UNDERGRADUATE EDUCATION COMMITTEE (UEC)
25 Oct 2013 - 10:00
A225

AGENDA
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Page

1. APPROVAL OF THE AGENDA

1.1. MOTION: To approve the agenda as presented.

2. APPROVAL OF UEC MINUTES

5 - 10 **2.1.** UEC draft minutes: September 27, 2013

MOTION: To approve the draft minutes as presented.

3. COURSE OUTLINES
The following courses are ready for publication following UEC approval.

11 - 33 **3.1. Biology**

Changes including title, calendar description, and prerequisites: BIO 201 and 202
Changes including course number, calendar description, and prerequisites: BIO 309 (formerly BIO 203)
Changes including course number, calendar description, prerequisites, and total hours per term: BIO 383 (formerly BIO 280)
Changes including course number, calendar description, prerequisites, and pre or corequisites: BIO 425 (formerly BIO 325) and BIO 426 (formerly BIO 326)

MOTION: To approve the Biology course outlines as presented.

34 - 52 **3.2. Computer Information Systems**

Review including changes to calendar description: COMP 350
Changes including title, calendar description, prerequisites, and pre or corequisites: COMP 361
New course: COMP 381, Introduction to Machine Learning
Changes including title, calendar description, and prerequisites: COMP 455
New course: COMP 481, Functional and Logic Programming
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MOTION: To approve the COMP course outlines as presented.

53 - 56 **3.3. History**

Changes including cross-listing new LAS 262 course: HIST 262/LAS 262, Latin American History: The National Experience

MOTION: To approve the cross-listed History and Latin American Studies course outlines as presented.

57 - 60 **3.4. Library and Information Technology**

Changes including calendar description, synonymous courses, and total hours per term: LIBT 265

MOTION: To approve the LIBT 265 course outline as presented.

61 - 71 **3.5. Mathematics and Statistics**

Changes including calendar description and synonymous courses: MATH 140

MOTION: To approve the MATH 140 course outline as presented.

4. PROGRAMS

72 - 77 **4.1. Arts**

Change to program requirements: Bachelor of Arts

MOTION: To approve the changes to Bachelor of Arts degree residency requirements as presented, effective September 2014.

MOTION: To approve the changes to the declaration policy of the Bachelor of Arts degree as presented, effective September 2014.

78 - 79 **4.2. Business Administration**

Change to program requirements: Bachelor of Business Administration Human Resources Management option and Organizational Studies concentration

MOTION: To approve the addition of BUS 377 as an elective option in the Bachelor of Business Administration Human Resources Management option and Organizational Studies concentration as presented, effective January 2014.

80 - 83 **4.3. Economics**

Change to program requirements: Economics major in Arts
Change to program requirements: Economics minor

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MOTION: To approve the changes to the Economics major in Arts as presented, effective January 2014.

MOTION: To approve the changes to the Economics minor as presented, effective January 2014.

84 - 90

4.4. Geography

Change to program requirements: Geography Honours in Arts

MOTION: To approve the changes to the program requirements for the Geography Honours in Arts as presented, effective September 2014.

91 - 214

4.5. Physics

Change to program requirements: Physics major, Honours, and minor in Science
New program: Engineering Physics diploma in Mechatronics
New course subject code: ENPH (Engineering Physics)
New course: ENGR 210, Circuit Analysis
New course: ENGR 330, Automatic Control Systems
New course: ENGR 340, Micro-Processors and Embedded Systems
New course: ENGR 350, Sensors and Actuators
New course: ENGR 390, Mechatronics
New course: ENPH 310, Electronics I
New course: ENPH 320, Electronics II
Changes including course renumbering: ENPH 360 (formerly PHYS 392)

MOTION: To approve the changes to the program requirements of the Physics major, Honours, and minor in Science as presented, effective May 2014.

MOTION: To approve ENPH as a course subject code.

MOTION: To approve the ENGR and ENPH course outlines as presented.

MOTION: To recommend the approval of the new Engineering Physics diploma in Mechatronics as presented.

5. OTHER BUSINESS/DISCUSSION ITEMS

215 - 218

5.1. Short Programs Subcommittee

MOTION: To accept the report of the Short Program Subcommittee's activities between September 2012 and April 2013, as presented.

MOTION: To revise the membership and mandate of the Short Programs Subcommittee, as presented.

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219 - 233 **5.2. Undergraduate Course and Program Approval policy (21)**

MOTION: To request a narrow revision of the Undergraduate Course and Program Approval policy (21) as presented.

234 **5.3. Submission Screening Subcommittee**

MOTION: To support the creation of Terms of Reference and membership criteria for a proposed new screening subcommittee of UEC, to be discussed at the November meeting.

235 **5.4. UEC Co-Chair**

MOTION: To support a recommendation to change the Terms of Reference to include co-chairs of UEC.

236 - 237 **5.5. Transfer Credit Subcommittee report**

MOTION: To accept the Transfer Credit Subcommittee report.

5.6. Admissions Subcommittee report

5.7. Policy Subcommittee report

5.8. Course Outline Subcommittee

6. INFORMATION ITEMS

6.1. Minor course changes (outlines will be available at www.ufv.ca/calendar/courseoutlines)

ANTH 267
BUS 249 (formerly BUS 149)

238 **6.2. Revised UEC Membership for 2013/14**

239 - 371 **6.3. Updated UFV Education Plan**

7. ADJOURNMENT

UNIVERSITY OF THE FRASER VALLEY

UNDERGRADUATE EDUCATION COMMITTEE (UEC) MEETING

September 27, 2013
10:00 am – A225
Abbotsford Campus

DRAFT MINUTES

PRESENT: M. Bos-Chan, N. Goad, J. Larsen, J. Lee, S. Manu, S. Marsh, S. Pattridge, L. Stagg, J. White, S. Xi
ABSENT: S. Bains, S. Brigden, W. Burton, R. Colwell, H. Compeau, V. Dvoracek, J. English, S. Fisher, D. Francis, S. Hardman, D. McGuire, R. McLeod, E. Spalding, A. Wiseman
GUESTS: T. Anzai, G. Carr, B. Kirkley, A. Kuczynska, S. Murray, E. Newman, S. Piper, B. Traverse, S. Van Dewetering
RECORDER: A. Hoogendoorn

1. APPROVAL OF THE AGENDA

MOTION:
To approve the agenda as amended:

- Addition of 5.1: Undergraduate Course and Program Approval policy (21) update
- Addition of 5.7: Short Program Subcommittee

S. Marsh/ L. Stagg

2. APPROVAL OF UEC MINUTES

2.1. UEC draft minutes: August 30, 2013

MOTION:
To approve the draft minutes as presented.

M. Bos-Chan/ N. Goad

3. COURSE OUTLINES

The following courses are ready for publication following UEC approval.

3.1. Communications

Review including changes to prerequisites and course description: CMNS 212/MACS 212

MOTION:
To approve the CMNS 212/MACS 212 course outlines as presented.

J. Larsen/ J. White

3.2. History

Changes including cross-listing new LAS 357 course: HIST 357/LAS 357, History of Inter-American Relations: Latin America, the United States, and Canada
Changes including cross-listing new LAS 359 course: HIST 359/LAS 359, Problems in Latin American Regional History
Changes including cross-listing new LAS 457 course: HIST 457/LAS 457, Sexuality and Gender in Latin America
Changes including cross-listing new LAS 458 course: HIST 458/LAS 458, History of Indigenous Peoples in Latin America
Changes including cross-listing new LAS 459 course and prerequisites: HIST 459/LAS 459, Topics in Political and Social History of Latin America
Changes including cross-listing new LAS 460 course: HIST 460/LAS 460, State Terror, Human Rights, and the Politics of Memory in Latin America

MOTION:
To approve the cross-listed History and Latin American Studies course outlines as presented.

S. Marsh/ M. Bos-Chan

There was discussion about how cross-listed courses can be problematic for BCCAT, as when there is a request to transfer a course, they are unsure of which department to send it to. Sometimes the information is sent to more than one department.

3.3. Psychology

Regularization of special topics course: PSYC 460 (formerly PSYC 491Q), Social Cognition

MOTION:
To approve the PSYC 460 course outline as presented.

S. Marsh/ J. Larsen

3.4. Social, Cultural, and Media Studies

New course: ANTH 299, Special Topics in Anthropology I
Regularization of special topics course: SOC 275 (formerly SOC 299I), Sociology of Death and Dying
New cross-listed course: SOC 313/GEOG 313, Agriculture and Rural Life
Changes including prerequisites: SOC 357
Changes including prerequisites and pre or corequisites: SOC 358

MOTION:
To approve the ANTH 299 course outline as presented.

M. Bos-Chan/ J. Larsen

MOTION:
To approve the Sociology course outlines, with the exception of SOC 357 and

358, as amended.

M. Bos-Chan/ J. Larsen

MOTION:
To approve the SOC 357 and 358 course outlines as amended.

J. Larsen/ N. Goad

The memos for SOC 357 and 358 were updated to include information outlining how the courses meet institutional outcomes.

3.5. Upgrading and University Preparation

Review including changes to calendar description and learning outcomes: MATH 063

MOTION:
To approve the MATH 063 course outline as presented.

J. Larsen/ N. Goad

3.6. Visual Arts

New course: AH 204, Indigenous Art of the Northwest Coast

MOTION:
To approve the AH 204 course outline as presented.

M. Bos-Chan/ J. Larsen

4. PROGRAMS

4.1. Arts

Change to program requirements: Bachelor of Arts (addition of option to declare a science major or minor)

MOTION:
To approve the addition of the option to declare a science major or minor within the Bachelor of Arts degree as presented, effective January 2014.

S. Marsh/ J. Larsen

There was discussion about the reasons for students declaring a science major or extended minor within a Bachelor of Arts degree rather than completing a Bachelor of Science degree. E. Newman explained that this is a trend with students and it gives them a better advantage for career opportunities and entrance to graduate school. Students would still fulfill all of the Bachelor of Arts graduation requirements.

4.2. Media Arts

Change to program requirements: Bachelor of Media Arts degree

New course subject code: MEDA (Media Arts)
New course: MEDA 260, Exploring Creativity
Changes including course number, calendar description, synonymous courses, and prerequisites: MEDA 350 (formerly MACS 350)
New course: MEDA 360, Professional Practices for Creative Digital Industries
New course: MEDA 401, Media Arts Integrated Project I
New course: MEDA 402, Media Arts Integrated Project II

MOTION:
To approve MEDA as a course subject code.

M. Bos-Chan/ J. White

MOTION:
To approve the MEDA course outlines as presented.

M. Bos-Chan/ J. Larsen

MOTION:
To approve the changes to the program requirements of the Bachelor of Media Arts degree as presented.

M. Bos-Chan/ J. Larsen

The Bachelor of Media Arts degree program proposal originally was approved at the February 1, 2013 UEC meeting. Subsequent changes were made at SBC and APPC, which required UEC approval as a minor program change.

Budget requirements for the Bachelor of Media Arts degree required the creation of a core set of courses to which a tuition surcharge could be assigned. To achieve this, the program working group looked at the existing course requirements for the degree and defined five courses to form the core requirements (MEDA 260, 350, 360, 401, and 402).

4.3. Modern Languages

New program: French major

MOTION:
To recommend the approval of the new French major for the Bachelor of Arts degree as amended:

- 2. a. Depth and Breadth of Knowledge: addition of notes to clarify the lower-level and upper-level degree requirements expected of students.
- 6. Admission and Transfer/Residency: place links to these requirements in the Bachelor of Arts calendar page.
- 4. Curriculum/Program Content: correct the prerequisites for:
  - FREN 102: FREN 101, or French 12 with less than a B ~~but without the provincial exam~~,or instructor's permission, or assessment of the department.
  - FREN 215: French 12 with a B or higher ~~the provincial exam~~, or FREN 101 and FREN 102, or instructor's permission, or assessment of the department.
  - FREN 342: FREN ~~219 and~~ 242

5. OTHER BUSINESS/DISCUSSION ITEMS

5.1. Undergraduate Course and Program Approval policy (21)

MOTION:
To recommend to Senate Governance Committee that while policy 21 is open to consider the addition of an expedited program approval process, that wording be added to policy 21 appendix B. 2. to identify a new Honours as a major program change.

M. Bos-Chan/ S. Marsh

Honours are not mentioned in the Undergraduate Course and Program Approval policy (21), which means they are being treated as new programs in the approval process. This is problematic because Honours are not considered new programs by Ministry standards and do not require external approval if there is an approved major in that area.

5.2. Columbia Bible College Transfer Agreement

MOTION:
To approve the five year renewal of the Columbia Bible College transfer agreement, as recommended by the UEC Transfer Credit Subcommittee.

J. Larsen/ M. Bos-Chan

The UEC Transfer Credit Subcommittee reviewed research that demonstrated that students who transferred from CBC to UFV under the previous transfer agreement did well in their subsequent studies. This is not a precedent setting decision for other institutions with similar qualifications.

There was concern that students applying for graduate studies in the future may not have their CBC credits accepted as UFV credits by other institutions.

5.3. Admissions Subcommittee report

5.4. Transfer Credit Subcommittee report

MOTION:
To accept the UEC Transfer Credit Subcommittee report.

S. Marsh/ M. Bos-Chan

5.5. Policy Subcommittee report

R. Colwell has volunteered to be a member of the UEC Policy Subcommittee.

The UEC Policy Subcommittee plans to conduct a focus group for feedback on the changes that are being made to the Assignment of Course Credit policy (105).

5.6. Course Outline Subcommittee report

The UEC Course Outline Subcommittee met with the Records and Graduation Officers to discussion feedback on the revised course outline. Changes will be made to the revised course outline and will be presented at the October UEC meeting.

5.7. Short Program Subcommittee

MOTION:
To approve the new Program Development Coordinator, Sylvie Murray, as the new chair of the Short Program Subcommittee.

S. Marsh/ M. Bos-Chan

6. INFORMATION ITEMS

6.1. Minor course changes (outlines will be available at www.ufv.ca/calendar/courseoutlines)

CMNS 301/JRNL 301
CMNS 345/ADED 345 and CMNS 445/ADED 445
CMNS 390
EDUC 498 (formerly EDUC 499)
ENGL 105, 108, 109, 115, 120, 130, 150, 170,
MATH 105, 110, 111, 125, 141
PHYS 112
STAT 106

6.2. Access to Campus-Wide Consultation submissions

7. ADJOURNMENT

The meeting was adjourned at 11:24am.

UNIVERSITY OF THE FRASER VALLEY

33844 King Road
Abbotsford, BC
V2S 7M8
Tel: (604) 504-7441

MEMORANDUM

TO: UEC

FROM: Allan Arndt, Biology Department Head

DATE: June 4, 2013

SUBJECT: BIO 201 – Change to Course Title/Description/Prerequisites

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The Biology Department requests approval of the changes to BIO 201 which include a change to the course title, description and prerequisites. These changes have been made to more accurately describe the current course content. The Official UFV Course Outline is attached with updates indicated.

CWC Comment
No concerns.

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UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE:	June 1994
COURSE REVISED IMPLEMENTATION DATE:	May 2014
COURSE TO BE REVIEWED:	May 2020
(six years after UEC approval)	*(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

BIO 201	Biology	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Cellular Biochemistry and Metabolism
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course provides an introduction to the biochemistry, structure, and function of cellular components. The course opens with an exploration of biological macromolecules, enzymes, and energetics as the basis for interpretation of structure and function of cellular membranes and organelles. Students examine major pathways of chemotrophic and phototrophic metabolism in cells, mitochondria and chloroplasts, focusing on energy flow in the cell and its control. Lectures and integrated laboratory exercises emphasize the importance of experimental evidence underlying current understanding of cell biochemistry and metabolism.

PREREQUISITES: BIO 111, BIO 112, and CHEM 114.
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: **90**

STRUCTURE OF HOURS:

Lectures:	**45**	Hrs
Seminar:		Hrs
Laboratory:	**45**	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **24**
Expected frequency of course offerings: annual
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☒ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☒ Yes	☐ No

Course designer(s): **Ernest Kroeker, Edith Camm, Anthony Stea**
Department Head: **Allan Arndt** Date approved: **June 4, 2013**
Campus-Wide Consultation (CWC) Date of meeting: **June 14, 2013**
Curriculum Committee chair: **David Fenske** Date approved: **September 20, 2013**
Dean/Associate VP: **Lucy Lee** Date approved: **September 20, 2013**
Undergraduate Education Committee (UEC) approval Date of meeting: **October 25, 2013**

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

1. Understand the structure and function of the four main classes of biological macromolecules.
2. Understand the basic metabolism of eukaryotic cells including central metabolic pathways involved with cellular respiration and photosynthesis.
3. Understand the energetics of cellular reactions and be able to calculate free energy changes for important biological reactions.
4. Know the basic structure and function of cellular membranes.
5. Understand the transport processes which occur in cells and how cellular homeostasis is maintained.
6. Gain valuable experience in a biology laboratory setting by working in small groups gathering real experimental data.
7. Learn the proper way to analyze and interpret scientific experimental data and be able to make proper summary graphs and tables.
8. Learn laboratory skills such as proper pipetting procedures, use of spectrophotometers, protein gel electrophoresis, use of gas chromatograph, etc.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lectures, laboratory exercises and reports, problem sets.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☐ Portfolio assessment ☒ Interview(s)

☒ Other (specify): Methods may include interview, special assignments, and/or exams. This course may be challenged. The student must challenge both lecture and lab components of the course by writing an examination for each. The student will be provided with a copy of the syllabus and information on how to obtain a copy of the current text and lab manual. The student will also be given information about exam style and expected standards. The student can sit the examination for the lecture portion of the course at a time convenient to both student and instructor. However, since it is not reasonable to expect a lab instructor to set up a lab exam for one student, our practice has been to permit the student to write the exam for the laboratory portion of the course at the same time it is written by a regular class. Students enrolled in BIO 201 for a second time are not obliged to take the laboratory part of the course if their previous lab mark was >70%.

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

A typical textbook is *Becker, W.M., L. J. Kleinsmith, and J. Hardin. The World of the Cell. 5th ed. San Francisco: Benjamin Cummings, 2003.*

SUPPLIES / MATERIALS:

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Laboratory reports and lab exam:	30%
Midterm:	25%
Final examination:	45%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

Biological molecules
-Amino acids, properties of R groups
-Protein structure
-Sugars; polysaccharides
-Storage lipids, and introduction to membrane lipids
-Nucleotides (roles in ATP and co-factors)
-Introduction to nucleic acids

Bioenergetics and enzymes
-Free energy changes in chemical reactions
-Enzyme structure and function, including regulation
-Introduction to enzyme kinetics

Movement of molecules from cell to cell and within the cell
-Membrane lipids and their role in membrane structure
-Transport of molecules across membranes
-Energetics of membrane transport
-Implications of membrane transport in nerve function
-Extracellular structures and their role in cell-cell communication
-The endomembrane system and its role in sorting proteins

Energy flow in cells
-Glycolysis and fermentation
-Regulation of glycolysis and fermentation
-Aerobic respiration in mitochondria: the TCA cycle and electron transport
- Proton gradient and ATP formation
- Chloroplasts and energy harvesting
- Photosynthetic carbon fixation; photorespiration, CAM, and C4 photosynthesis.

Lab exercises include
- Photometric assays
- Isolation of protein fractions from porcine serum
- Electrophoresis of protein fractions from porcine serum
- Enzyme kinetics of acid phosphatase
- Gas chromatography to separate fatty acids from naturally-occurring lecithin (2 weeks)
- Cell fractionation
- Respiration in yeast cells
- Use of inhibitors to probe mitochondrial electron transport (oxygen electrode)
- Chloroplast isolation and measurement of electron flow through PSII

UNIVERSITY OF THE FRASER VALLEY

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MEMORANDUM

TO: UEC

FROM: Allan Arndt, Biology Department Head

DATE: June 4, 2013

SUBJECT: BIO 202 – Change to Course Title/Description/Prerequisites

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The Biology Department requests approval of the changes to BIO 202 which include a change to the course title, description and prerequisites. These changes have been made to more accurately describe the current course content. The Official UFV Course Outline is attached with updates indicated.

CWC Comment
No concerns.

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UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE:	June 1994
COURSE REVISED IMPLEMENTATION DATE:	May 2014
COURSE TO BE REVIEWED: *(six years after UEC approval)*	May 2020 *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

BIO 202	Biology	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Cellular Signaling and Regulation of Gene Expression
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course focuses on signal transduction in cells. Topics covered include: electrical and chemical signalling in cells, DNA structure and organization of the eukaryotic genome, DNA replication, the cell cycle and cancer, biotechnology and genetic engineering, gene expression, transcription and translation mechanisms, and control of gene expression.

PREREQUISITES: BIO 201. Note: As of May 2015, prerequisites will change to the following: BIO 111, BIO 112, and CHEM 114.

COREQUISITES:

PRE or COREQUISITES:

SYNONYMOUS COURSE(S):

(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: **90**

STRUCTURE OF HOURS:

Lectures:	**45**	Hrs
Seminar:	**25**	Hrs
Laboratory:	**20**	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **24**
Expected frequency of course offerings: Yearly
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☒ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☒ Yes	☐ No

Course designer(s):	**Tony Stea**		
Department Head:	**Allan Arndt**	Date approved:	**June 4, 2013**
Campus-Wide Consultation (CWC)		Date of meeting:	**June 14, 2013**
Curriculum Committee chair:	**David Fenske**	Date approved:	**September 20, 2013**
Dean/Associate VP:	**Lucy Lee**	Date approved:	**September 20, 2013**
Undergraduate Education Committee (UEC) approval		Date of meeting:	**October 25, 2013**

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

1. Describe the main steps in signal transduction in cells.
2. Explain how electrical and chemical signals are essential for nervous system signalling.
3. Discuss the organization of the genome of cells.
4. Describe how DNA replication works in prokaryotic and eukaryotic cells.
5. Explain the cell cycle and the role of mitosis.
6. Describe the role of biotechnology and genetic engineering in society.
7. Describe how transcription and translation processes work in eukaryotic cells.
8. Discuss the mechanisms of control of gene expression.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lecture, demonstration, small group practice, discussion, A/V materials, use of models, charts, and lab exercises.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☒ Portfolio assessment ☒ Interview(s)

☒ Other (specify): The student must challenge both lecture and lab components of the course by writing an examination for each. The student will be provided with a copy of the syllabus and information on how to obtain a copy of the current text and lab manual. The student will also be given information about exam style and expected standards. The student can sit the examination for the lecture portion of the course at a time convenient to both student and instructor; however, since it is not reasonable to expect a lab instructor to set up a lab exam for one student, our practice has been to permit the student to write the exam for the laboratory portion of the course at the same time it is written by a regular class.

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Becker, W.M., L. J. Kleinsmith, J. Hardin, and G.P. Bertoni. The World of the Cell. 7th ed. San Francisco: Benjamin Cummings, 2009.

SUPPLIES / MATERIALS:

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Midterm lecture exam:	25%
Final lecture exam:	45%
Quizzes:	5%
Lab reports:	10%
Oral presentation:	15%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

1) Cell Signaling and Signal Transduction:
- electrical properties of cells and nervous system signaling
- chemical signals, cellular receptors, novel messenger molecules
- signal transduction pathways stimulating gene expression

2) Structural Basis of Cellular Information:
- DNA structure, genome organization, DNA packaging.

Course Content continued:

3) DNA Replication and Cell Division:
- DNA replication, DNA damage and repair, cell cycle, cancer.

4) Biotechnology and Genetic engineering:
- Gene cloning, genetic engineering, gene therapy.

5) Gene Expression:
- genetic code, transcription, RNA processing, translation, protein targeting.

6) Control of Gene Expression:
- prokaryotes *vs.* eukaryotes, transcriptional *vs.* posttranscriptional control.

LABORATORY EXPERIMENTS:
In the lab/seminar component of the course students work on complex lab exercises for five to six weeks. The remaining time is used for student presentation of research projects. For the research projects, students work in pairs or individually and must choose a research paper dealing with any topic related to cell biology. The majority choose papers from Science, Nature or Cell due to our current library holdings. The choice of paper must be approved by the instructor. Students must acquire a good basic understanding of the paper including the techniques described in the paper. The students then present the paper to the class. They are graded on the level of understanding demonstrated during the presentation as well as during a brief discussion with the instructor and class immediately following their presentation. The primary objective of this activity is to teach the students how to read the literature. A secondary objective is to expose students to the application of experimental techniques which cannot actually be performed or demonstrated in our teaching labs.

Lab exercises include:
Lab 1: PCR analysis and sequence comparisons of human mitochondrial DNA.
Students will isolate their own mitochondrial DNA from cheek cells and amplify a specific region using the Polymerase Chain Reaction (PCR). Samples will be run on a DNA electrophoresis gel and then later sequenced. Sequences will be compared to a number of other sequences in a human mtDNA database.

Lab 2: Control of gene expression in Eukaryotes.
Insects (meal worms) are exposed to heat shock conditions. Blood and tissue samples are assayed using Western blotting with an hsp70 antibody to observe aspects of the expression of hsp70 gene.

Lab 3: Gene regulation in transgenic bacteria.
Students create transgenic bacteria by inserting a jellyfish gene which glows when active. The students then determine the presence or absence of the gene and the environmental factors which can influence activity of this transgene.

SUPPORTING LAB EQUIPMENT AVAILABLE:
In-house manual presently in use as is all necessary equipment.

UNIVERSITY OF THE FRASER VALLEY

33844 King Road
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V2S 7M8
Tel: (604) 504-7441

MEMORANDUM

TO: UEC

FROM: Allan Arndt, Biology Department Head

DATE: June 4, 2013

SUBJECT: BIO 203 – Change to Course Number/Calendar Description/Prerequisites

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The Biology Department requests approval of the renumbering change converting BIO 203 to BIO 309. This change has been made to reflect current course content as well as the student academic preparation required to succeed. The Official UFV Course Outline is attached with updates indicated.

CWC Comment

Will you please add the following note under the Calendar description that we use for synonymous courses? Note: Students with credit for BIO 203 may not take BIO 309 for further credit.

I would like to be clear on the prerequisites because we know students will ask. Do you want students to have BIO 111, BIO 112, and 8 credits in BIO courses numbered 200 and above? This is how I read it, but this is not what is stated.

For students who have completed this course as BIO 203, how will this be applied to your programs? Will you allow this course to satisfy an upper-level requirement?

Department Response

This note has been incorporated into the course outline.

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UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE:	October 1994
COURSE REVISED IMPLEMENTATION DATE:	May 2014
COURSE TO BE REVIEWED:	May 2020
(six years after UEC approval)	*(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

BIO 309	Faculty of Science/Biology	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Microbiology I
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course examines advanced concepts in modern microbiology including; the fundamentals of microbial structure, bioenergetics, growth, and genetics, predominately by considering a variety of bacteria and viruses.

Note: Students with credit for BIO 203 may not take BIO 309 for further credit.

PREREQUISITES: BIO 111 and BIO 112. Note: As of May 2015, prerequisites will change to the following: BIO 111 and 112, plus 8 credits numbered 200 and above.

COREQUISITES:

PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces: **BIO 203**
(b) Cross-listed with:
(c) Cannot take: **BIO 203** for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: **90**

STRUCTURE OF HOURS:

Lectures:	**45**	Hrs
Seminar:		Hrs
Laboratory:	**45**	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **24**
Expected frequency of course offerings:
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☒ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☒ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☒ Yes	☐ No

Course designer(s):	**Terry Starr, Stephen Thomas**		
Department Head:	**Allan Arndt**	Date approved:	**June 4, 2013**
Campus-Wide Consultation (CWC)		Date of meeting:	**June 14, 2013**
Curriculum Committee chair:	**David Fenske**	Date approved:	**September 20, 2013**
Dean/Associate VP:	**Lucy Lee**	Date approved:	**September 20, 2013**
Undergraduate Education Committee (UEC) approval		Date of meeting:	**October 25, 2013**

BIO 309 **OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 2)**
COURSE NAME/NUMBER

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

a) Demonstrate information competency of the various prokaryotic life strategies covered in the course: reproduction, nutrition, biochemistry, and genetics.
b) Apply knowledge from cell biology and genetics that emphasize the central role of cell structure in determining cell function.
c) Integrate various biochemical concepts that allow microbes to survive and flourish in a vast array of environmental conditions.
d) Critically analyze relevant literature and current news reports pertaining to microbial epidemics.
e) Interpret biological data from scientific figures and experiments.
f) Analyze microbial life strategies that affect industrial practices.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lecture, demonstrations, small group practice, discussions, audio-visual presentations, use of models and charts, labs.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Microbiology, with Diseases by Body Systems R.W Bauman second edition Pearson Publishing
Lab handouts: UFV Press

SUPPLIES / MATERIALS:

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Midterm:	25%
Lecture final:	50%
Labs:	25%

Students must pass both the lab and lecture portions of the course in order to receive a passing grade.

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

Lecture #1: Introduction: Ch. 2, Specimen Identification
Lecture #2: Cell Structure, Ch. 3
Lecture #3: Cell Wall, Ch. 3
Lab #1: Basic Techniques
Lecture #4: Nutrition, Ch. 5
Lecture #5: Growth, Ch. 6
Lab #2: Staining Techniques
Lecture #6: Metabolism, Energy & Enzymes, Ch. 7
Lecture #7: Metabolism; 6C, 5C, & TCA Cycles
Lab #2 (continued): Staining Techniques
Lecture #8: Metabolism; Fermentation, Mixed Acids, Ch. 8
Lecture #9: Metabolism; Biosynthesis
Lab #3: API and Virus Titer
Lecture #10: Catch Up and Review

Course Content continued:

Midterm I: Ch. 2,3,5,6,7,8,9
Lab #3 (cont'd) API & Virus Titer Lecture #11: Nucleic Acids, Ch. 10
Lecture #12: Proteins, Ch. 10
Lab #4: Environmental Factors
Lecture #13: Enzyme Activity, Ch. 11
Lecture #14: Gene Structure, Ch. 12
Lecture #15: Mutations, Ch. 12
Lecture #16: Plasmids, Transposable Elements, Ch. 13
Lab #5: Biochemical Activities
Lecture #17: Conjugation, Transformation, Ch. 13
Lecture #18: Molecular Genetics, Ch. 14
Lab #6: Student Project

Midterm II: Ch. 10, 11, 12, 13,
Lab #6: Student Project (cont'd)
Lecture #19: Molecular Genetics, Ch. 14 (cont'd)
Lecture #20: Bacterial Control, Ch. 15, 16
Lab #6: Student Project (cont'd)
Lecture #21: General Viruses, Ch. 17
Lecture #22: Bacteriophage, Ch. 18
Lab #6: Student Project (cont'd)
Lecture #23: Eukaryotic Viruses, Ch. 19
Lecture #24: Common Parasites Ch. 20

UNIVERSITY OF THE FRASER VALLEY

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MEMORANDUM

TO: UEC

FROM: Allan Arndt, Biology Department Head

DATE: June 4, 2013

SUBJECT: BIO 280 – Change to Course Number, Description, Prerequisites & Course Outline

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The Biology Department requests approval of the change converting BIO 280 to BIO 383. This change has been made to reflect current course content. Student success is significantly improved with exposure to cell biology prior to taking this course and is therefore reflected in the altered prerequisites. The Official UFV Course Outline is attached with updates indicated.

CWC Comment
I have the same request as the previous 2 course outlines – please add the Note under the Calendar Description about students with BIO 280 may not complete this course for further credit.
I also have the same question about how you plan on using the BIO 280 course towards your programs now that you have changed it to an upper-level course.

Department Response
This note has been incorporated into the course outline.

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UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE:	January 2014
COURSE REVISED IMPLEMENTATION DATE:	May 2014
COURSE TO BE REVIEWED:	May 2020
(six years after UEC approval)	*(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

BIO 383	Faculty of Science/Biology	3
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Human Physiology
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course is focused on the study of the physiology of humans. We will be studying the endocrine, nervous, sensory, muscular, cardiovascular, respiratory, excretory, and gastrointestinal systems of humans. This course is meant as a survey of the different organ systems in humans with particular focus on physiological principles and mechanisms.

Note: Students with credit for BIO 280 may not take BIO 383 for further credit.

PREREQUISITES: BIO 111 and BIO 112. Note: As of May 2015, prerequisites will change to the following: BIO 201 and BIO 202.
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces: **BIO 280**
(b) Cross-listed with:
(c) Cannot take: **BIO 280** for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: **45**
STRUCTURE OF HOURS:

Lectures:	**45**	Hrs
Seminar:		Hrs
Laboratory:		Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **24**
Expected frequency of course offerings: every year
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☒ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☒ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s):	**Anthony Stea, Gregory Schmaltz**		
Department Head:	**Allan Arndt**	Date approved:	**June 4, 2013**
Campus-Wide Consultation (CWC)		Date of meeting:	**June 14, 2013**
Curriculum Committee chair:	**David Fenske**	Date approved:	**September 20, 2013**
Dean/Associate VP:	**Lucy Lee**	Date approved:	**September 20, 2013**
Undergraduate Education Committee (UEC) approval		Date of meeting:	**October 25, 2013**

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

1. Demonstrate information competency on the various physiological systems covered in the course: endocrine, nervous, sensory, muscular, cardiovascular, respiratory, excretory, and gastrointestinal.
2. Integrate various physiological concepts to exemplify the central role of homeostasis in regulating body functions.
3. Apply knowledge from cellular biology and anatomy to the central theme of form and function in physiology.
4. Interpret biological data from scientific figures and experiments.
5. Analyze critically relevant literature information on various topics in current physiological research.
6. Communicate effectively through writing on current findings in physiology.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

This course will involve a standard lecture approach to cover basic information along with assignments and topical readings to stimulate student-based learning and discussion.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☐ Portfolio assessment ☐ Interview(s)
The student must challenge the course by writing an examination. The student will be provided with a copy of the syllabus and information how to obtain a copy of the current textbook. The student will also be given information about exam style and expected standards. The student can write the examination for the course at a time convenient to both student and instructor.

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS: *[Textbook selection varies by instructor. An example of texts might be:]*

Human Physiology with Mastering, 6th ed. by Silverthorn

SUPPLIES / MATERIALS:

STUDENT EVALUATION: *[An example of student evaluation for this course might be:]*

Term paper:	10%
Quizzes and assignments:	20%
Midterm:	25%
Final exam:	45%

COURSE CONTENT: *[Course content varies by instructor. An example of course content might be:]*

- Overview of the anatomy and function of the main tissue types and the integration in organ systems.
- Explanation of the major glands of the endocrine system with a focus on the main hormonal axes and modes of production of hormones.
- Overview of the nervous system and description of the physiology of electrical and chemical signaling in the nervous system.
- Discussion of the transduction mechanisms of the five senses.
- Explanation of the mechanisms for muscle contraction including the sliding filament model.
- Overview of the anatomy and function of the heart with a focus on the cardiac cycle.
- Description of the role of blood in the cardiovascular system and in particular the role of red blood cells in gas exchange.
- Overview of the anatomy of the respiratory system and its role.
- Overview of the anatomy of the kidney with a focus on the role of the nephron.
- Description of the organs of the gastrointestinal tract with a focus on the role of each in human digestion.

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MEMORANDUM

TO: UEC

FROM: Allan Arndt, Biology Department Head

DATE: June 4, 2013

SUBJECT: BIO 325 – Change to Course Number/Update to Prerequisites

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The Biology Department requests approval of the changes to BIO 325 which include renumbered to BIO 425 and updating prerequisites from BIO 203 to BIO 309. The change to course number has been made to reflect current course content. The BIO 203 prerequisite has been changed to BIO 309 as BIO 203 is being renumbered to BIO 309. The Official UFV Course Outline is attached with updates indicated.

CWC Comment
Note added under the Calendar Description. The new prereqs for BIO 309 state BIO 111, 112, and 8 credits of 200 numbered or above. This course does not state BIO 201 specifically. If you think that a student must have BIO 201 in order to be successful in this course, then I suggest that you keep it there.

Department Response
The calendar entry has been changed to read "The new prereqs for BIO 309 state BIO 111, 112, and 8 credits in Bio courses numbered 200 or above" as you've stated in a different email.

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UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE:	January 2014
COURSE REVISED IMPLEMENTATION DATE:	May 2014
COURSE TO BE REVIEWED: *(six years after UEC approval)*	May 2020 *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

BIO 425	Faculty of Science/Biology	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Introductory Medical Microbiology
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

The course focuses on the relationship between human health and microbes. The functioning of the immune system, the normal human flora, and diseases caused by microbial pathogens will be studied.

Note: The new prerequisites for BIO 309 state BIO 111, 112, and 8 credits in BIO courses numbered 200 or above.

PREREQUISITES: BIO 201 and 203. Note: As of May 2015, prerequisites will change to the following: BIO 309.
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces: **BIO 325**
(b) Cross-listed with:
(c) Cannot take: **BIO 325** for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: **90**
STRUCTURE OF HOURS:

Lectures:	**45**	Hrs
Seminar:		Hrs
Laboratory:	**45**	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **24**
Expected frequency of course offerings: Once every two years
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☒ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☒ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s):	**Terry Starr, Stephen Thomas**		
Department Head:	**Allan Arndt**	Date approved:	**June 4, 2013**
Campus-Wide Consultation (CWC)		Date of meeting:	**June 14, 2013**
Curriculum Committee chair:	**David Fenske**	Date approved:	**September 20, 2013**
Dean/Associate VP:	**Lucy Lee**	Date approved:	**September 20, 2013**
Undergraduate Education Committee (UEC) approval		Date of meeting:	**October 25, 2013**

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

1. describe the relationship between human health and microbes.
2. explain the normal functioning of the immune system at both the molecular and cellular levels.
3. list the various mechanisms that microbes employ to circumvent or evade host defenses.
4. explain the pathogenesis of various viral and bacterial diseases found in many human populations.
5. discuss the connection between the environment and human health.
6. list the common mechanisms that pathogens use to cause death and disease in susceptible individuals.
7. apply to their daily lives the concepts linking human health and microbial interactions.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

a) Demonstrate information competency on the various concepts covered in the course; functioning of the human immune system, strategies that microbes employ to circumvent host defenses, detecting and circumventing microbial infections, microbial mechanisms of infections.

b) Integrate the relationship between the environment, microbial growth, and human health.

c) Apply knowledge from cell biology and genetics to clarify the central relationship between microbial growth and human immunological responses.

d) Critically analyze current literature reports pertaining to diseases influenced by microbial infections.

e) Interpret biological data from scientific figures and experiments.

f) Connect the concept of immunization with outbreaks of human diseases in various world populations.

g) Lecture, small group discussions, project and oral presentations, lab exercises.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Microbiology with Diseases by Body System, 3rd ed. by Bauman

SUPPLIES / MATERIALS:

STUDENT EVALUATION:
[An example of student evaluation for this course might be:]

Midterm:	30%
Lab reports:	10%
Lab exam:	10%
Final exam:	50%

COURSE CONTENT:
[Course content varies by instructor. An example of course content might be:]

Lecture topics:
Microorganisms and human health
Immune system: nonspecific defenses
Immune system: humoral defense
Immune system: cell mediated defense

Course Content continued:

Generation of antibody diversity
Maturation and activation of B and T cells Immunologic disorders
Epidemiology and public health
Antimicrobial pharmacology
Human diseases caused by bacteria
Human diseases caused by viruses
Human diseases caused by fungi
Normal flora of the human body
General characteristics of viruses
Eukaryotic viruses

Labs:
1. Immunology
2. Normal flora
3. Antibiotic sensitivity
4. Food microbiology
5. Genome changes
6. Bacteriophages

UNIVERSITY OF THE FRASER VALLEY

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MEMORANDUM

TO: UEC

FROM: Allan Arndt, Biology Department Head

DATE: June 4, 2013

SUBJECT: BIO 326 – Change to Course Number/Update to Prerequisites

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The Biology Department requests approval of changes made to BIO 326 which include renumbering to BIO 426 and updating prerequisites from BIO 203 to BIO 309. The change to course number has been made to reflect current course content. The BIO 203 prerequisite has been changed to BIO 309 as BIO 203 is being renumbered to BIO 309. The Official UFV Course Outline is attached with updates indicated.

CWC Comment
My only request is to add the Note under the Calendar Description that students with credit for BIO 326 may not take BIO 426 for further credit.

Department Response
That would be fine – the changes have been incorporated into the course outline.

Q:\UEC\UEC meetings\2013-10-25\Courses\BIO\Memo- BIO 426.doc

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE:	January 2014
COURSE REVISED IMPLEMENTATION DATE:	May 2014
COURSE TO BE REVIEWED:	May 2020
(six years after UEC approval)	*(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

BIO 426	Faculty of Science/Biology	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Environmental Microbiology
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

There has been an increase in interest in environmental microbiology since the late 1980s. This exciting field encompasses the physiology, ecology, biochemistry, and genetics of microorganisms, with potential for environmental applications. This course will place emphasis on environmental sustainability. To this end, studies will focus on agricultural uses of micro-organisms, interactions between micro-organisms and with higher organisms, tracking pathogens in the environment, nutrient cycling, pollution, and bioremediation. Success in environmental sustainability will require the application of molecular biology to microbial ecology and the use of genetically engineered micro-organisms. As well, it will require an interdisciplinary approach with an interface between microbiology, biogeochemistry, aquatic and organic chemistry, hydrogeology, and soil physics. This course will therefore also provide students with an introduction to molecular biological techniques and how they pertain to environmental microbiology and interaction with these other disciplines.

Note: Students with credit for BIO 326 may not take BIO 426 for further credit.

PREREQUISITES: BIO 201 and BIO 203. Note: As of May 2015, prerequisites will change to the following: BIO 201 and 309

COREQUISITES:

PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces: **BIO 326**
(b) Cross-listed with:
(c) Cannot take: **BIO 326** for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: **90**

STRUCTURE OF HOURS:

Lectures:	**45**	Hrs
Seminar:		Hrs
Laboratory:	**45**	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **24**
Expected frequency of course offerings: every other year
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☒ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s):	**Terry Starr, Stephen Thomas**		
Department Head:	**Allan Arndt**	Date approved:	**June 4, 2013**
Campus-Wide Consultation (CWC)		Date of meeting:	**June 14, 2013**
Curriculum Committee chair:	**David Fenske**	Date approved:	**September 20, 2013**
Dean/Associate VP:	**Lucy Lee**	Date approved:	**September 20, 2013**
Undergraduate Education Committee (UEC) approval		Date of meeting:	**October 25, 2013**

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- Demonstrate a solid understanding of environmental sustainability issues.
- Describe the differences between water and soil habitat and their influences on microbial activities.
- Distinguish the role and importance of chemical structure of molecules and the effects of environmental factors on biodegradation by microorganisms.
- Explain the roles of these factors on specific examples of naturally occurring compounds and various hydrocarbons and pesticides.
- Analyze the roles of microorganisms in groundwater and soil ecosystems, especially in terms of their effects on the evolution of the biogeochemistry and biochemical properties of these systems.
- Relate the microbiology of groundwater to the observed changes in naturally occurring compounds introduced into groundwater.
- Describe the basic principles of bioremediation activities as they are used in contaminated soil and groundwater.
- Devise appropriate generalized systems to perform bioremediation in contaminated systems.
- Apply information gained from this course and from other sources to critically evaluate bioremediation processes and applications in environmental sustainability.
- Design and complete a laboratory project relevant to bioremediation and environmental sustainability.
- Explain the importance of genetic engineering to the future of environmental sustainability.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lectures, laboratories, field trips

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☐ Portfolio assessment ☒ Interview(s)

☒ Other (specify):
This course may be challenged. The student must challenge both lecture and lab components of the course by writing an examination for each. The student will be provided with a copy of the syllabus and information on how to obtain a copy of the current text and lab manual. The student will also be given information about exam style and expected standards. The student can sit the examination for the lecture portion of the course at a time convenient to both student and instructor. However, since it is not reasonable to expect a lab instructor to set up a lab exam for one student, our practice has been to permit the student to write the exam for the laboratory portion of the course at the same time it is written by a regular class.

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Environmental Microbiology Edited by Raina M. Maier, Ian L. Pepper, and Charles P. Gerba
Various Web resources
Laboratory resources:
Environmental Microbiology: A laboratory Manual – Ian L. Pepper and Charles P. Gerba

SUPPLIES / MATERIALS:

Lab coat

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Assignments and quizzes:	10%
Midterm:	25%
Final exam:	35%
Laboratory quizzes:	10%
Laboratory reports/project:	20%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

- **Review of basic microbiological concepts**
  Introduction to environmental microbiology; Microorganisms; Bacterial growth
- **Microbial environments**
  Soil environments; Aquatic environments; Extreme environments
- **Detection, enumeration, and identification**
  Environmental sample collection and processing; Microscopic techniques; Cultural methods; Physiological methods; Immunological methods; Nucleic acid-based methods of analysis
- **Microbial communication, activities, and interactions with environment and nutrient cycling**
  Biogeochemical cycling; Consequences of biogeochemical cycles gone wild; Microbial communication: Bacteria/bacteria and Bacteria/host; Bacterial communities in natural ecosystems; Global change and microbial infectious disease; Microbial transport
- **Remediation of organic and metal pollutants**
  Microorganisms and organic pollutants; Microorganisms and metal pollutants; Genetics of bioremediation and its application to biotechnology
- **Water, soil, and food-borne pathogens**
  Environmentally transmitted pathogens; Indicator microorganisms
- **Waste treatment and disinfection**
  Wastewater treatment and biosolids reuse; Drinking water treatment; Disinfection, Subsurface microbial processes
- **Environmental Sustainability**
  Introduction to environmental sustainability issues including but not limited to protection of agricultural soil, Development of renewable energy resources, and water quality.
- **Urban microbiology**
  Microorganisms and bioterrorism; Risk assessment, Specific examples e.g., the Walkerton incident.
- **Laboratory content:**
  Examination of soil microorganisms via microscopic and cultural assays/filamentous fungi
  Degradation of hydrocarbons/bioremediation/[pseudomonas enrichments
  Coliforms (MPN and Membrane Filtration) (Confirmed test) (Completed test)
  Microbial transformations and response to contaminants/ Nitrification and denitrification
  Aerobiology: Sampling of airborne microorganisms
  Soil enzymes/dehydrogenase activity
  Bioremediation projects (including molecular biology of hydrocarbon degradation)
  There will also be two field trips during the semester (TBD)

To: CWC and Science Curriculum Committee

From: Colleen Gingerich, and updated by Ian McAskill, CIS Department Head (acting).

Date: (May 22, 2013), updated September 4, 2013

Subject: COMP 350 Course Update

Course Revision done as scheduled. Only minor changes were made.

COMP 350 – User Interface Design and Programming

CHANGES:

Course Description:

Wording changed *from*:
This course introduces students to some theory and practical guidelines for designing usable and enjoyable human-computer interfaces, emphasizing user-centered design and graphical user interfaces. It illustrates techniques of programming for a graphical user interface using a variety of modern programming environments and operating systems.

To:
This course introduces the topic of human-computer interaction by teaching students how to design and program enjoyable, user-centered graphical interfaces. The design principles are based on user behavior and human factors such as perception, memory and attention. Students will learn to implement graphical user interfaces in a variety of programming environments and operating systems.

Textbooks:
Changed; some of the recommended textbooks to the current versions of the textbooks
Added a couple more suggested textbooks

Course Content:
Added: profiling, prototyping and android programming

There are no budgetary implications inherent with these changes.

CWC comments: No substantive comments to the best of our knowledge.

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE:	September 2003
COURSE REVISED IMPLEMENTATION DATE:	May 2014
COURSE TO BE REVIEWED: *(six years after UEC approval)*	May 2020 *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

COMP 350	Computer Information Systems	3
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

User Interface Design and Programming
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course introduces the topic of human-computer interaction by teaching students how to design and program enjoyable, user-centered graphical interfaces. The design principles are based on user behavior and human factors such as perception, memory, and attention. Students will learn to implement graphical user interfaces in a variety of programming environments and operating systems.

PREREQUISITES: COMP 251. Acceptance to CIS degree program. (Students accepted to a CIS or Computing Science minor may register with permission of the department.)

COREQUISITES:

PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 45

STRUCTURE OF HOURS:

Lectures:	45	Hrs
Seminar:		Hrs
Laboratory:		Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: 35
Expected frequency of course offerings: Annually
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☒ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☒ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s):	**Gabriel Murray**		
Department Head:	**Dan Harris**	Date approved:	**May 11, 2012**
Campus-Wide Consultation (CWC)		Date of meeting:	**June 15, 2012**
Curriculum Committee chair:	**David Fenske**	Date approved:	**September 20, 2013**
Dean/Associate VP:	**Lucy Lee**	Date approved:	**September 20, 2013**
Undergraduate Program Advisory Committee (UEC) approval		Date of meeting:	**October 25, 2013**

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- Identify positive and negative attributes of an existing user interface
- Describe strategies for designing effective user interfaces
- Use the design strategies discussed in the course to solve interface design problems
- Write computer programs which implement a GUI application, using one or more current programming languages and operating systems

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Presentation of design theory will be by lectures and reading assignments. Lectures will also present case studies to illustrate programming techniques in one or more software frameworks. Students will get hands-on experience during in-class exercises, both individually and in groups. Each student will also bring a term project through stages of proposal, design, prototyping, evaluation, and final revised implementation.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☐ Portfolio assessment ☒ Interview(s)

☒ Other (specify): Review of past experience

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS: *[Textbook selection varies by instructor. An example of texts might be:]*

Steve Krug, Don't Make Me Think: a Common-sense approach to Usability, New Riders Publishing (2005)

Donald Norman, The Design of Everyday Things, Doubleday (2002)

Jeff Johnson, Designing with the Mind in Mind, Morgan Kaufmann (2010)

Yvonne Rogers et al., Interaction Design: Beyond Human-Computer Interaction, Wiley (2011)

Debbie Stone et al., User Interface Design and Evaluation, Morgan Kaufmann (2005)

SUPPLIES / MATERIALS:

None

STUDENT EVALUATION: *[An example of student evaluation for this course might be:]*

Individual assignments:	10%
Term project:	30%
Midterm exam(s):	30%
Final exam:	30%

COURSE CONTENT: *[Course content varies by instructor. An example of course content might be:]*

- Basic Concepts and Goals of Human Computer Interaction
- Human Factors of Computer Use
- Interface Technologies
- User Profiling and Personas
- Prototyping and Scenarios
    - Low-Fidelity Prototypes
    - High-Fidelity Prototypes
- Usability Testing and other Evaluation Methods
- User and Task Centered Design
- GUI Elements and Design Principles
- Case Studies:
    - MFC programming in Microsoft Windows
    - Swing programming in Java
    - Android programming

To: CWC and Faculty of Science Curriculum Committee

From: Colleen Gingerich, and updated by Ian McAskill, CIS Department Head (acting).

Date: (May 9, 2012), updated September 4, 2013

Subject: COMP 361 Course Updates

Rationale: Changes were needed to update the course, according to what is happening in that field of studies. Changes include:

1. Course title changed from “Introduction to Robotics and Embedded Systems” to “Introduction to Robotics”
2. Course description changed to reflect more emphasis on robotics instead of embedded systems.
3. Prerequisite increased from “COMP 155 with a C+ or better” to “COMP 251”
4. Learning Outcomes were updated
5. Methods were changed to include lectures and labs as well as working with robotic hardware
6. Student Evaluation is no longer strongly Project focused but has a balance of Exams, Project, and Assignments
7. Course Content was revised

There are no budgetary implications inherent with these changes.

CWC comments: No substantive comments to the best of our knowledge.

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE:	September 2006
COURSE REVISED IMPLEMENTATION DATE:	May 2014
COURSE TO BE REVIEWED:	May 2020
(six years after UEC approval)	*(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

COMP 361	**Computer Information Systems**	3
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Introduction to Robotics
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course introduces the principles, design, and implementation of autonomous robotic systems. Students will learn how to program intelligent robots for applications involving sensing, navigation, planning, and uncertainty, in real and simulated environments.

PREREQUISITES: COMP 155 with a C+ or better. Note: As of May 2015, prerequisites will change to the following: COMP 251.

COREQUISITES:

PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: **45**

STRUCTURE OF HOURS:

Lectures:	**30**	Hrs
Seminar:		Hrs
Laboratory:	**15**	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **35**
Expected frequency of course offerings: **Every other year**
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☒ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☒ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s):	**Gabriel Murray**		
Department Head:	**Dan Harris**	Date approved:	**April 13, 2012**
Campus-Wide Consultation (CWC)		Date of meeting:	**June 15, 2012**
Curriculum Committee chair:	**David Fenske**	Date approved:	**September 20, 2013**
Dean/Associate VP:	**Lucy Lee**	Date approved:	**September 20, 2013**
Undergraduate Education Committee (UEC) approval		Date of meeting:	**October 25, 2013**

COMP 361 **OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 2)**
COURSE NAME/NUMBER

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- Describe the history of robotics and likely future directions.
- Explain the relationship between robotics and AI.
- Compare and contrast different robotic architectures and paradigms.
- Differentiate behaviour-based robotics from other paradigms.
- Program robotic systems for tasks such as navigation and planning.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Course material will be delivered primarily through lectures and labs. Lab work will include both simulated robotic environments as well as interaction with actual robotics hardware. Students will select a term project in which they program additional functionality for an existing robotic system.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☒ Portfolio assessment ☒ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Robot Programming, Joe Jones
An Introduction to AI Robotics, Robin Murphy
Behavior-Based Robotics, Ronald Arkin
Computational Principles of Mobile Robotics, Gregory Dudek

SUPPLIES / MATERIALS:

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Exams:	40%
Individual project:	30%
Assignments:	30%

COURSE CONTENT:
[Course content varies by instructor. An example of course content might be:]

- History of robotics and AI
- Embodied agents
- Robot architectures
- Behaviour-based robotics
- Robotic sensors
- Robot navigation and planning
- Adaptive robotics and learning
- Uncertainty in robotics
- Social robotics and multi-agent systems

Memo

To: Ashley Hoogendoorn, UEC Assistant
Lucy Lee, Dean of Science
Sylvie Murray, Program Development Coordinator

From: Edward Lo

Date: August 21, 2013

Subject: Proposal for new course, COMP 381 Introduction to Machine Learning

This is a new course.

B. New course

1. *Rationale for new course*
   The curriculum in CIS continues to evolve, reflecting the ongoing evolution of computer science and technology. COMP 381 fills a curriculum need to expand our coursework in the general area of artificial intelligence. The addition of this course complements an overall evolution of the program to provide students with options of a more theoretical nature. Currently, we offer the Bachelor of Computer Information Systems (BCIS). The new course does not require a new discipline designation and can be taken by all CIS students. The only required prerequisite is COMP 251. COMP 251 is a required course in our BCIS program. Thus, many students would have fulfilled the pre-requisite after they have completed the courses in the second year.

   COMP 381 is under the interesting area of AI (Artificial Intelligence), on the topic of Machine Learning. Machine Learning is concerned with enabling computers to learn (and adapt) by processing large amounts of data. This has been a very exciting research area in the past twenty years, and we currently only touch on it very briefly in a couple of our CIS courses. And CIS currently only offers a single introductory course in AI (CIS 380). We believe one course in AI is not enough for students to fully appreciate the area and a second course will greatly enhance their understanding and prepare our students for more exciting areas like data mining, game theory, etc.

2. *How new course fits into program(s)*
   COMP 381 will provide more opportunity for students interested in the more theoretical aspects of computer science at the upper level. Interest in these topic areas is already evidenced by current enrolments (Fall 2013 full, with significant wait list) in the introductory course in artificial intelligence, CIS 380.

3. *If a new discipline designation is required, explain why.*
   A new discipline designation is not required.

C. Budget and Learning outcome Issues

This course is planned to be offered within the existing budget model framework and allocation for the CIS department.

1. *How does your course address the UFV Learning Outcomes?*
   COMP 381 fulfills the ILOs on "Demonstrate Information Competency", "Analyze Critically and Imaginatively", and "Initiate Inquiries and develop solutions to problems" since it requires students to use the technologies learnt as a tool to gather and evaluate information, and organize information logically and consider alternate strategies, and finally propose and implement a working solution. Knowledge learnt can also be used to participate both regionally and globally (ILO 9). The course will lightly touch on ILO 5, 6, 7 and 8. It will have more emphasis on ILO 7 through a term project.

2. *Is this course required by any program beyond the discipline? If so, how will this change affect that program or programs?*
   COMP 381 is an advanced topic in computer science, no doubt of interest to advanced students in other areas of the sciences and social sciences where applications of artificial intelligence are employed. It is not a required course, even in CIS.

3. *What consideration has been given to indigenizing the curriculum?*
   There is no opportunity in the course content of this course to advance the university's mission of indigenizing the academy.

4. *If any of the following items on the OCO have changed, or this course is new, explain how the change will affect the budget for your area or any other area:*

a.	*Credit value:*	3 credit hours
b.	*Class size limit:*	35 students
c.	*Frequency of offering:*	Offered once per one and half year (maybe once every two years)
d.	*Resources required (labs, equipment):*	Computer Lab such as D242, D226 and D223

5. *If this course is not eligible for PLAR, explain why.*
   COMP 381 is eligible for PLAR.

6. *Are field trips required for this course? Will the dates be announced in the timetable? How are the trips funded?*
   Not required.

7. *Please provide an estimate of the typical costs for this course, including textbooks and other materials.*
   COMP 381 requires a textbook that typically costs between $100-200.

Comments from CWC

I have read this proposal and I have no concerns. I did notice that 2 items on the official course outline are blank – Course Implementation Date and Will Transfer Credit will be Requested (upper-level requested by department).

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: May 2014
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: May 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

COMP 381	Computer Information Systems	3
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Introduction to Machine Learning
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course introduces techniques on how to program computers to learn over time. Machine learning creates software programs that are more flexible and tailored to the user. Applications range from simple spam detection systems, to websites that learn about customer preferences, to complex speech recognition systems. This course emphasizes the actual programming techniques needed to implement machine learning, rather than a purely theoretical and mathematical overview.

PREREQUISITES: COMP 251 with a C or better; STAT 106 is recommended.
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 45

STRUCTURE OF HOURS:

Lectures:	30	Hrs
Seminar:		Hrs
Laboratory:	15	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **35**
Expected frequency of course offerings: **Every other year**
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☒ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s): **Gabriel Murray**
Department Head: **Dan Harris** Date approved: **October 12, 2012**
Campus-Wide Consultation (CWC) Date of meeting: **August 30, 2013**
Curriculum Committee chair: **David Fenske** Date approved: **September 20, 2013**
Dean/Associate VP: **Lucy Lee** Date approved: **September 20, 2013**
Undergraduate Education (UEC) approval Date of meeting: **October 25, 2013**

LEARNING OUTCOMES:

At the end of this course, students will be able to:

- Systematically explore large amounts of data.
- Implement their own classification, regression, and clustering models.
- Implement a simple recommendation system.
- Evaluate machine learning performance.
- Use existing machine learning toolkits.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lectures, Labs, Assignments, and Guest Speakers

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☒ Portfolio assessment ☒ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Machine Learning for Hackers, Drew Conway and John Myles White
Programming Collective Intelligence, Toby Segaran
Data Mining: Practical Machine Learning Tools and Techniques, Ian Witten and Eibe Frank
Machine Learning in Action, Peter Harrington

SUPPLIES / MATERIALS:

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Assignments: 15%
Term project: 35%
Midterm exam: 15%
Final exam: 35%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

- Linear regression
- Logistic regression
- Regularization
- Neural networks
- Support vector machines
- Clustering
- Recommender systems
- Hadoop and Mahout

To: CWC and Faculty of Science Curriculum Committee

From: Colleen Gingerich, and updated by Ian McAskill, CIS Department Head (acting).

Date: (May 9, 2012) September 4, 2013

Subject: COMP 455 Course Update

Rationale: Changes were needed to update the course, according to what is happening in that field of studies. Changes include:

1. Course title changed from “Distributed Programming” to “Extreme Computing”
2. Calendar description changed to reflect the shift in course content from JAVA emphasis to emphasizing current distributing programming and cluster computing.
3. Prerequisite :removed the “C+ or better”
4. Learning Outcomes were revised
5. Methods were reworded
6. Textbooks were updated
7. Student Evaluation was improved to include the % assigned to each Evaluation Method
8. Course Content was revised

There are no budgetary implications inherent with these changes.

CWC comments: No substantive comments to the best of our knowledge.

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE:	January 1998
COURSE REVISED IMPLEMENTATION DATE:	May 2014
COURSE TO BE REVIEWED:	May 2020
(six years after UEC approval)	*(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

COMP 455	**Computer Information Systems**	**3**
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Extreme Computing
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

We live in the age of "big data," where companies need to gather and analyze truly massive amounts of information. Companies specializing in web search need to essentially archive and analyze the entire web. Social media sites need to store and work with millions of user profiles. Programmers need tools that will efficiently scale up to these kinds of tasks. This course introduces the theory and practice of distributed programming and cluster computing, where such problems are tackled by dividing the tasks into smaller parts and running them across many machines at once. In particular, we will cover the MapReduce algorithm and its popular open-source software implementations.

PREREQUISITES: COMP 251.
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: **45**

STRUCTURE OF HOURS:

Lectures:	**30**	Hrs
Seminar:		Hrs
Laboratory:	**15**	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **35**
Expected frequency of course offerings: **Annually**
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☒ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s):	**Gabriel Murray**		
Department Head:	**Dan Harris**	Date approved:	**April 13, 2012**
Campus-Wide Consultation (CWC)		Date of meeting:	**June 15, 2012**
Curriculum Committee chair:	**David Fenske**	Date approved:	**September 20, 2013**
Dean/Associate VP:	**Lucy Lee**	Date approved:	**September 20, 2013**
Undergraduate Education Committee (UEC) approval		Date of meeting:	**October 25, 2013**

COMP 455 **OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 2)**
COURSE NAME/NUMBER

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- Explain "big data" and the need for distributed programming.
- Write their own MapReduce applications.
- Use open-source implementations of MapReduce, such as Hadoop.
- Avoid common MapReduce errors and pitfalls.
- Identify situations where MapReduce is not appropriate.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

The material for COMP 455 is delivered through a combination of lectures and labs. Emphasis is placed on giving students hands-on experience with writing MapReduce applications and using Hadoop. Students will also gain experience through a substantial term project that can be formulated as a group project.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☒ Portfolio assessment ☒ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Hadoop: The Definitive Guide, Tom White
Data-Intensive Text Processing with MapReduce, Jimmy Lin and Chris Dyer

SUPPLIES / MATERIALS:

None

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Final exam:	30%
Term project:	30%
Midterm:	20%
Assignments:	20%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

- Introduction to MapReduce
- Introduction to Hadoop
- The Hadoop Distributed File System (HDFS)
- Hadoop I/O
- Developing a MapReduce application
- Text processing with MapReduce
- MapReduce types and formats
- MapReduce features
- Setting Up a Hadoop Cluster

Memo

To: Ashley Hoogenddoorn, UEC Assistant
Lucy Lee, Dean of Science
Sylvie Murray, Program Development Coordinator

From: Edward Lo

Date: August 21, 2013

Subject: Proposal for new course, COMP 481 Functional and Logic Programming

This is a new course.

B. New course

1. *Rationale for new course*
   The curriculum in CIS continues to evolve, reflecting the ongoing evolution of computer science and technology. COMP 481 fills a curriculum need to expand our coursework in the general area of artificial intelligence. The addition of this course complements an overall evolution of the program to provide students with options of a more theoretical nature. Currently, we offer the Bachelor of Computer Information Systems (BCIS). The new course does not require a new discipline designation and can be taken by all CIS students. The only required prerequisite is COMP 251. COMP 251 is a required course in our BCIS program. Thus, many students would have fulfilled the pre-requisite after they have completed the courses in the second year.

   COMP 481 is an area of programming that we have not covered in our existing courses. Our programming courses cover imperative programming fairly well and a course on the other two programming paradigms (functional programming and logic programming) will fill the missing gap for our students. They are particularly useful for AI applications. This course will help us produce more well-rounded students with a much deeper appreciation for, and understanding of, different types of programming.

2. *How new course fits into program(s)*
   COMP 481 will provide more opportunity for students interested in the more theoretical aspects of computer science at the upper level. Interest in these topic areas is already evidenced by current enrolments (Fall 2013 full, with significant wait list) in the introductory course in artificial intelligence, CIS 380.

3. *If a new discipline designation is required, explain why.*
   A new discipline designation is not required.

C. Budget and Learning outcome Issues

This course is planned to be offered within the existing budget model framework and allocation for the CIS department.

1. *How does your course address the UFV Learning Outcomes?*
   COMP 481 fulfills the ILOs on "Demonstrate Information Competency", "Analyze Critically and Imaginatively", and "Initiate Inquiries and develop solutions to problems" since it requires students to use the technologies learnt as a tool to gather and evaluate information, and organize information logically and consider alternate strategies, and finally propose and implement a working solution. Knowledge learnt can also be used to participate both regionally and globally (ILO 9). The course will lightly touch on ILO 5, 6, 7 and 8.

2. *Is this course required by any program beyond the discipline? If so, how will this change affect that program or programs?*
   COMP 481 is an advanced topic in computer science, no doubt of interest to advanced students in other areas of the sciences and social sciences where applications of artificial intelligence are employed. IT is not a required course, even in CIS.

3. *What consideration has been given to indigenizing the curriculum?*
   There is no opportunity in the course content of this course to advance the university's mission of indigenizing the academy.

4. *If any of the following items on the OCO have changed, or this course is new, explain how the change will affect the budget for your area or any other area:*

a.	*Credit value:*	3 credit hours
b.	*Class size limit:*	35 students
c.	*Frequency of offering:*	Offered once per one and half year (maybe once every two years)
d.	*Resources required (labs, equipment):*	Computer Lab such as D242, D226 and D223

5. *If this course is not eligible for PLAR, explain why.*
   COMP 481 is eligible for PLAR.

6. *Are field trips required for this course? Will the dates be announced in the timetable? How are the trips funded?*
   Not required.

7. *Please provide an estimate of the typical costs for this course, including textbooks and other materials.*
   COMP 481 requires a textbook that typically costs between $100-200.

Comments from CWC:

I have read this proposal and I have no concerns. Same comment about the 2 sections not filled out on the Official Course Outline (Course Implementation Date and Will Transfer Credit will be Requested (upper-level requested by department).

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UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: May 2014
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: May 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

COMP 481	**Computer Information Systems**	**3**
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Functional and Logic Programming
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

Most programming languages (e.g. Java, C, C++, Python) are imperative languages, meaning that programs are written as sequences of instructions that change program state. However, imperative programming is just one programming paradigm. This course introduces two other programming paradigms: functional and logic programming. Logic programming is based on first-order logic, while functional programming is based on the lambda calculus. Students will learn the basic theoretical foundations as well as how to program in two relevant languages. The course will also describe the importance of these languages to the field of AI.

PREREQUISITES: COMP 251 with a C or better; MATH 225 recommended.
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 45
STRUCTURE OF HOURS:

Lectures:	**30**	Hrs
Seminar:		Hrs
Laboratory:	**15**	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **35**
Expected frequency of course offerings: **Every other year**
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☒ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s): **Gabriel Murray**

Department Head:	**Dan Harris**	Date approved:	**October 12, 2012**
Campus-Wide Consultation (CWC)		Date of meeting:	**August 30, 2013**
Curriculum Committee chair:	**David Fenske**	Date approved:	**September 20, 2013**
Dean/Associate VP:	**Lucy Lee**	Date approved:	**September 20, 2013**
Undergraduate Education Committee (UEC) approval		Date of meeting:	**October 25, 2013**

LEARNING OUTCOMES:

At the end of this course, students will be able to:

- Compare and contrast imperative and declarative languages.
- Explain the functional programming paradigm.
- Program effectively in Haskell or another functional language.
- Explain the logic programming paradigm.
- Program effectively in Prolog.
- Write programs for AI applications.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lectures, labs, assignments, and guest speakers

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☒ Portfolio assessment ☒ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Programming in Prolog, Clocksin and Mellish
Learn Prolog Now!, Blackburn, Bos and Striegnitz (paperback or free online)
Learn You a Haskell for Great Good!, Lipovaca (paperback or free online)
Computational Semantics with Functional Programming, van Eijck and Unger

SUPPLIES / MATERIALS:

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Assignments: 20%
Labs: 20%
Midterm exam: 20%
Final exam: 40%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

- Imperative Programming
- Declarative Programming
- Introduction to Logic Programming
- Introduction to Prolog
- Prolog for AI
- Prolog for natural language processing
- Introduction to Functional Programming
- Introduction to Haskell
- Haskell for natural language processing
- Other declarative languages

MEMO

UNIVERSITY OF THE FRASER VALLEY

To: Ashley Hoogendoorn, UEC Committee Assistant, Jacqueline Nolte, Dean of Arts, Susan Fisher, Associate Dean of Students (Arts), Ken Brealey, Associate Dean of Faculty (Arts), Cheryl Dahl, Program Development Coordinator, Stephen Piper, SCMS Department Head

From: Alisa Webb, History Department Head

Date: 24/07/2013

Re: Cross-listing History Course with Latin American Studies

Courses to cross-list: HIST 262

Rationale:

Discussion has been ongoing regarding linking Latin American History courses more firmly with the Latin American Studies program. The LA History courses are already an integral part of the LAS Program. It makes sense, then, to allow students to take these courses either for LAS or for HIST credit. SCMS department members and HIST department members support this more formal linking.

Budgetary Implications:

None – the courses will continue be offered on their usual rotation by Geoffrey Spurling as part of his annual workload allocation.

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UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE:	January 1996
COURSE REVISED IMPLEMENTATION DATE:	May 2014
COURSE TO BE REVIEWED:	May 2020
(six years after UEC approval)	*(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

HIST 262	History	3
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Latin American History: The National Experience
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course surveys some of the principal themes in Latin American history from the time of independence to the present. Topics include early state formation and nineteenth-century liberalism; urban and industrial growth; populism; resistance and revolution; military rule, democratization, and the struggle for human rights; gender, ethnic, race, and class relations; U.S. foreign policy and Canada's ties with the region; popular culture; and religion.

Note: This course is offered as HIST 262 and LAS 262. Students may only take one of these for credit.

PREREQUISITES: None
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with: **LAS 262**
(c) Cannot take: **LAS 262** for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: **45**

STRUCTURE OF HOURS:

Lectures:	**30**	Hrs
Seminar:	**15**	Hrs
Laboratory:		Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **36**
Expected frequency of course offerings:
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☒ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☒ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☒ Yes	☐ No

Course designer(s):	**Geoffrey Spurling**		
Department Head:	**Alisa Webb**	Date approved:	**May 2013**
Campus-Wide Consultation (CWC)		Date of meeting:	**May 31, 2013**
Curriculum Committee chair:	**Amanda McCormick**	Date approved:	**October 11, 2013**
Dean/Associate VP:	**Jacqueline Nolte**	Date approved:	**October 11, 2013**
Undergraduate Education Committee (UEC) approval		Date of meeting:	**October 25, 2013**

HIST 262 **OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 2)**
COURSE NAME/NUMBER

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- create their own arguments and evaluate those of others.
- clearly communicate their ideas, both in writing and in class discussions.
- critically examine a range of primary and secondary sources.
- identify and understand the major themes in the national period history of Latin America.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Teaching methods will include lectures, formal and informal class discussions based on assigned readings, and/or other materials, and audio-visual materials.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Rampolla, Mary Lynn. *A Pocket Guide to Writing in History*. Fifth ed. Boston and New York: Bedford/St. Martin's, 2007.
Rosenberg, Mark B., A. Douglas Kincaid, and Kathleen Logan, eds. *Americas: An Anthology*. New York: Oxford University Press, 1992.
Winn, Peter. *Americas: The Changing Face of Latin America and the Caribbean*. Third ed. Berkeley: University of California Press, 2006.

SUPPLIES / MATERIALS:

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Final exam	30%
Mid-term exam	25%
Paper – analysis of primary sources	35%
Participation in discussion groups	10%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

Week 1 Introduction to the course / Regional and Historical Context
Week 2 Latin America in the Nineteenth Century: Independence and State Formation, *Caudillismo*, Liberalism, and National Identity
Week 3 Latin America in the Twentieth Century: Urban and Industrial Growth, Revolution in Mexico, the Great Depression, Import Substitution Industrialization, and Populism
Week 4 Latin America in the Twentieth Century II: Military Rule and Repression, Cold War Politics, Economic Growth and Crisis, Foreign Debt, the Lost Decade, and Neoliberal Change
Week 5 Foreign Policy, Trade, Investment, and Intervention: The U.S. and Latin America
Week 6 Canada and Latin America / Migration, the Informal Economy, and Maquiladoras
Week 7 Mid-term Exam
Week 8 Rebellion and Revolution
Week 9 Indigenous Peoples and the State
Week 10 Questions of Identity: Ethnicity, Race, Colour, and Class
Week 11 Gender Relations, Politics, Democratization, and Economic Restructuring
Week 12 Catholicism, Liberation Theology, Protestantism, and Spiritism
Week 13 The Arts and Popular Culture: Literature, Painting, Film, and Music / Latin America Today

UNIVERSITY OF THE FRASER VALLEY

CROSS-LISTED COURSE OUTLINE

COURSE IMPLEMENTATION DATE:	January 1996
COURSE REVISED IMPLEMENTATION DATE:	May 2014
COURSE TO BE REVIEWED:	May 2020
(six years after UEC approval)	*(month, year)*

CROSS-LISTED COURSE OUTLINE INFORMATION

This is a cross-listed course. Only one official course outline exists for this course, listed under the original course name and number. Please refer to the official course outline for full course information.

Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

LAS 262	SCMS	3
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Latin American History: The National Experience
COURSE DESCRIPTIVE TITLE

OFFICIAL COURSE OUTLINE:

This is a cross-listed course. Please refer to **HIST 262** for the official course outline.

CALENDAR DESCRIPTION:

This course surveys some of the principal themes in Latin American history from the time of independence to the present. Topics include early state formation and nineteenth-century liberalism; urban and industrial growth; populism; resistance and revolution; military rule, democratization, and the struggle for human rights; gender, ethnic, race, and class relations; U.S. foreign policy and Canada's ties with the region; popular culture; and religion.

Note: This course is offered as HIST 262 and LAS 262. Students may only take one of these for credit

PREREQUISITES: None
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):

(a) Replaces:
(b) Cross-listed with: **HIST 262**
(c) Cannot take: **HIST 262** for further credit.

SERVICE COURSE TO (department/program):

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☒ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☒ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☒ Yes	☐ No

Course designer(s):	**Geoffrey Spurling**		
Department Head:	**Stephen Piper**	Date approved:	**May 2013**
Campus-Wide Consultation (CWC)		Date of meeting:	**May 31, 2013**
Curriculum Committee chair:	**Amanda McCormick**	Date approved:	**October 11, 2013**
Dean/Associate VP:	**Jacqueline Nolte**	Date approved:	**October 11, 2013**
Undergraduate Education Committee (UEC) approval		Date of meeting:	**October 25, 2013**

To: Undergraduate Education Committee Assistant

From: Christina Neigel, Department Head

Date: July 2, 2013

Subject: Proposal for Course Outline changes to: LIBT 265: Work Experience Practicum

Background:

The program, in accordance with the Canadian Library Association's *Guidelines for Library Technician Programs in Canada* maintains a field experience component to the program. This requirement provides a final "capstone" experience for students that is intended to pull their knowledge and experience together in preparation for work in the field.

It is critically important that these changes are made before the next offering of this course (Winter 2014) as the enhancements are significant for prospective graduates in the Spring of 2014.

Rationale for Changes (in order of changes):

Course Description: The language has been improved to more accurately and fully describe the nature of a practicum in library and information technology. In addition, the expectation that students will attend 2 seminars has been inserted. These seminars are intended to provide opportunities for students to more adequately prepare for and respond to their practicums. Finally, in response to legislative requirements, language around criminal records checks has been modified to clearly state that they are necessary before participating in any practicum.

Replaces: This course has operated as LIBT 265 since 2008 and remains under the same number designation.

Total hours: the major change to this course is the reduction of practicum hours from 140 to 70 and the addition of two 3 hour seminars. After having examined the weight of various practicum courses at UFV and other institutions, 140 hours is not in alignment with 1.5 credits, existing as an unfair burden to students (70 hours in more proportionate to other practicums from departments like Criminology and Early Childhood Education). It has also been observed that many of the students have opportunities to acquire important applied skills through employment and volunteer experience that mitigates the reduction of practicum hours. Most significantly, the increased focus on self-analysis through the seminars and a final reflective assignment make the practicum more meaningful to the student's overall learning experience.

Will Transfer Credit be Requested: This has been changed from "No" to "Yes" as **i**t is important for the department to build in mechanisms for transfer credit for those students who may wish transfer their credits to other institutions.

Learning Outcomes: Previously, learning outcomes were minimally expressed. Outcomes have been elaborated.

Methods: Again, methods were minimally expressed and this has been fine-tuned to better illustrate the way in which the course operates.

Methods for Obtaining PLAR: The language has been corrected to accurately reflect how PLAR is assessed for this course.

Student Evaluation: The language has been modified to incorporate the requirement of seminars and a final self-reflective assignment.

Course Content: Again, the language has been modified to incorporate the seminar requirement and other activities at the instructor's discretion.

Budget Implications: None.

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE:	September 1996
COURSE REVISED IMPLEMENTATION DATE:	January 2014
COURSE TO BE REVIEWED:	January 2020
(six years after UEC approval)	*(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

LIBT 265	Library and Information Technology Program	1.5
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Work Experience Practicum
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course provides an employer-supervised, on-the-job placement in which students perform tasks and duties similar to those of qualified, entry-level library technicians. To obtain credit, students are also required to attend two in-class seminars where they will discuss workplace expectations and reflect upon their experiences. In keeping with employers' operational requirements, the course requires that students be available for daytime and/or evening shifts.

Note: A criminal records review is required prior to confirmation of placement. Students holding certain types of criminal records might be ineligible for placement.

PREREQUISITES:
COREQUISITES:
PRE or COREQUISITES: LIBT 130, LIBT 135, LIBT 140, LIBT 145, LIBT 200, LIBT 220, LIBT 240, LIBT 161, and permission of the instructor.

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 76

STRUCTURE OF HOURS:

Lectures:		Hrs
Seminar:	6	Hrs
Laboratory:		Hrs
Field experience:	70	Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: 36
Expected frequency of course offerings: 1 per year
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☒ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s):	**Christina Neigel**		
Department Head:	**Christina Neigel**	Date approved:	**September 2013**
Campus-Wide Consultation (CWC)		Date of meeting:	**July 12, 2013**
Curriculum Committee chair:	**Amanda McCormick**	Date approved:	**September 27, 2013**
Dean/Associate VP:	**Rosetta Khalideen**	Date approved:	**September 27, 2013**
Undergraduate Education Committee (UEC) approval		Date of meeting:	**October 25, 2013**

LEARNING OUTCOMES:

Upon successful completion of this course, students will:

1. Demonstrate entry-level knowledge of, and the ability to successfully complete the daily tasks, duties, and procedures required of library technicians in organizations such as libraries, information centres, records management departments, and archives
2. Practice appropriate workplace behaviours (e.g., punctuality, collegiality, and public service)
3. Practice effective and appropriate interpersonal and workplace communication skills
4. Evaluate their workplace performances and reflect upon their practicum experiences
5. Demonstrate an understanding of how the overall goals of information organizations are actualized through policies, procedures, and the administration of resources
6. Assess their abilities and interests as potential information workers

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Students will: (a) complete tasks assigned by employers in a given library, information centre, records management department, and/or archives, (b) attend two seminars to discuss workplace expectations and reflect upon and share practicum experiences, and (c) complete a reflective self-analysis.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☐ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☒ Other (specify): The completion of a practicum is mandatory for all students in the Diploma program. Students with exceptional experiential backgrounds in the field may be eligible to challenge a portion of the total number of hours required to complete the placement portion of the course. Such students will be required to submit a portfolio that includes, at minimum, a current resume, detailed inventory and self-analysis of relevant skills, knowledge, abilities, and interests, and representative samples of work. .

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

No textbook. Required readings and resources at the discretion of the instructor.

SUPPLIES / MATERIALS:

None

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

This is a Credit/No Credit course.
Students' workplace performances are assessed by their placement supervisor(s). In order to receive credit for the course, students must earn a minimum of a "satisfactory" evaluation from their supervisor(s). Students must also attend both in-class seminars and satisfactorily complete a reflective self-analysis. Additional assignments are at the discretion of the instructor.

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

1. On-the-job tasks, duties, and/or special projects, as determined and assigned by placement supervisor(s).
2. In-class seminars discussing appropriate workplace behaviours, employers' expectations, and the examination of, and reflection upon, practicum experiences.

UNIVERSITY OF THE FRASER VALLEY

33844 King Road
Abbotsford, BC
V2S 7M8
Tel: (604) 504-7441

MEMORANDUM

TO: CWC, FSCC, FSC, Dean Lee, UEC, Senate

FROM: Greg Schlitt, Math and Stats Department Head

DATE: October 18, 2013

SUBJECT: Updates to synonymous courses for two precalculus courses 110 and 140

RATIONALE: While discussing MATH 096, we decided to update some course equivalences. Previously, MATH094/095, MATH 110 and MATH 140 were listed as synonymous. Since developmental course credits don't contribute towards university level programs, we decided it would be more sensible for the courses MATH 110 and MATH 140 to be synonymous, and remove the mention of 09/095. (Both 110 and 140 university level precalculus courses, the first for science students and the second for business students).

Notes:

- MATH 096 is being added as a prerequisite for MATH 110 (minor change), and this is being handled through another memo. We have included this proposed change to the outline of MATH 110 as an information item. We are not adding MATH 096 as a prerequisite to MATH 140 as any student who meets the prerequisites of MATH 096 also meets the prerequisites for MATH 140.
- UUP will be taking MATH 096 through the appropriate committees in the Faculty of Access and Open Studies.
- We are aware that having MATH 140 and MATH 110 as synonymous courses means that these courses are treated as the same course by Banner for prerequisite checking. These courses overlap enough that students shouldn't get credit for both, but they are not interchangeable courses. For example, while MATH 110 is a prerequisite for MATH 111, MATH 140 is not as MATH 140 does not adequately prepare students for MATH 111. We have been very clear in the course outlines when listing the correct prerequisites and we hope that this avoids any prerequisite problems.

BUDGET IMPLICATIONS: NONE

CWConsult Feedback:
From: **Elaine Harris** <Elaine.Harris@ufv.ca>
Date: Thu, Jun 13, 2013 at 3:36 PM
Subject: RE: [CWC] change in synonymous courses
To: Cynthia Loten <Cynthia.Loten@ufv.ca>, Sue Brigden <Sue.Brigden@ufv.ca>
Cc: Trudy Archie <Trudy.Archie@ufv.ca>, Michelle Ward <Michelle.Ward@ufv.ca>, Pat Cruickshanks <Pat.Cruickshanks@ufv.ca>, Shelaugh Thomson <Shelaugh.Thomson@ufv.ca>

Hi Cindy
Yes, I think you have described the two options correctly.

Elaine

From: cindy.loten@gmail.com [mailto:cindy.loten@gmail.com] **On Behalf Of** Cynthia Loten
Sent: Thursday, June 13, 2013 2:44 PM
To: Sue Brigden
Cc: Trudy Archie; Elaine Harris; Michelle Ward; Pat Cruickshanks; cwconsult; Shelaugh Thomson

Subject: Re: [CWC] change in synonymous courses

Hi,

What Elaine suggested regarding MATH 094/095 and MATH 096 sounds good to me too.

As for 110 and 140, which are currently listed in each other's "can't take for further credit" line. This is what we want, but we weren't aware that this meant that students with 140 would pass the automatic prereq check for 111! This would be setting up 140 students for failure in 111. I will confer with my department, and see what option we want. Just to confirm, our options are

1) 110 and 140 are synonymous which means 110 and 140 are treated the same in terms of prerequisite checking (ie students with 140 would be allowed into 111 even though 140 is not a prerequisite of 111 because 110 is a prerequisite for 111). This is the current situation.

2)110 and 140 are not synonymous courses which means students could get credit for two kinds of precalculus, but 110 and 140 would not be treated as the same course in terms of prerequisite checking.

Cynthia Loten
Head, Math and Stats Department

On Wed, Jun 12, 2013 at 10:37 AM, Sue Brigden <Sue.Brigden@ufv.ca> wrote:
Hi Elaine,
I am okay with that, too.
Sue

From: Trudy Archie
Sent: Wednesday, June 12, 2013 10:32 AM
To: Elaine Harris; Sue Brigden

Cc: Cynthia Loten; Michelle Ward; Pat Cruickshanks; cwconsult; Shelaugh Thomson
Subject: RE: [CWC] change in synonymous courses

I'm okay with that.

From: Elaine Harris
Sent: Wednesday, June 12, 2013 10:17 AM
To: Trudy Archie; Sue Brigden
Cc: Cynthia Loten; Michelle Ward; Pat Cruickshanks; cwconsult; Shelaugh Thomson
Subject: RE: [CWC] change in synonymous courses

Hi Trudy and Sue
MATH 094 and 095 were added as synonymous courses, in the submission to CWC from Cynthia on May 23. However, the outline listed them individually and I suggested they be listed as being equivalent in combination e.g. Math 094/095. The statement would be "Students with credit for MATH 094 **and** 095 cannot take this course for further credit."

In practice, we would just set up the MATH 095 as equivalent to 096

in Banner (there is no option to set up combinations of courses as equivalent) and then records staff would have to manually exclude the credit for MATH 094. This way of setting things up means that only MATH 095 would be picked up as equivalent to 096 for prerequisite checking. This way of doing the set-up means that students who have credit for MATH 094 but not MATH 095 could still get further credit for MATH 096. Given that MATH 094 can be used as a prerequisite for 096, that makes some sense.

I had the same question as you did, Sue, as to whether excluding credit was a concern at the developmental level, but it may have some value – it gives students a clear message that 096 cover the same content as 094/095, and this would also prevent a student from using all of these courses towards the requirements for an Adult Dogwood.

I know this is a bit hard to follow if you have not seen the forms that are used in Banner and how they work. If you need any more detail on this please feel free to call me.

Elaine Harris
Associate Registrar

From: Trudy Archie
Sent: Wednesday, June 12, 2013 8:47 AM
To: Sue Brigden
Cc: Elaine Harris; Cynthia Loten; Michelle Ward; Pat Cruickshanks; cwconsult; Shelaugh Thomson
Subject: RE: [CWC] change in synonymous courses

But I think this is just for the prereq checks and so maybe it should be exit courses as synonymous – 095 and 096?

From: Sue Brigden
Sent: Wednesday, June 12, 2013 8:29 AM
To: Trudy Archie
Cc: Elaine Harris; Cynthia Loten; Michelle Ward; Pat Cruickshanks; cwconsult; Shelaugh Thomson
Subject: Re: [CWC] change in synonymous courses

Hi,
Given that they are not credit courses, I wonder why we would do that.
Sue

On 2013-06-12, at 8:25 AM, "Trudy Archie" <Trudy.Archie@ufv.ca> wrote:
Elaine,

Should we have added 094/095 as synonymous courses on our 096 outline to help with this? Should they go on the “cannot take….. for further credit” line?

Trudy

From: Elaine Harris
Sent: Tuesday, June 11, 2013 4:00 PM
To: Cynthia Loten
Cc: cwconsult; Trudy Archie; Pat Cruickshanks; Michelle Ward; Shelaugh Thomson
Subject: RE: [CWC] change in synonymous courses

Hi Cynthia
Although Banner does not include an option to equate two courses to one course, with manual intervention we have been able to make it possible for both MATH 094 and 095 to be equated to MATH 110, and we can do the

same for MATH 096. So, if you list the synonymous courses as MATH 094/095 on the MATH 096 outline, the records staff can make that work.

We currently have MATH 095 and 140 set up as equivalents to MATH 110 (since 2009). This means that only one of 140, 096 and 110 can be taken for credit.

However, the tool that prevents students from getting credit for both 140 and 110 is the Banner Equivalent course, and it also treats the courses as equivalent for prerequisite checking purposes as well. So if MATH 110 meets the prerequisite for MATH 111, and MATH 140 is set up as an equivalent, then MATH 140 will meet the prerequisite also.

I see that this is not what you intended. Since MATH 140 is not listed as a prerequisite for MATH 111, the students who read the prerequisites would not likely assume that MATH 140 would meet them, but if they did register, they would pass the automatic prerequisite checking with MATH 140. I don't know of any way to avoid that, except that if the courses are sufficiently different, despite some overlap, the other option is to allow students to get credit for both.

Elaine

From: cindy.loten@gmail.com [mailto:cindy.loten@gmail.com] **On Behalf Of** Cynthia Loten

Sent: Friday, June 07, 2013 3:12 PM
To: Elaine Harris
Cc: cwconsult; Trudy Archie; Pat Cruickshanks
Subject: Re: [CWC] change in synonymous courses

Hi,

The intent is that 096 is synonymous with 094 and 095 together as 096 does Precalculus 12 in one semester while 094 and 095 cover Precalculus 12 over two semesters.

While MATH 110 is a prerequisite for MATH 111, MATH 140 is not. MATH 110 and MATH 140 cover enough common material so that students should not get credit for taking both. MATH 110 and MATH 140 are currently listed in the synonymous courses categories on each others outlines (in the 'cannot take for further credit' line), but these courses are not treated (and should not be treated) the same in terms of prerequisite checking. A student who takes MATH 140 is not properly prepared for MATH 111.

MATH 140 is aimed at students with grade 11 math. As mentioned in the memo, students who meet the prerequisites to take MATH 096 will also meet the prerequisites to take MATH 140. For this reason, MATH 096 was not added to the list of prerequisites for MATH 140. The same can be said for MATH 094/095.

Cynthia Loten
Head, Math and Stats Department

On Fri, Jun 7, 2013 at 12:18 PM, Elaine Harris <Elaine.Harris@ufv.ca> wrote:
Hi
MATH 094, 095 and 096 synonymous courses:
Courses listed as synonymous courses on the outline are set up as "equivalent courses" in Banner. In response to Simon's question, Banner "equivalencies" do not prevent registration in an equivalent course, until the "repeat rule" is exceeded (i.e. I believe a student could register once in each of 094 and 096 within the two-attempt limit).

Setting up equivalencies will do the following:

1. Students would only be able to get credit for one or the other course. The GPA calculation process will exclude the course with the lower grade.
2. If courses are set up as equivalent, they are treated as if they are the same course for prerequisite checking. So, if MATH 094 and 096 are synonymous and set up as equivalents in Banner, then MATH 094 will automatically meet any prerequisite that accepts MATH 096. (Similarly, MATH 110 and MATH 140 are set up as equivalents in Banner, based on the synonymous courses in the outlines. For prerequisite checking, MATH 110 meets the prerequisite for MATH 111, so students with MATH 140 will also meet it.)

If you don't consider MATH 094 to be equivalent to MATH 096, then the MATH 096 outline should not list MATH 094 as synonymous. It might be appropriate to list MATH 095 as synonymous, but perhaps not 094?

MATH 140 prerequisites:
I noticed that MATH 140 does not list MATH 094,095 or 096 as prerequisites. If these would be acceptable for MATH 140, it would be helpful to include them in the prerequisites, so a student with MATH 095 or 096 does not have to obtain permission to register. Banner looks only for specific courses listed in prerequisites, and doesn't automatically accept a higher level course than one that is listed.

Thanks for the opportunity for feedback.
Elaine

From: cwconsult-bounces@ufv.ca [mailto:cwconsult-bounces@ufv.ca] **On Behalf Of** Cynthia Loten
Sent: Thursday, May 23, 2013 3:20 PM
To: cwconsult
Cc: Trudy Archie; Pat Cruickshanks
Subject: [CWC] change in synonymous courses

Hi,

I've attached a memo and relevant course outlines for the next CWC. This is submitted on behalf of myself and Trudy Archie from UUP as it affects classes from both of our departments. UUP owns MATH 096 and Math & Stats owns the rest.

Let me know if you need any further information.

Cindy

Cynthia Loten
Head, Math and Stats Department

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: September 1993
COURSE REVISED IMPLEMENTATION DATE: September 2014~~January 2011~~
COURSE TO BE REVIEWED: September 2009
(~~four~~ six years after U~~PA~~EC~~C~~ approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

MATH 110	SCIENCE/MATHEMATICS & STATISTICS	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

PRE-CALCULUS MATH
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION: This course is required for students who intend to study calculus and who have not obtained a mark of at least a B in Principles of Math 12 or equivalent.
MATH 110 is intended to give students an opportunity to develop the mathematics they have seen in high school and progress into a successful completion of first-year calculus. In particular, it is meant to help students strengthen their basic algebraic skills, to re-examine functions including rational, exponential, logarithmic, trigonometric, and inverse functions, and to provide a general introduction to the instantaneous rate of change as studies in calculus. Practical applications are emphasized. As the use of technology can greatly facilitate the study of mathematics, students will require a graphing calculator.
Note: Students with credit for MATH 140 cannot take this course for further credit. ~~Students may receive credit for only one of MATH 094/095, MATH 110, or MATH 140~~.

PREREQUISITES: One of the following: C or better in one of Principles of Math 12 or Precalculus 12; or C- or better in both MATH 094 and MATH 095; or a C- in MATH 096; or C+ or better in Applications of Math 12; or at least 55% on the MDPT.

COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: ~~MATH 094/095~~, MATH 140 for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 75

STRUCTURE OF HOURS:

Lectures:	**75**	Hrs
Seminar:		Hrs
Laboratory:		Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **36**
Expected frequency of course offerings: Fall & Winter
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☒ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☒ Yes	☐ No

Course designer(s):	**Calculus Group**		
Department Head:	~~**Greg Schlitt**~~**Cynthia Loten**	Date approved:	~~**September 1, 2010**~~**April**
~~Supporting area~~Campus Wide Consultation~~ consultation~~ (~~Pre-UPAC~~		Date of meeting:	~~**September 17, 2010**~~**May**
Curriculum Committee chair:	~~**Norm Taylor**~~**David Fenske**	Date approved:	**September 20, 2013**~~**Sep 24, 2010**~~
Dean/Associate VP:	~~**Ora Steyn**~~**Lucy Lee**	Date approved:	**September 20, 2013**~~**Oct 2010**~~
Undergraduate ~~Program Advisory~~Education Committee (~~UPAC~~UEC		Date of meeting:	**October 29, 2010**

MATH 110 **OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 3)**
COURSE NAME/NUMBER

LEARNING OUTCOMES:

The course is meant to provide students with a deeper understanding of the concepts and techniques necessary for a successful study of calculus. Work progresses at a pace which provides a good preparation for the pace of first-year calculus.

Upon successful completion of this course, students will be able to:

1. demonstrate basic algebraic skills, especially those most frequently required in the study of calculus,
2. demonstrate proficiency with function notation,
3. use technology to explore mathematical concepts,
4. explain the graphs and properties of the basic functions used in calculus (power, rational, exponential, logarithmic, trigonometric, inverse functions), and
5. apply the basic functions to practical situations, translating from English to mathematics and back again.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lectures are interspersed with problem sessions; evaluation includes assignments, midterms, and a three-hour comprehensive final. Graphing calculators will be used throughout.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☐ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☒ Other (specify): Please check online at http://www.ufv.ca/math/challenge.htm for the departmental challenge policy

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS: *[Textbook selection varies by instructor. Examples for this course might be:]*

The textbook is chosen by a departmental curriculum committee. Recent texts include:

Connally, Hughes, Hallett, Gleason, et al. 2000. Functions Modeling Change. Wiley.
Stewart, Redlin, Watson. 1998. Precalculus. Third edition. Brooks/Cole.

SUPPLIES / MATERIALS:

A graphing calculator (without a computer algebraic system) is required.

STUDENT EVALUATION: *[An example of student evaluation for this course might be:]*

The weighting of the various components may vary from instructor to instructor and from year to year, although there must two midterms, and the comprehensive final exam must be worth from 30% to 50% of the final grade.
An example of student evaluation for this course:

Quizzes/assignments	20%
Midterm exams	40%
Final exam	40%

Students must achieve at least 40% on the final exam in order to receive credit for this course.

COURSE CONTENT: *[Course content varies by instructor. An example of course content might be:]*

Exact course content and ordering may vary slightly from year to year but will encompass the following:

1. Review of basic algebra.
2. Algebraic equations and inequalities.
3. Functions and graphs, including mathematical notation and language, and the use of functions to relate a mathematical equation to sintuations encountered in life.
4. Polynomial and rational functions.
5. Inverse functions: finding them graphically and algebraically, understanding their uses.
6. Exponential and logarithmic functions, including applications such as population growth, radioactive decay, the spread of pollution.
7. Trigonometric functions and their relationship to periodic phenomena such as ocean tides, human physiology.
8. Analytic trigonometry
9. Sequences, series, inductions, as time permits.
10. Introduction to the instantaneous rate of change.

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE:	September 2009
COURSE REVISED IMPLEMENTATION DATE:	September 2014
COURSE TO BE REVIEWED:	September 2020
(six years after UEC approval)	*(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

MATH 140	Science/Mathematics & Statistics	3
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Algebra and Functions for Business
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course is intended to give students an opportunity to develop the mathematical skills and techniques necessary for the study of differential and integral calculus with business applications. Students will strengthen their basic algebraic skills, solve small linear systems of equations by various methods, examine linear, quadratic, cubic, rational, exponential, logarithmic, and logistic models and their graphs, and study various measures of change of functions. Practical applications in business, economics, and the social sciences are emphasized. Many applications involve modeling data with piecewise continuous models.

Note: Students with credit for MATH 110 cannot take this course for further credit.

PREREQUISITES: One of the following: C+ or better in one of Foundations of Mathematics 11 or Pre-calculus 11; or C or better in one of Principles of Math 11 or MATH 085; or one of Foundations of Mathematics 12, Pre-calculus 12, or Principles of Math 12; or a score of 17/25 or better on Part A of the MSAT.

COREQUISITES:

PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: MATH 110 for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 45

STRUCTURE OF HOURS:

Lectures:	45	Hrs
Seminar:		Hrs
Laboratory:		Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course: N/A
Hours per day: N/A

OTHER:
Maximum enrolment: 36
Expected frequency of course offerings: Every semester
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☒ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s):	**Ian Affleck**		
Department Head:	**Cindy Loten**	Date approved:	**April 29, 2013**
Campus-Wide Consultation (CWC)		Date of meeting:	**May 31, 2013**
Curriculum Committee chair:	**David Fenske**	Date approved:	**September 20, 2013**
Dean/Associate VP:	**Lucy Lee**	Date approved:	**September 20, 2013**
Undergraduate Education Committee (UEC) approval		Date of meeting:	**October 25, 2013**

MATH 140 **OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 2)**
COURSE NAME/NUMBER

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:
1. perform arithmetic combinations of polynomial and rational expressions
2. factor quadratic and some cubic expressions
3. solve linear and quadratic equations, linear inequalities, and inequalities involving absolute values
4. solve small systems of linear equations algebraically and graphically
5. demonstrate appropriate use and interpretation of function notation
6. sketch the graph of a given function and analyse a given graph of a function
7. using graph, data, equation, or application, identify the following models: linear, quadratic, cubic, exponential, logarithmic, logistic
8. use technology to construct regression equations for the above models from data, including piecewise-defined models
9. compute and interpret inverses of linear, exponential, and logarithmic functions
10. solve exponential and logarithmic equations
11. translate between graph, point-slope form, and slope-intercept form of a line
12. compute and interpret difference quotient and average rate of change of a function and secant slope on a graph
13. interpret all results in the field of interest from which the model being analyzed arose

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Students will learn to use graphing calculators as a tool for plotting and analyzing functions.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☐ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☒ Other (specify): Course Challenge

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Sullivan, Precalculus, 8th edition, Pearson, 2008 (Chapters 1-5 and 14)
Lial, Hungerford and Holcomb, Finite Mathematics with Applications in the Management, Natural, and Social Sciences, 9th edition, Pearson, 2006 (Chapters 1-5)
Beecher, Penna, and Bittinger, Precalculus, 3rd edition, Pearson, 2008 (Chapters R, 1-4)
Swokowski and Cole, Precalculus: Functions and Graphs, 11th edition, Thomson, 2008 (Chapters 1-4)
Haussler, Paul, and Wood, Introductory Mathematical Analysis for Business, Economics, and the Life and Social Sciences, 12th edition, Pearson, 2008 (Chapters 0-4)

SUPPLIES / MATERIALS:

A Texas Instruments graphing calculator (TI-83, TI-83Plus, TI-84, TI-85, or TI-86) is required

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Progress will be evaluated with regular short tests and/or assignments, one or more midterms and a three hour comprehensive final exam.

Quizzes, assignments, and projects:	30%
Term tests:	30%
Final exam:	40%*

* Students must obtain at least 40% on the final exam to pass the course, regardless of term grades.

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

1. **Algebra:**
   (a) Real numbers and their properties, intervals, absolute value
   (b) Integer exponents, order of operations
   (c) Polynomial arithmetic and basic factoring
   (d) Rational expressions: domain, arithmetic, simplification
   (e) Radical notation and rational exponents
   (f) Solving linear and quadratic equations, linear inequalities

2. **Linear systems:**
   (a) Solving 2-variable linear systems algebraically and graphically
   (b) Solving 3-variable linear systems algebraically and with the use of technology

3. **Functions:**
   (a) Linear, quadratic, cubic, exponential, logarithmic, logistic, simple rational functions
   (b) Function notation
   (c) Graph of a function
   (d) Using functions to relate mathematical equations to real situations
   (e) Piecewise-defined functions
   (f) Combinations, compositions, and transformations of functions
   (g) Inverse functions: finding them graphically and algebraically, understanding their uses

4. **Modeling and regression:**
   (a) How to choose and build linear, exponential, logarithmic, logistic, polynomial models using technology
   (b) Constructing piecewise-continuous models using technology

5. **Applications in business and the social sciences**
   (a) Population growth, compound interest, depreciation, doubling time, and halving time
   (b) Supply and demand equilibrium, break-even point
   (c) Cost, revenue, profit as functions of production level

6. **Introducation to calculus**
   (a) Difference quotients, secant slopes, average rate of change
   (b) Introduction to tangent lines and the instantaneous rate of change

MEMO

UNIVERSITY OF THE FRASER VALLEY

To: College of Arts Curriculum Committee

From: Susan Fisher, Associate Dean, Students

Date: 5 September 2013

Re: Change in Calendar copy for BA Residency requirements and for declaration of majors, minors, honours and extended minors

---

Proposed

There are two proposed changes:

1. clarifying the BA residency requirements to use a percentage of total credits rather than a specific number of credits
2. adding a note alerting students that not everyone who applies to a program will necessarily be accepted; demand may exceed the available number of seats

Rationale

The present calendar copy refers to a specific number of credits. But Arts programs vary in the number of credits they require; moreover, some Arts courses are 3 credits and some are 4. Using percentages will make the residency requirements easier to apply.

At times, Arts programs have difficulty ensuring that all program students get the courses they need. The note we propose to add would enable departments when necessary to limit the number of majors, honours, extended minors, and/or minors that they accept. (Note that the Department of Criminology and Criminal Justice already includes a note like this in its section on the extended minor.)

Budget Implications

The change will enable departments to have more control over the number of program students they accept. When departments can control their student numbers, they are better able to offer programs efficiently.

Institutional Learning Outcomes

N/A

Indigenization

N/A

Timeline for Implementation

We would like this change to be implemented for September 2014.

There was only one comment on CWConsult:

I have read this proposal and I have no concerns. Actually, I was included in the group of people who discussed this change, so I have already agreed ☺Thanks, Rhonda

1

Change 1: For the residency section of the Bachelor of Arts copy:

Residency

Students can complete academic course work at another post-secondary institution and transfer this credit to UFV to satisfy BA degree requirements, under the following restrictions:

- Out of the BA overall total of 120 credits, 60 credits must be completed at UFV;
- Out of the BA upper-level total of 45 credits, 30 upper-level credits must be completed at UFV;
- For an Honours or major program, at least ~~15~~ 50 percent of the required upper-level credits in the specific Arts discipline must be completed at UFV (See Note);
- For an extended minor program, at least 50 percent of the required ~~seven~~ upper-level credits in the specific Arts discipline must be completed at UFV (See Note);
- For a minor program, at least ~~seven~~ 50 percent of the required upper-level credits in the specific Arts discipline must be completed at UFV (See Note);

Note: When looking at the upper-level residency for an individual Arts program, please remember that a total of 30 upper-level credits must be completed at UFV.

Change 2: For the declaration section of the Bachelor of Arts copy:

Declaration of majors, extended minors, minors

Students who have been admitted to the Bachelor of Arts program may formally declare majors, extended minors, or minors only after they have completed at least 30 credits in the program with a minimum of a 2.0 CGPA on all credits attempted, provided that they have also met the declaration requirements of the subject discipline. Students must declare at least one major or two extended minors by the time they have completed 60 university-level credits. Formal declaration is completed by appointment with an Arts Advisor in the Arts Advice Centre.

Students who have completed 60 credits but have not yet declared at least one major or two extended minors will not be permitted to register. Exceptions may be made in special circumstances by an Arts Advisor.

Please note that the number of students accepted into any Arts honours, major, extended minor, or minor program may be restricted due to demand.

CWC Comments:

From: Rhonda Colwell
Sent: June-07-13 2:50 PM
To: Susan Fisher
Cc: Ashley Hoogendoorn; Samantha Pattridge
Subject: RE: [CWC] BA Change to Residency Requirements

Hi everyone,

I have read this proposal and I have no concerns. Actually, I was included in the group of people who discussed this change, so I have already agreed ☺

Thanks,
Rhonda

● Page 3

MEMO

UNIVERSITY OF THE FRASER VALLEY

To: College of Arts Curriculum Committee

From: Susan Fisher, Associate Dean, Students

Date: 5 September 2013

Re: Change in Calendar copy for BA Residency requirements and for declaration of majors, minors, honours and extended minors

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Budget Implications

The change will enable departments to have more control over the number of program students they accept. When departments can control their student numbers, they are better able to offer programs efficiently.

Institutional Learning Outcomes

N/A

Indigenization

N/A

Timeline for Implementation

We would like this change to be implemented for September 2014.

There was only one comment on CWConsult:

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Residency

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- Out of the BA upper-level total of 45 credits, 30 upper-level credits must be completed at UFV;
- For an Honours or major program, at least ~~15~~ 50 percent of the required upper-level credits in the specific Arts discipline must be completed at UFV (See Note);
- For an extended minor program, at least 50 percent of the required ~~seven~~ upper-level credits in the specific Arts discipline must be completed at UFV (See Note);
- For a minor program, at least ~~seven~~ 50 percent of the required upper-level credits in the specific Arts discipline must be completed at UFV (See Note);

Note: When looking at the upper-level residency for an individual Arts program, please remember that a total of 30 upper-level credits must be completed at UFV.

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Declaration of majors, extended minors, minors

Students who have been admitted to the Bachelor of Arts program may formally declare majors, extended minors, or minors only after they have completed at least 30 credits in the program with a minimum of a 2.0 CGPA on all credits attempted, provided that they have also met the declaration requirements of the subject discipline. Students must declare at least one major or two extended minors by the time they have completed 60 university-level credits. Formal declaration is completed by appointment with an Arts Advisor in the Arts Advice Centre.

Students who have completed 60 credits but have not yet declared at least one major or two extended minors will not be permitted to register. Exceptions may be made in special circumstances by an Arts Advisor.

Please note that the number of students accepted into any Arts honours, major, extended minor, or minor program may be restricted due to demand.

CWC Comments:

From: Rhonda Colwell
Sent: June-07-13 2:50 PM
To: Susan Fisher
Cc: Ashley Hoogendoorn; Samantha Pattridge
Subject: RE: [CWC] BA Change to Residency Requirements

Hi everyone,

I have read this proposal and I have no concerns. Actually, I was included in the group of people who discussed this change, so I have already agreed ☺

Thanks,
Rhonda

Memo

Date: May 27, 2013
To: Undergraduate Education Committee Assistant
Dean(s) Program Development Coordinator
From: Don Miskiman
Interim Director, UFV School of Business
Subject: Course addition to electives for BBA human resource management option and BBA organization studies concentration.

A. Addition to electives: BUS 377 Management of Cooperatives

1. Rationale for change: To provide business students and students with a business minor, more selection for an elective in their program. The course adds to the breath of organizational types to study in business.

B. Budget and Learning outcome Issues

1. How does your course address the UFV Learning Outcomes?
   The course reflects Institutional Learning Outcomes #1, 2, 3, 4, 7, and 9

2. Is this course required by any program beyond the discipline? If so, how will this change affect that program or programs?
   Not applicable.

3. What consideration has been given to indigenizing the curriculum?
   Where possible the curriculum will highlight the importance of Aboriginal history and culture to business and cooperatives within our community as well as respect and understand Aboriginal people, their traditions and values. In-class cases and examples will include indigenous operated cooperatives.

4. If any of the following items on the OCO have changed, or this course is new, explain how the change will affect the budget for your area or any other area:
   a. Credit value: **No Change**
   b. Class size limit: **No Change**
   c. Frequency of offering: **No Change**
   d. Resources required (labs, equipment): **No Change**

5. If this course is not eligible for PLAR, explain why.
   PLAR by portfolio assessment.

6. Are field trips required for this course? Will the dates be announced in the timetable? How are the trips funded?
   Not Applicable.

7. Please provide an estimate of the typical costs for this course, including textbooks and other materials.

BBA Degree. Addition of course to HRM electives and to OS electives. (Addition in yellow)

Human Resource Management electives
Four upper-level Business electives for the Human Resource Management option must be chosen from the following list.

Course	Title	Credits
BUS 304	Organization Theory and Application	3
BUS 307	Selected Topics in Organizational Behaviour	3
BUS 308	Selected Topics in Applied Organization Theory	3
BUS 309	Selected Topics in Human Resources Management	3
BUS 377	Management of Cooperatives	3
BUS 400	Business and Society	3
BUS 407	Gender and Diversity Issues	3
BUS 408	Teamwork in Organizations	3
BUS 417	Performance Evaluation and Management	3
BUS 419	Strategic Human Resource Planning	3
BUS 423	Services Marketing	3
BUS 430	Management of Innovation	3
BUS 492	Directed Studies	3
CMNS 345/ ADED 345	Instructional Skills for the Workplace	4
CMNS 445/ ADED 445	Facilitating Skills for the Workplace	4

Organizational Studies concentration
Required course

Course	Title	Credits
BUS 304	Organization Theory and Application	3

Electives: Any three of the following

Course	Title	Credits
BUS 307	Selected Topics in Organizational Behaviour	3
BUS 308	Selected Topics in Applied Organization Theory	3
BUS 309	Selected Topics in Human Resources Management	3
BUS 327	Consumer Behaviour	3
BUS 377	Management of Cooperatives	3
BUS 407	Gender and Diversity Issues	3
BUS 408	Teamwork in Organizations	3
BUS 492	Directed Studies	3
CRIM 417	Leadership in Groups and Organizations	3

MEMO

UNIVERSITY OF THE FRASER VALLEY

To: Undergraduate Education Committee

From: Amanda McCormick, CACC Chair

Date: October 16, 2013

Re: Economics Major and Minor

As requested by ECON and UEC, CACC discussed the proposed changes to the ECON major and minor and have conditionally supported forwarding the proposed change directly to UEC without formal approval by the CACC so long as ECON ensures inclusion of BUS/ECON 226 or a similarly focused course in the lower level requirements of the major.

As this course was originally a third-year required course for the ECON Major, it makes sense that it or an equivalent should continue to be a required course for the ECON Major, but provided at the second-year level. As ECON has since indicated that this course will in fact continue to be a required course at the second-year level, CACC supports its moving forward to the October UEC meeting without first receiving formal approval from CACC.

Economics
ufv.ca/economics

Economics major

This section specifies only the requirements for the Economics major, which may be completed as an option in the Bachelor of Arts degree. Degree students must also ensure that all other degree requirements have been met. For students who are planning on completing this Arts major within their degree program, please check the BA residency section of the calendar for how many upper-level credits must be completed at UFV in order to graduate with this program.

Lower-level requirements: ~~25~~ 29 ~~26~~ 30 credits

Course	Title	Credits
ECON 100	Principles of Microeconomics	3
ECON 101	Principles of Macroeconomics	3
STAT 106 (formerly MATH 106)	Statistics I	4
MATH 111	Calculus I	3-4
or MATH 141	Calculus for Business	
BUS 143	Accounting I	3
BUS 149	Essentials of Finance	3
BUS 226/ECON 226	Economics and Business Statistics	4
Two of:		6
ECON 203	Comparative Economic Systems	
ECON 207	Introduction to Strategic Thinking	
ECON 215	Canadian Economic Issues	

Upper-level requirements: ~~31~~ 30 credits

Required courses:

Course	Title	Credits
ECON 307	Managerial Microeconomics	3
ECON 410	Macroeconomics and Financial Markets	3
~~BUS 301/ECON 301~~	~~Economic and Business Statistics~~	~~4~~
BUS 349/ECON 349	Financial Management I	3

Students must complete ~~six~~ seven of the following courses:

Course	Title	Credits
ECON 341	International Trade	3

ECON 352	Technological Progress and Economic Growth	3
ECON 360	Labour Economics	3
ECON 361	Environmental Economics	3
ECON 365	Transportation Economics	3
ECON 388	Law and Economics	3
ECON 397	Regulatory Economics	3
ECON 398	Development Economics	3
BUS 433/ECON 433	Investments	3
BUS 434/ECON 434	Risk Management and Financial Engineering	3
BUS 435/ECON 435	International Finance	3
BUS 449/ECON 449	Financial Management II	3
MATH 308 (see Note 1)	Linear Programming	3

Note 1: MATH 308 is not offered on a regular basis.

Economics minor

This section specifies only the requirements for the Economics minor, which may be completed as an option in several degree programs including the Bachelor of Arts, the Bachelor of Business Administration, the Bachelor of Science, and the Bachelor of General Studies. Students in other degree programs should check the program information in the calendar to ensure that the Economics minor is an option. Degree students must also ensure that all other degree requirements have been met. For students who are planning on completing this Arts minor within their degree program, please check the BA residency section of the calendar for how many upper-level credits must be completed at UFV in order to graduate with this program.

Lower-level requirements: 12-14 credits

Course	Title	Credits
ECON 100	Principles of Microeconomics	3
ECON 101	Principles of Macroeconomics	3
BUS 149	Essentials of Finance (formerly BUS 162)	
or STAT 104	Introductory Statistics	
or STAT 106	Statistics I	
or MATH 270/ STAT 270	Introduction to Probability and Statistics	3-4
MATH 111	Calculus I	
or MATH 115	Differential and Integral Calculus I	
or MATH 141	Calculus for Business	3-4

Upper-level requirements: 15 credits

Required courses:

Course	Title	Credits
ECON 307	Managerial Microeconomics	3
ECON 410	Macroeconomics and Financial Markets	3

Elective courses (any three upper-level Economics courses):

Course	Title	Credits
~~ECON 301~~	~~Economic and Business Statistics~~	~~4~~
ECON 341	International Trade	3
ECON 349	Financial Management I	3
ECON 352	Technological Progress and Economic Growth	3
ECON 361	Environmental Economics	3
ECON 365	Transportation Economics	3
ECON 388	Law and Economics	3
ECON 397	Regulatory Economics	3
ECON 398	Development Economics	3
ECON 433	Investments	3
ECON 434	Risk Management and Financial Engineering	3
ECON 435	International Finance	3
ECON 449	Financial Management II	3

Note: BUS 410 (previously offered) will also count towards the elective requirement.

MEMO

UNIVERSITY OF THE FRASER VALLEY

To**:** Campus Wide Consultation

From: Michelle Rhodes, Head, Geography Department

Date: 20 August 2013

Re: Changes in BA, Honours Geography program

Proposed

We are requesting the following changes to the Honours Geography (BA) and Honours Physical Geography (BSc) course offerings:

- Reduction of required credits to 120, from current 132 credits
- Removal of 'breadth' requirement—additional 12 credits in a single discipline outside of Geography

Rationale

The Honours program in Geography has been in place since 2008. In that time, about a dozen students have graduated with an Honours in Geography designation, while many other students during this time have completed independent studies research projects equivalent to, in some cases, the calibre of Honours research projects. The most significant barriers to completing the Honours degree remain time and cost of completion. Removing the extra 12 credits required for an Honours degree would help the department to organize more student research under the umbrella of the Honours program, and reward high-achieving students who cannot otherwise complete the additional coursework. This change was also recommended by the external reviewers involved in the departmental review.

Students will still be required to complete GEOG 354, GEOG 491 (or approved alternative), and GEOG 492 or GEOG 493, and STAT 315 (BSc only), none of which are required for non-Honours students.

Budget Implications

This change should reduce the cost of the program to both the student and the institution. By requiring fewer credits, the student is using fewer (subsidized) institutionally provided resources. It also reduces the possibility, albeit rare, that a student completing an Honours degree would complete both their Honours research projects (through Independent Studies) as well as other Independent Studies courses. The streamlined program change would funnel more of the student demand for research opportunities into the Honours structure.

Institutional Learning Outcomes

This program will continue to address multiple ILOs, namely *Analyze Critically and Imaginative, Initiative Inquiries and Develop Solutions* and *Pursue Self-Motivated and Reflective Learning* (through research design and completion); *Engage in Respectful and Professional Practices* (through collaboration with professionals in the field); and *Contribute Regionally and Globally* (#9).

Timeline for Implementation

The department is requesting this change to be available as soon as possible, and in time for the 2014-15 (Fall) if not sooner.

Calendar Copy: BA, Honours Geography

Program requirements

In addition to the requirements for the Bachelor of Arts and for the Geography major, Geography Honours students will need to complete the following:

1. ~~132~~ 120 credits, including:

- A minimum of 64 credits of Geography, including:~~;~~
- ~~A breadth requirement of three upper-level courses (9-12 credits) to be completed in another discipline (biology, communications, history, sociology, etc.); and~~
    - GEOG 354.

2. An original research project, completed as part of:

- One of the following courses: GEOG 396, 398, 400G, 400J, 402, 410, 440, 458, or 491; and
- GEOG 492: Honours Research Project~~.~~

3. Minimum CGPA of 3.33.

Research project

Successful completion of a research project is required prior to graduation. This project is developed in consultation with a faculty supervisor and demonstrates a student's advanced skills and knowledge in a given area of geography.

Students will complete this project in two courses. In the first course, the student will design and collect data for their project. This will be completed as part of GEOG 491 (Honours Research Design and Data Collection), or an equivalent third-year internship or fourth-year research-intensive course approved by the department. Students will then register in GEOG 492 (Honours Research Project) to complete the data analysis and project write-up.

Each honours student will disseminate their research findings in a presentation to an academic audience (e.g. professional conference or department seminar) as well as through an academic research poster or alternative. Following project completion and presentation, the honours supervisor in consultation with a second reader, will assign a grade for GEOG 492.

Residency

Please check the Bachelor of Arts residency section of the calendar for how many upper-level credits must be completed at UFV in order to graduate with this program.

GPA requirement

A CGPA of least 3.33 or higher, including the mark awarded for the final research project, must be attained in order for an honours designation to be awarded.

Concentrations

Students can choose to complete an honours designation in Geography with a selected concentration. Students seeking an honours designation will need to apply to the honours program and complete the requirements of the honours program in addition to those required for the selected concentration.

Program outline

This section specifies the honours requirements only. Please refer to the Bachelor of Arts for program requirements.

Lower-level requirements: 26-27 credits

Course	Title	Credits
GEOG 101	Weather and Climate	4
GEOG 102	Evolution of the Earth's Surface	4
or GEOG 116	Introduction to Geology	
GEOG 140	Introduction to Human Geography	3
GEOG 201	Introduction to Climatology	
or GEOG 202	Introduction to Geomorphology	4
GEOG 241	Social Geography	
or GEOG 242	Economic Geography	3
GEOG 252	Explanation in Geography: Quantitative Methods (see Note 4)	4
GEOG 253	Introduction to Geographic Information Systems	4
One of:	STAT 104, STAT 106, or PSYC 110 (see Notes 43)	3-4

Upper-level requirements: ~~47-49~~ 36-42 credits

Course	Title	Credits
GEOG 354	Approaches in Human Geography	4
One course:	Physical geography (GEOG 302, 303, 304, 307, 308, 315,317, 335, 402, 410, 417, 419)	4
One course:	Human geography (GEOG 311, 312, 314, 340, 343, 344, 345, 346, 360, 362, 364, 411, 412, 421, 440, 443, 447, 460, 464, 466)	4

GEOG 433	Geography of Selected Regions	4
One of:		4-6
GEOG 396	Global Development Studies: Canada Internship	
GEOG 398	Global Development Studies: International Internship	
GEOG 452	Field Methods and Techniques	
or GEOG 470	Field Studies in Geography	
GEOG 491	Honours Research Design and Data Collection (see Note 1)	4
GEOG 492	Honours Research Project	4
Electives	Upper-level Geography (two to three courses)	8-12
~~**Plus:**~~		
~~Three upper-level Arts/Sciences courses to be completed in a single discipline, such as biology, history, sociology, etc. (see Note 2)~~		~~9-12~~

Note 1: Students are not required to complete GEOG 491 if they have already completed one of the following courses: GEOG 396, 398, 400G, 400J, 402, 410, 440, or 458. Those students that do not need to take GEOG 491 are required to complete an additional upper-level elective.

~~Note 2: Students planning to apply for a Bachelor of Arts Geography Honours should consult carefully with the Arts Advice Centre to ensure they satisfy any lower-level prerequisites for upper-level courses they expect to take to satisfy this requirement.~~

Note ~~3~~2: No more than eight credits of Directed Studies/Directed Readings (GEOG 480, GEOG 482, GEOG 483, GEOG 484) will count toward the degree.

Note ~~4~~3: One of STAT 104 (formerly MATH 104), STAT 104 (formerly MATH 106), or PSYC 110 is required for GEOG 252; students should plan accordingly.

GEOGRAPHY HONOURS – ALL COMMENTS

From: Rhonda Colwell
Sent: Thursday, August 29, 2013 5:09 PM
To: Michelle Rhodes; cwconsult
Subject: RE: Item for CWC

Hi everyone,

I have read this proposal and I have 2 questions:

Under Program Requirement #1, can GEOG 354 be included in the minimum of 64 credits in Geography? If yes, can this section be reworded to something like " A minimum of 64 credits in Geography to include GEOG 354"?

Can you verify the total number of credits required for each section? This always confuses me, but my count for the upper-level BA Geography Honours comes to 36-42 credits.

Other than that, I think these changes will benefit our students. And, this seems to be fairly consistent/similar with the new PSYC Honours requirements.

From: cwconsult-bounces@ufv.ca [cwconsult-bounces@ufv.ca] on behalf of Michelle Rhodes
Sent: September 12, 2013 9:10 AM
To: Rhonda Colwell; cwconsult
Subject: Re: [CWC] Item for CWC

Hi Rhonda,

Sorry for the delayed response! First week (and second) crash mode, I'm afraid.

For the first question, I've made the change in the copy, to now read:

- A minimum of 64 credits of Geography, including:
    - GEOG 354.

For the second question, the number of upper-level credits varies based on how students meet some of their requirements, but for lower-level, the number is 26-27.

For upper-level, it's a minimum of 36. Thanks for catching that! The max is 38, not 42, as students who have completed all the regular course requirements (totalling 16 credits), plus 354 (4 cr.), 491 (4 cr.), and 492 (4 cr.) are only required to take 8 credits of electives. (The 12 credits of electives only applies when students substitute GEOG 491 with another course.)

Thanks for your input, and let me know if you have any other questions. I've attached the revised copy here.

Michelle

From: Rhonda Colwell
Sent: Monday, September 16, 2013 11:59 AM
To: Michelle Rhodes; cwconsult
Subject: RE: Item for CWC

Thanks Michelle. This works for me!

From: Norm Taylor
Sent: Saturday, September 14, 2013 4:26 PM
To: Michelle Rhodes
Cc: Ashley Hoogendoorn
Subject: FW: Item for CWC

Hi Michelle,

I thought I'd ask a couple of questions about this:

1. First of all, does this apply to both degrees? The language in the document under the BSc Honours section seems to imply that it remains at 132 credits.
2. I note that the Honours policy states that it has to have 132 credits or 9 upper-level credits in a concentration that are not mandatory to the degree. Which courses are those?
3. Finally, looking at the bigger picture, the only other BA Honours degrees (English and Psychology) require 132 credits, as does one of the BSc Honours (Physics). (However, I have noted that for some reason, Biology does not.) Given that UFV is generally more generous than other institutions at handing out credits for courses, is it a good idea to reduce the number of required credits?

Michelle Rhodes response to Norm Taylor 14/09/2013 6:00 PM

Thank you for catching the missed change for the BSc calendar copy. It will also be 120 credits. It was an oversight in correcting the calendar language--the memo is correct.

The institution has begun veering more towards 120 credits, and this is something that Eric Davis has pushed for as well. We'd originally modelled ours on SFU's, which is 132, but other institutions are also starting to reduce as well.

We are only removing the credit and breadth requirement. As most students met their breadth requirement with 3 upper-level courses in another discipline that were all 4 credits, this is where the nixed 12 credits are coming from. Honours students are still required to take GEOG 354, GEOG 491 (or other research course equivalent), and GEOG 493, none of which are required for non-Honours majors. Further, BSC Honours in PG students are required to take STAT 315 as well, thereby bringing their total up to 4 additional courses.

Thanks for your feedback on this!

From: Darren Francis
Sent: Sunday, September 15, 2013 10:40 PM
To: Michelle Rhodes; Rhonda Colwell; cwconsult
Subject: RE: Item for CWC

Hi Michelle,

My main question is about the industry standard for an Honours program? My understanding is that traditionally an Honours degree is a 132 credits, is the Geography program certain students will not be adversely impacted by having an

Honours degree which is below the 132 credit industry standard? For example, are you sure UFV students will have the same opportunity for entry into graduate school?

From: Michelle Rhodes
Sent: Monday, September 16, 2013 12:06 PM
To: Darren Francis; Rhonda Colwell; cwconsult
Subject: RE: Item for CWC

Hi,

There is no consistency with Honours programs, I'm afraid, inside or outside of the institution. Further, the policy was changed recently to allow for programs to move forward with fewer than 120 credits. This was a much-debated policy, but the agreement was to allow for 120-credit programs that require a core of courses required by Honours students plus a research project. Our proposed changes maintain this.

UBC is also at 120 credits. UNBC does not require 132 credits for most of its Honours programs. Outside of the province, 120 credits it the norm, as most other provinces offer 3-year degrees. (Alberta only has one institution that does so.) Only in BC does it appear that 132 credits are a norm at many institutions.

Our geography students have had great success in entering graduate schools without the Honours designation when they have pursued independent research, maintained a high GPA, and taken advantage of additional mentoring that we provide through IS/ DS as well as Honours. Essentially, they are completing Honours degrees without the designation and the extra 12 credits. We've just sent two students to Guelph on SSHRC scholarships, and one had an Honours while the other did not. This is in addition to having sent non-Honours students to Queen's, SFU, Dalhousie, UVic, U of Minnesota, etc. in the past two years.

It would be ideal to be able to recognize this level of excellence, without having them take an additional 12 credits (which equals, effectively, a year's delayed entry into graduate school and possibly the workforce, plus the extra cost) has meant some very qualified students have not been able to leave UFV with an Honours designation. It also remains a barrier to low-income students who are looking to reduce their costs while seeking the best advantages they can secure through their degree.

From: Michelle Rhodes
Sent: Monday, September 16, 2013 12:29 PM
To: Darren Francis; Rhonda Colwell; cwconsult
Subject: RE: Item for CWC

Hi Darren,

Just a quick follow up. The Psychology Honours revisions were just approved at Senate this past Friday, with the 120 credits.

UNIVERSITY OF THE FRASER VALLEY

33844 King Road
Abbotsford, BC
V2S 7M8
Tel: (604) 504-7441

MEMORANDUM

TO: FSCC

FROM: Derek Harnett, Department Head of Physics

DATE: Sept. 9, 2013

SUBJECT: Proposed changes to the honours, major, and minor physics degree requirements

RATIONALE

HONOURS

- PHYS 222 & 322 are listed as degree requirements. Recently, PHYS 222 has been replaced by PHYS 312 and PHYS 322 has been renumbered as PHYS 412. We are proposing to change the degree requirements to reflect this renumbering.
- PHYS 392 is a newly developed course that we are proposing be included in the list of upper-level lab courses (from which degree students must take two).
- With the prospect of more students transferring into UFV from other institutions, the Department of Physics would like to strengthen its residency requirement with respect to upper-division classes.
- We are proposing some minor wording changes for the purpose of clarification.

MAJOR

- As a degree requirement, we would like to add MATH 118: Calculus II for the Life Sciences as an alternative to MATH 112: Calculus II.
- Currently, students completing a double major in Physics and Mathematics are required to complete 21 credits of upper-level physics electives as opposed to the 27 needed for a Physics major alone. We would like to extend this policy to include double majors in Physics and any of Biology, Chemistry, and Physical Geography.
- With the prospect of more students transferring into UFV from other institutions, the Department of Physics would like to strengthen its residency requirement with respect to upper-division classes.
- We are proposing some minor wording changes for the purpose of clarification.

MINOR

- We are proposing some additions to the list of recommended lower-level courses.
- With the prospect of more students transferring into UFV from other institutions, the Department of Physics would like to strengthen its residency requirement with respect to upper-division classes.

BUDGET IMPLICATIONS

None

CWC Comments
None

Physics Honours

This section specifies the Physics Honours requirements only. Please refer to the Bachelor of Science section for information on additional requirements, as well as the requirements for a Physics major.

Lower-level requirements

The lower-level requirements for the Physics Honours are the same as the lower-level requirements for the Physics major, with the addition of the following courses.

Course	Title	Credits
MATH 152	Linear Algebra for Engineering (see Note)	4
or MATH 221	Linear Algebra (see Note)	3
MATH 255	Ordinary Differential Equations	3
COMP 152	Introduction to Structured Programming	4 or 8
or the combination of:		
COMP 150	Introduction to Programming	
and COMP 155	Object-oriented Programming	

Note: MATH 221 should be taken if the student wishes to add a Mathematics major or minor.

Upper-level requirements

Course	Title	Credits
PHYS 302	Optics	3
PHYS 311	Statistical Physics	3
PHYS 312	Intermediate Electromagnetism	3
PHYS ~~322~~ 412	Advanced Electromagnetism	3
PHYS 351	Quantum Mechanics	3
PHYS 381	Mathematical Physics	3
PHYS 451	Advanced Quantum Mechanics	3
Any two upper-level Physics labs (PHYS 342, PHYS 372, PHYS 382, PHYS 383, PHYS 392, or PHYS 485)		6
At least one additional Physics course ~~must have at least one third year~~ with a pre-requisite numbered 300 or above		3
MATH 322	Complex Variables	3
At least one other math course labeled 300 or above (MATH 312 suggested)		3
Three other credits in computer science related courses: e.g., any COMP course, PHYS 393, PHYS 484, PHYS 485, PHYS 493, or MATH 316		3

Additional requirements

Students must take at least two courses from ~~any of~~ the following list:

• ASTR 103, ASTR 104, CHEM 113, CHEM 114, MATH 125, MATH 270, BIO 111, BIO 112, or any ~~two~~ Business ~~courses~~, ~~any two~~ Economics ~~courses~~, ~~any two~~ or Arts course~~s~~.

Note: More courses may be added as new courses are added to the calendar, but may not yet be included on this list. Check with the Physics department to see if there have been any additions.

Students should note the pre-requisite requirements for these courses.

Students must complete a minimum of 21 upper-level Physics credits at UFV.

Students should note that by choosing the appropriate options within the Physics Honours, they will also meet all the requirements for a Mathematics minor.

Graduation requirements
• At least 132 credits total
• At least 54 upper-level credits
• At least 45 of the upper-level credits must be from physics or math
• At least 39 of the upper-level credits must be from physics
Academic performance
• The GPA ~~in~~ calculated from all courses that the student uses towards the degree must be at least 3.33.
• In addition, the GPA in all Physics courses used towards the degree must be at least 3.33.
Students in the Physics major do not need to apply to the honours program, but they may graduate from the honours program once all requirements have been met.
Course listings
For complete details on courses see the course descriptions section.

Physics major

This section specifies the Physics major discipline requirements only. Please refer to the Bachelor of Science section for information on additional requirements.

Lower-level requirements

Course	Title	Credits
PHYS 111	Mechanics (or PHYS 101 with a B+ or better)	5
PHYS 112	Electricity and Magnetism	5
PHYS 221	Intermediate Mechanics	4
PHYS 231	Introductory Thermodynamics	3
MATH 111	Calculus I	4
MATH 112	or MATH 118 Calculus II	4
MATH 211	Calculus III	3

~~Note: PHYS 232 is recommended.~~

Note: While not degree requirements, PHYS 225 and PHYS 232 are recommended as they are pre-requisites for several upper-level courses.

Other recommended lower-level courses can be found in the Physics Honours section.

Upper-level requirements

Course	Title	Credits
PHYS 381	Mathematical Physics	3
PHYS	27 upper-level physics credits	27
or PHYS	21 upper-level physics credits and a (Biology, Chemistry, Mathematics, or Physical Geography major)	21

~~Students may transfer up to 15 upper-level physics credits from approved courses taken outside UFV.~~

Students must complete a minimum of 15 upper-level Physics credits at UFV.

Physics minor

This section specifies the physics minor requirements only. Please refer to the Bachelor of Science section for information on additional requirements. In addition to the general BSc requirements, students must complete a minimum of 14 credits from physics courses numbered 300 and above. Students need to combine these physics minor requirements with the credits from another science minor, major, or honours if they wish to obtain a Bachelor of Science degree.

Note: Students must be aware that upper-level physics courses require lower-level physics and math prerequisites. Students are advised to take these lower-level prerequisites in their first two years of full-time study.

Recommended lower-level courses

Course	Title	Credits
PHYS 111	Mechanics	5
PHYS 112	Electricity and Magnetism	5
PHYS 221	Intermediate Mechanics	4
PHYS 225	Waves and Introductory Optics	3
PHYS 231	Introductory Thermodynamics	3
PHYS 232	Experimental Methods in Physics	2
MATH 111	Calculus I	4
MATH 112 or MATH 118	Calculus II	4
MATH 211	Calculus III	3

Upper-level requirements

Course	Title	Credits
PHYS	Upper-level physics courses, 9 credits of which must be completed at UFV	14

Course listings

For complete details on courses see the course descriptions section.

MEMO

UNIVERSITY OF THE FRASER VALLEY

To: Ashley Hoogendoorn (Undergraduate Education Committee)

From: Tim Cooper, Chair of the Engineering Physics: Mechatronics Program Working Group

Date: October 17th 2013

Re: Engineering Physics Mechatronics Diploma & new subject code, ENPH

The Engineering Physics: Mechatronics Diploma program has been through Campus-Wide-Consultation and was approved by Science Curriculum Committee (September 21st 2013) and Science Faculty Council (October 4th 2013).

Motion:
That UEC recommend approval of the Engineering Physics Mechatronics Diploma program.

Motion:
That UEC recommend approval of ENPH as a course subject code. ENPH stands for Engineering Physics.

Rationale:
The Engineering Physics Diploma in Mechatronics is a program proposal currently working its way through UFV's program approval process. Nine new courses have been created for this diploma, six of which have been given an ENGR (engineering) designation. The remaining three new courses focus on electronics and are appropriate to both engineering and physics credentials. The new ENPH subject code is being requested in order to clearly identify those mechatronics courses which can also count as upper division physics credits.

Engineering Physics Diploma in Mechatronics

UNIVERSITY OF THE FRASER VALLEY

Department of Physics
Faculty of Science

Submitted to the UFV Undergraduate Education Council (UEC)

October 18th 2013

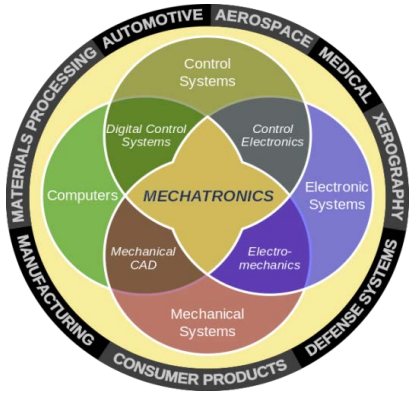
Table of Contents

Name of Institution: University of the Fraser Valley
Title of Program: Engineering Physics Diploma in Mechatronics
Credential to be awarded to graduates: Engineering Physics Diploma in Mechatronics
Length of Program: Two Years (four terms) of Full-Time Study
Rationale for the credential: This program works on the model of a typical two-year diploma program, but students will enter the program after having completed one year of academic studies in science and mathematics. This will address a common problem faced by engineering /technology diplomas in ensuring that their students have the math and science skills required for success in the program, and flexibility in employment and further educational pursuit, if they choose to, after graduation. Graduates of the proposed diploma will have a general academic background, in addition to more specific skills directly related to employment.

Chair, Program Working Group: Tim Cooper	**Title:** Instructor of Physics
Phone: 604 858 8102 or **Local:** 4456	**Email:** Tim.Cooper@ufv.ca
Dean: Lucy Lee	**Email:** Lucy.Lee@ufv.ca
Note: Internal contacts will be replaced by UFV Institutional contact information for external submission.	

EXECUTIVE SUMMARY:

Mechatronics is a multi-disciplinary sub-field of engineering which combines aspects of physics, mechanical engineering, electrical engineering, electronics, computational methods, software design, control theory, and systems design (see diagram below). Applications include designing computer programs and/or electric circuits to control and monitor machinery (automation). Automation is widespread in a range of sectors (including aviation, transportation, agriculture, building management, and manufacturing) and will increase as the costs of computer-power continue to drop. A primary purpose of this proposal is to support industries in the Fraser Valley and beyond who need engineers trained in mechatronics to help them innovate and grow.



Source: http://en.wikipedia.org/wiki/Mechatronics

A related purpose of this proposal is to answer Fraser Valley student demand for training in engineering. More than 100 students apply each year for the UFV Engineering Transfer program and a large number of students from this region apply directly to Engineering degree programs at UBC, SFU and UVic. Our mandate as a regional university is to serve these students locally with the education they seek. This proposed diploma will enhance our current offerings in engineering (currently limited to the transfer program) and will act as a stepping-stone to further development in this area, including diplomas in electrical, mechanical and chemical engineering, and degrees in engineering physics (still specialising in mechatronics) and agricultural automation.

Engineering is a discipline that is highly rigorous and highly academic, whilst at the same time fostering the learning of specific techniques and knowledge immediately applicable to the workplace.

Several two-year engineering diploma programs and several four-year engineering degrees exist. While the degrees are built on courses presented at a high academic level, the diplomas focus more on hands-on skills and run at a lower academic level (thus limiting options of graduates). Our Diploma will take three years from high school to complete. This extra time allows us to deliver the material at the high academic level of a degree in engineering, but also put in the hands-on skills and specific knowledge.

This higher academic level will allow graduates to ladder into a BSc degree with a major in Physics or in related disciplines (Math, Computer Information System) with 1-1.5 more year(s) of study. It will also facilitate transfer to engineering programs elsewhere.

Eventually we hope this diploma will also add a laddering-in option to students currently graduating with the first year electronics common-core program offered by trades at UFV. This diploma would be a place that the more mathematically oriented graduates could go.

These anticipated outcomes will motivate more students to enter and stay in the Physics/Engineering and related programs at UFV, it will allow us to build greater capacity. In other institutions (UBC, U of Saskatchewan) engineering physics attracts significantly more students than pure physics, and we expect the same to be the case here. The effect on the physics departments will be to increase the demand for second, third and fourth year courses, along with a spill-over into several math courses.

To summarize, the Engineering Physics (Mechatronics) Diploma will provide the following outcomes:

- direct entry in industry as technologist . Our students will be prepared to enter the work force, with a deeper knowledge of math and physics than is typical of 2-year diploma graduates;
- laddering options to a Bachelor of Science degree, and possibly CIS or Computer Science
- links to trades; and
- for the institution, a vital step along the path to developing full Engineering degrees at UFV.

PROGRAM DESCRIPTION:

Goals and objectives of the new program

The students will develop deep critical thinking and problem solving skills within the contexts of math, physics and engineering. In addition they will have specific knowledge in mechatronics to the point where they can find employment or be well positioned for further study leading to degrees in physics, math or engineering.

These goals are in line with UFV which, as a comprehensive institution offering a range of programs, is committed to offering an academic and applied education that is relevant to students and employers in the region.

The survey we conducted among employers in the region indicates that our program will produce sought-after workers for the manufacturing, automation (including in agriculture) and high tech industries in the Fraser Valley and lower mainland (see Appendix G).

Target student audience(s) for this program

Target student audiences for this program are:

1) Students in year one of a Bachelor of Science at UFV. We surveyed our UFV Physics 111 students in one semester and found a large demand for the proposed diploma. Based on this survey, we expect over 50 students to apply for admission to the program per year (see Appendix H).

2) Any graduate of an Engineering transfer program from any institution in the province. In BC, there is a province wide 'standard' first-year engineering transfer program. UFV offers this program as do many other colleges/universities. We have built our diploma programs to allow laddering from Engineering transfer programs.

3) International students: There is a strong demand among international students for programs leading to employment. Although business programs are their first choice, engineering programs rank as their second choice. We have seats for 9 international students in our program and the UFV's International Education department has estimated that there will be demand for two to three times this number (see Appendix F).

Our anticipated annual enrolments for the program are 18 students in the first years of the program's implementation, and 24 in subsequent years. We anticipate that the demand among the three groups mentioned above will significantly exceed our enrolment capacity.

Avoiding unnecessary duplication in the system

Most universities have four-year engineering degrees that run at a high academic level. Most colleges have two year engineering diplomas that are accessible directly from high school and run at a lower academic level than the program that we are proposing. As a two-year diploma program that builds on a

first year of university-level math and physics, our proposed Engineering Physics (Mechatronics) diploma program is unique.

The following table shows how it compares to other diplomas offered in the institutions closest to UFV. Higher academic levels than achieved in related diplomas, and specialization in mechatronics, are the distinguishing features of our proposed program.

Institution	Program	Notes
BCIT	- Electrical and Computer Engineering Technology (Automation and Instrumentation Option) Diploma	The UFV proposed program contains significantly more Math and Physics than this program. We focus on mechatronics whereas this focuses more on electronics.
BCIT	- Mechanical Technology (Mechatronics and Robotics) Diploma	The UFV proposed program has higher academic level and contains significantly more physics than this program, which is why we call it Engineering *Physics* Diploma.
Camosun College	- Electronics and Computer Engineering Technology Program	This two-year program specializes in controls and communications whereas we focus on mechatronics.
North Island College	- Industrial Automation Technician Diploma	This is a technician level diploma, containing less math and physics than our proposed diploma. Mostly repair/replace/maintain rather than design, as our diploma graduates would do.

In the case of all three programs, students do learn physics and math, but the courses are not considered suitable for transfer to major universities (unlike the physics and math courses included in the UFV diploma program). As a result, the diplomas listed above offer terminal qualifications unless students are willing to go through a bridge program. Our program will allow students to continue their education in an academic (BSc) or engineering degree.

Labour market demand

Details of the labour market are found in Appendix G. To summarize, graduates with this diploma will either go directly to the workplace, transfer to an engineering degree program or ladder up to a Bachelor of Science degree at UFV, most likely in Physics. The program was designed this way to respond to the demand of students, as reflected in our survey of first-year Physics students.

Of the 160 students surveyed:

- 46 would leave with the diploma to get a job directly;
- 37 would stay and upgrade to a math or physics major; and
- 38 would like to transfer to another institution to get an engineering degree.

As the program proposed is unique in BC, we cannot use data on job prospects from another institution as evidence of future labour market demand for our diploma graduates wishing to enter the workplace directly, but we can look at the job prospects from two-year diploma programs and four-year engineering degree programs, and reasonably expect our graduates would fare somewhere in between.

The 2 two-year programs at BCIT that are as close as we can get to our emphasis in mechatronics are Mechatronics and Robotics (7340) and Electrical and Computer Engineering Technology, Automation and Instrumentation Option (548D).

The exiting survey for BCIT's Mechatronics and Robotics (see Appendix G) shows that 90% of its graduates were employed full time, and 100% of its graduates said their program was very or somewhat useful in getting their job.

The exiting survey for BCIT's Electrical and Computer Engineering Technology, Automation and Instrumentation Option (548D) shows 86% were employed full time, and 92% of the graduates said their program was very or somewhat useful in getting their job (see Appendix G).

We anticipate that our students will do about as well as the current BCIT diploma graduates.

Our students will also have the option of transferring to an engineering degree program which we hope they can complete with two years of additional studies. Discussions are underway with UBC at the present time. Data available on PAYSCALE and a recent report by the National Association of Colleges and Employers (NACE) rank graduates of four-year engineering degree programs with the highest earning potential of any undergraduate degree.

According to Canada's Higher Education & Career Guide, "because mechatronics engineers have interdisciplinary training, they are in high demand and can find work in a variety of fields. Graduates can work in research development, technical sales, project management, planning and technical writing. Examples of employers for mechatronics engineers include Air Canada, Triumf, and International Submarine Engineering. They can also work in automotive, aerospace, computer, communications and medical fields. They can design and build automotive components, manufacturing equipment, aerospace systems, and biomedical testing. This is usually in collaboration with mechanical, electrical, computer and biomedical engineers, and can take place on-campus, in private laboratories or in hospitals" (see Appendix G).

Students laddering to and completing a Physics degree have an earning potential that lies in the middle of those with engineering degrees (based on the Pay-scale rating in Appendix G). If Physics is combined with a formal engineering qualification and specialty, then students graduating with a diploma in addition to their degree should fare even better than just a degree according to Dr. Iqbal, Co-op placement officer for Physics at UBC (see Appendix F).

CURRICULUM:

Skills, knowledge, or other attributes students will develop from the program

The learning outcomes for the program are provided in the table below (column to the left). The linkage between the program's and UFV's learning outcomes are also traced here.

Engineering Physics (Mechatronics) Diploma Program Outcomes:

Program Learning Outcomes	Institutional Learning Outcomes
▪ Students will use physics and mathematics to interpret contemporary scientific and social issues on a regional and global scale.	▪ Demonstrate information competency ▪ Initiate inquiries and develop solutions to problems ▪ Contribute Regionally and globally
▪ Students will learn to show leadership by taking responsibility for their own learning. Students will be able to decide on the direction their own learning will take, set a goal and figure out how to achieve that goal. Students will be able to do this independently or in teams.	▪ Initiate inquiries and develop solutions to problems ▪ Pursue self-motivated and self-reflective learning ▪ Engage in collaborative research
▪ Students will learn to tackle problems from a variety of perspectives using a variety of techniques.	▪ Analyze critically and imaginatively ▪ Use knowledge and skills proficiency
▪ Students will demonstrate knowledge, skills and the ability to apply knowledge and skills within the contexts of mathematics, physics, mechanical, electrical, electronics and computer programming.	▪ Use knowledge and skills proficiently ▪ Initiate inquiries and develop solutions to problems
▪ Students will learn to communicate effectively with each other and with the instructor. They will communicate using diagrams, graphs, mathematics and English used within an integrated approach.	▪ Communicate effectively ▪ Engage in collaborative leadership
▪ Students will appreciate the importance of ethics in engineering. They will appreciate that public interest depends on the correct functioning of their practice.	▪ Use knowledge and skills proficiently ▪ Initiate inquiries and develop solutions to problems ▪ Engage in respectful and professional practices
▪ Students will be aware that their	▪ Contribute regionally and globally

knowledge can be applied locally and globally. They will be aware that electrical codes vary from place to place, but the big picture remains the same.	
▪ Graduates will be able to ask questions of clients to learn their needs. Graduates will be able to design electronic, mechanical and mechatronics systems that will meet the needs of their clients, both here and around the world.	▪ Analyze critically and imaginatively ▪ Initiate inquiries and develop solutions to problems ▪ Contribute regionally and globally
▪ Students will have the capability to fit into our fast-paced society easily with multi-disciplinary knowledge and will help strengthen the local economy.	▪ Demonstrate informational competency ▪ Use knowledge and skills proficiently ▪ Initiate inquiries and develop solutions to problems

Program/course structure

Entrance Requirements (18 credits):			
Course Number	**Course Title**	**Credit Value**	**Notes**
PHYS 111	Classical Mechanics	5 credits	Existing
MATH 111	Calculus I	4 credits	Existing
PHYS 112	Electromagnetism	5 credits	Existing
MATH 112	Calculus II	4 credits	Existing
Note: The courses above are currently offered every year.			

Engineering Physics, Mechatronics Diploma requirements (Note: ENPH indicates engineering physics):

Course Number	**Course Title**	**Credit Value**	**Notes**
COMP 152	Introduction to Structured Programming	4 credits	Existing
ENGR 151	Computer-Aided Engineering Graphics	4 credits	Existing
Note: We recommend students take these courses before the start of the program.			

First Semester (Fall): (12 credits)			
Course Number	**Course Title**	**Credit Value**	**Notes**
MATH 211	Calculus III	3 credits	Existing
PHYS 221*	Intermediate Mechanics	4 credits	Existing
PHYS 231	Introduction to Thermodynamics	3 credits	Existing
PHYS 232	Experimental Methods in Physics	2 credits	Existing

Second Semester (Winter): (13-14 credits)			
Course Number	**Course Title**	**Credit Value**	**Notes**
PHYS 381	Mathematical Physics	3 credits	Existing
ENGR 210	Circuit Analysis	3 credits	New

ENPH 310	Electronics I	4 credits	New
ELECTIVE**	Elective I	3-4 credits	Existing

Summer Semester: (1 credit)			
Course Number	**Course Title**	**Credit Value**	**Notes**
ENGR 100	Production in Practice	1 credit	NEW. Offered by a Trades Instructor

Third Semester (Fall): (14 credits)			
Course Number	**Course Title**	**Credit Value**	**Notes**
ENPH 320	Electronics II	4 credits	New
ENGR 330	Automatic Control Systems	4 credits	New
PHYS 392 or ENPH 360	Interfacing with Virtual Instrumentation	3 credits	Existing/Renamed
ELECTIVE**	Elective II	3 credits	Existing

Fourth Semester (Winter): (14-15 credits)			
Course Number	**Course Title**	**Credit Value**	**Notes**
ENGR 340	Micro Processors and Embedded Systems	4 credits	New
ENGR 350	Sensors and Actuators	4 credits	New
ENGR 390	Mechatronics Project	3 credits	New
ELECTIVE**	Elective III	3-4 credits	Existing

Elective Options: Students must choose 3 elective courses from the following table. No more than one course per row in the table.			
Course Number	**Course Title**	**Credit Value**	**Notes**
MATH 152 or MATH 221	Linear Algebra for Engineering Linear Algebra	4 credits 3 credits	Existing Existing
PHYS 225	Waves and Introductory Optics	3 credits	Existing
CMNS 155 or CMNS 235 + or ENGL 105	Intro to Workplace and Academic Communication Any CMNS course numbered above 235 Academic Writing	3 credits 3 credits 3 credits	Existing Existing Existing
PHYS 402	Advanced Optics	4 credits	Renamed from PHYS 302
PHYS 382	Modern Physics Laboratory I	3 credits	Existing
Math 255	Ordinary Differential Equations	3 credits	Existing

TOTAL PROGRAM CREDITS	**62-64 credits**

Notes:

*Students who take ENGR 113+MATH 152+MATH 255 are excused from taking PHYS 221.

** Students must choose electives from the list above.

Provincial, national and/or international certifications and standards achieved in the new program

Not applicable: there are no national or provincial requirements for an engineering diploma program specializing in mechatronics. However we will be applying for certification from the Association of Scientists, Technicians and Technologists of British Columbia (ASTTBC). This is normally done after the program has been running for a while. The President of ASTTBC has been contacted and sees no problem with this.

PROGRAM CONSULTATIONS & EVALUATION:

Other provincial post-secondary institutions consulted about the proposed program

SFU has been consulted. They are interested in our students laddering up to their Mechatronics degree. A transfer agreement will be finalized after the program is implemented.

We are in the process of arranging a transfer agreement with UBC.

BCIT, to our knowledge, cannot at this time accept transfer students for degree completion.

Other consultations

Consultation where we got more feedback than just the employability questionnaire:

- Dan Came, Kardium and class President of UBC Engineering Physics last year
  Dan Came suggested that our Program Working group add shop skills to the program. As a result our consultations, we added ENGR 100: *Production in Practice.* We are also in the process of articulating UFV's ENPH 360 to UBC's ENPH 253

- Normand Fortier (P.Eng), Head of Science at TRU
  We are meeting with UBC to discuss the program and its transfer to UBC. The recommendation to work with UBC came from Normand Fortier during our Physics Department review 3 years ago.

- Javed Iqbal, Co-op for Science, UBC
  Javed Iqbal reviewed the program's curriculum and confirmed the courses are suitable for Physics graduates. He confirms that the UFV program will provide graduates with the foundations required in today's industry and provided a letter of support found in Appendix F.

- Robert Cen (P.Eng), electrical engineering manager at CWA Engineers Inc.
  Robert provided positive feedback on the proposal. He suggested that a hands-on-skills component would be helpful to students which reinforced the addition of ENGR 100: *Production in Practice.*

- Jing Li, Associate Professor of Engineering, College of Electromechanical Engineering, China Jiliang University, China.
  Jing Li reviewed our proposal and provided excellent feedback. It was suggested that our Program Working Group include motor controllers in the curriculum. As a result of this suggestion we include this in ENGR 350: *Sensors and Actuators.*

- Ravi Phillips and Ora Steyn (UFV International Ed.)
  Our consultation with UFV International confirmed that the program is expected to be very popular among international students. UFV International outlined factors which could make the program popular among international students: including a clear pathway into the program with opportunities for students to upgrade and meet the entrance requirements. All suggestions were considered in the development of the program structure.

- Michael Isaacson, President of APEGBC (and Professor of Engineering at UBC)
  Michael Isaacson was supportive of the program and offered to investigate government funding opportunities for the program.

- John English (P. Eng), former Dean of Engineering at BCIT
  John English provided significant guidance and support in the development of the program and has been a key member of the program working group.

Student Loan Eligibility Requirements

This program meets the requirements for the BC Student Loans Program.

Review and Evaluation

The Engineering Physics Program Working Group will be reviewing the program each semester in the first year. After, we expect the department will meet at least once annually to identify problems and look for solutions in just as the department does for the Engineering Transfer Program and the major, minor, and honours programs we currently offer. The program will also be reviewed under UFV Policy 189, Academic Program and Unit Reviews.

Safety and Risk Management

The only safety issues are from the labs, and we have decades of experience dealing with labs of this type. The electronics labs are considered low risk. UFV's *Occupational Health & Safety policy (number 219)* governs safety in the laboratories. Please see:
http://www.ufv.ca/media/assets/secretariat/policies/Occupational-Health-&-Safety-(219).pdf and
http://www.ufv.ca/ohs/

ADMISSION & TRANSFER:

Preamble

These rules and guidelines are used to administer the Engineering Physics Diploma program. However, since it is impossible to predict all possible eventualities, these rules are written with the understanding that modifications will be needed, and a committee will be established to ensure balanced input is available to make key decisions.

UFV rules and policies are always in effect in addition to any rules described here.
BSc policies will be the default policies unless stated otherwise in this section.

Engineering Physics Diploma Committee (EPDC):

A committee shall be struck consisting of the program head, the physics department head and one other member elected by, and from the physics department. Should the program head be the same person as the department head, they shall have one vote and an additional member of the physics department will be elected

This committee will:

(i) Recommend changes to the program to the physics department which will have the final say.
(ii) Judge the conduct of students in the diploma against professional norms.
(iii) Recommend course and policy updates to the Physics Department for approval.
(iv) Adjudicate the special cases described below.

Admission Requirements

Admission to the program will be for September each year. Applications can be submitted starting in October of the previous year. Students are assumed to take four courses per semester for the four semesters of the diploma.

Students must have a minimum of a B in PHYS 112. Students must have a minimum of a B- in MATH 112. Students are also required to meet at least one of the pre-requisites for ENGL 105. Students must have at least a cumulative GPA of 2.0 on all completed UFV courses at the time of application to the diploma.

Entry is competitive. Students with the highest GPAs based on MATH 111, MATH 112, PHYS 111 and PHYS 112 at the end of April will have the first offers to enter the program.

International students who do not have the stated pre-requisite courses, will be considered for admission if suitability is determined by the Department Head in consultation with the Office of the Registrar. All students must meet the continuance level for the program.

Qualified students that are not admitted will be recorded on a wait list. When a seat is offered to a student, that student must accept the offer in a timely fashion or that seat will be offered to the next student on the waitlist.

If a student has already completed courses from the diploma prior to being accepted to the diploma, the Engineering Physics Diploma Committee (EPDC) will decide if this student should be accepted to the program (creating unfilled reserved seats in some courses) or if the student should be delegated to a wait list. Effective use of university resources can be a factor in the committee's decision.

If the program is not going to be filled to capacity, seats in individual courses will be made available to any student that meets the pre-requisites. Such students will thus have some of the diploma courses without being a member of the program. These students will not have access to the reserved seats unless they apply for and are granted entry to the diploma. Note that it is technically possible for a student to complete all the program requirements without ever being admitted to the program; if the completion requirements are met, the credential will be granted.

Continuance Requirements and Re-Admission

Continuance will be based primarily on a student's performance from the time they start the program until the end; as a result, continuance GPA requirements will be computed only on the courses taken from start of the program plus program-specific courses taken prior to the entry to the program; other courses previously taken will not count for or against the student.

To remain in the program, a student must maintain a minimum GPA of 2.0 in all program courses.

To remain in the program, a student must maintain a minimum GPA of 2.0 in all courses taken from the time of admission to the program.

(Note that the above two calculations are the same if a student has not taken any program-specific courses prior to starting the program and does not take any additional courses outside the program while working on the diploma.)

If a student drops below the minimum GPA they will have one semester to rectify the problem as described below. The EPDC may grant exceptions under extenuating circumstances. Since diploma students are expected to be taking courses following a specific time-line, the following rules reflect the typical situations that might arise.

a) If a student falls below the minimum GPA as a result of Fall term marks, the student will typically be enrolled in Winter term courses before the grades are known. This student will not be immediately removed from the program for GPA reasons (though may be removed for reasons described below.) The student may be withdrawn from some Winter term courses if the student has not made the pre-requisite requirements. If the student intends to continue in the diploma, then the student must enroll in at least 9 credits of courses and achieve at least a 2.0 GPA for that semester. Failure to do so will result in the removal of the student from the program.

If the student met the one semester GPA requirement but still has not met both continuance GPA requirements by the end of the Winter term, then the student will have until the end of the Summer semester to meet both these requirements. (This may mean taking sufficient elective courses to meet the program course requirement - if sufficient courses are not offered; the EPDC can set a similar requirement based on the offerings available that term.)

b) If a student falls below the minimum GPA as a result of Winter term marks in the first year of the diploma: (Problems in winter term second year are handled by the graduation requirements)

This student will not be immediately removed from the program for GPA reasons (though may be removed for reasons described below.)

The student will be given the opportunity to register for Fall term courses accessing the reserved seats in the courses for the second year of the diploma.

Unlike students under case a) this student will have the summer semester to improve grades and will be encouraged to do so.

If Summer term courses are taken, the student must either meet both the conditions of the continuance requirements to remain in the program OR maintain at least a GPA of 2.0 over a minimum of 9 credits in that Summer semester to remain in the program; by the end of the Fall semester that student must meet both conditions of the continuance requirement to remain in the program.

c) If a student falls below the minimum GPA as a result of summer semester courses:
In practice this will be similar to case a) and should be treated in a similar way.

Since the program is intended to be run at full capacity with a small number of seats, not registering in a course, dropping a course, or failing a course may have major repercussions not only for that student but for a student in a following year. Specifically, if reserved seats are not made year specific, a student in the program would be allowed to access any reserved seat. Thus a student in the second year of the program could "bump" an incoming student under the UFV rules unless the following rule is in place:
A student may be removed from the program by not taking the four designated courses for that semester (either by not enrolling or by dropping a course or by being awarded a P or NC grade). This is particularly a problem if the course not taken is a pre-requisite for a later course. Elective courses may not create registration problems. The EPDC committee will decide if the missed course will create a potential problem for another student and decide if removal from the program is necessary. Note that a student removed from the program might still be able to access a course if all the reserved seats are not filled, and by taking a course this way may be able to join a later cadre of students.

Re-admission to the program is not guaranteed. Space must be available in the courses the student needs. The committee may choose to re-admit a student who has achieved a semester GPA of at least 2.0 in a semester in which he took at least 9 credits of courses.

All students will be removed from the program at the end of the winter term of the second year of the program.

Graduation Requirements
The student must complete all required courses and required number of electives as specified by the program. The student must maintain a minimum GPA of 2.0 computed on all the program courses.

The committee may override specific course requirements if they deem another course can be substituted for the course a student is missing. If the student has completed the required courses but with a GPA below 2.0, the committee can allow a student to graduate by requiring additional course(s) at a performance level determined by the committee. (Specifically, this means a student missing a course may be able to take a Directed Studies course or other designated course to meet the program requirements even if there is no room in the existing program course.)

It is possible for a student to take all courses in the program without being admitted to the program if seats reserved for diploma students were released for general admission and taken by the student. It is

also possible that a student who failed to meet continuance requirements could complete the courses without meeting the re-admission requirements. In these cases the committee would determine if the student has successfully completed the graduation requirements as described above and recommend the student for graduation.

Residency
Students must complete 7 of the named Physics or Engineering Diploma Courses at UFV

Reserves
In order to ensure those students admitted to the program will be able to graduate in a timely fashion, the program will use reserved seats to restrict first access to those students admitted to the program. Once students admitted to the program have had time to register, the courses will be open to general registration for any student that meets the pre-requisites.

A number of International Students will be given access to the reserved seats.

If possible, students will be given reserves in the courses of the program corresponding to the semester they joined. For example, students will be given reserves in PHYS 221 in their first semester which will expire after that term. So if they try to take PHYS 221 in their third semester they can only take an un-reserved seat.

Audit
Students may not audit any of the engineering courses in this diploma.

Transfer
International students will be expected to have taken the entrance requirements before coming to UFV~~,~~ and also two other courses. Specifically they will have taken the equivalent of:

- MATH 111; PHYS 111; MATH 112; PHYS 112.
- COMP 152 and ENGR 151 (can be taken concurrently with diploma courses)

These are fairly standard courses world-wide, so we don't anticipate many issues with transfer. The admission requirements stated above apply.

Domestic Students

Any student who has taken an engineering transfer program in the province will have taken the equivalent of the six courses listed above, and will be able to transfer effortlessly.

Any strong general science student from most post-secondary institutions in North America will have taken first year math and physics, and will be able to transfer in.

After the diploma is in place and is running smoothly we want to explore how students who have taken an electronics common core at UFV or anywhere in BC can bridge in, and what prior learning credit they can receive.

Should the electives be chosen appropriately, students will be able to transfer out of the proposed program into other programs at UFV:

- In one year the diploma graduate can receive a BSc with a major in Physics at UFV
- In three semesters the diploma graduate can likely receive a BSc with a major in Mathematics at UFV

We are working on transfer to the Universities (UBC/SFU/UVIC). SFU want to see the program running first before arranging for block transfer, talks with UBC are in progress. However, all the pre-year and almost all of the first year courses of the diploma (with exceptions noted below) are standard courses which already transfer widely in the system.

The courses that are not currently articulated for transfer are:

Second Semester Courses:
- ENGR 210: Circuit Analysis
- ENPH 310: Electronics I

Summer Semester Course:
- ENGR 100: Production in Practice

Third and Fourth Semester:
- ENPH 320: Electronics II
- ENGR 330: Automatic Control Systems
- ENPH 360: Interfacing with Virtual Instrumentation
- ENGR 340: Micro Processors and Embedded Systems
- ENGR 350: Sensors and Actuators
- ENGR 390: Mechatronics Project

OTHER:

Please see Appendix E for the Budget Analysis for the proposed UFV Engineering Physics Mechatronics Diploma – *currently being reviewed by Senate Budget Committee.*

Appendix A:
Undergraduate Non-Degree Program Outline & Calendar Copy

Program Outline for Draft Calendar Copy

1. **Faculty and department of program**. Science, Physics
2. **Website** *(department, or program-specific if applicable) N/A*
3. **Program title/credential** Engineering Physics Diploma in Mechatronics
4. **Associated degree program** *(for major, minor, or extended minor only) N/A*
5. **Program introduction/calendar description** *(brief description, usually 1-3 paragraphs)*

   This is a 2 year diploma program in Engineering Physics, specializing in Mechatronics.
   Entrance to the program is for students who have completed MATH 111, PHYS 111, PHYS 111 and PHYS 112.

   The program itself contains 62 credits. The program is designed for students to go directly to the workplace, but also to ladder the diploma up to a UFV Physics Major Degree or even to complete an engineering degree at another institution.

6. **Entrance requirements**

   Admission to the program will be for September each year. Applications can be submitted starting in October of the previous year. Students are assumed to take four courses per semester for the four semesters of the diploma.

   Students must have a minimum of a B in PHYS 112. Students must have a minimum of a B- in MATH 112. Students are also required to meet at least one of the pre-requisites for ENGL 105. Students must have at least a cumulative GPA of 2.0 on all completed UFV courses at the time of application to the diploma.

7. **When to apply** *(either specific intake or continuous application, if applicable)*

   Applications are accepted for entrance to Fall and Winter semesters. For application deadlines, see *specific intake application process* in the Admissions section of the UFV Academic Calendar.

8. **How to apply**

   Applications can be submitted online or downloaded at ufv.ca/admissions/admissions/apply. Applications may also be submitted by mail, or in person. The post-marked date is recorded for applications received by mail, and the date received is recorded for online and in-person applications. However, the official application date is not recorded until all the application is complete.

9. **Basis for admission decision**

   Entry is competitive. Students with the highest GPAs based on Math 111, Math 112, PHYS 111 and PHYS 112 at the end of April will have the first offers to enter the program.

International students, who do not have the stated pre-requisite courses, will be considered for admission if suitability is determined by the Department Head in consultation with the Office of the Registrar. All students must meet the continuance level for the program.

Qualified students that are not admitted will be recorded on a wait list. When a seat is offered to a student, that student must accept the offer in a timely fashion or that seat will be offered to the next student on the waitlist.

If a student has already completed courses from the diploma prior to being accepted to the diploma, the Engineering Physics Diploma Committee (EPDC) will decide if this student should be accepted to the program (creating unfilled reserved seats in some courses) or if the student should be delegated to a wait list. Effective use of university resources can be a factor in the committee's decision.

10. Fees and additional costs *(a link to the general fees section of the calendar will be included; specify additional costs such as materials, fieldtrips, studio supplies, textbook costs, uniforms, software, etc.)*

International students will pay $7475 for four each of four semesters. Domestic students will pay the standard rate.

11. Program duration and total number of credits

Duration of the program is 2 years; however students meeting the program requirements over a longer time period will be allowed to graduate too.

12. Location *(if applicable)*

All courses are on the Abbotsford campus except ENGR 100 which is at the Chilliwack Campus.

13. Program outline *(courses to be completed)*

Engineering Physics, Mechatronics Diploma requirements (Note: ENPH indicates engineering physics):

Course Number	Course Title	Credit Value
COMP 152	Introduction to Structured Programming	4 credits
ENGR 151	Computer-Aided Engineering Graphics	4 credits
Note: We recommend students take these courses before the start of the program.		

First Semester (Fall): (12 credits)		
Course Number	**Course Title**	**Credit Value**
MATH 211	Calculus III	3 credits
PHYS 221*	Intermediate Mechanics	4 credits
PHYS 231	Introduction to Thermodynamics	3 credits
PHYS 232	Experimental Methods in Physics	2 credits

Second Semester (Winter): (13-14 credits)		
Course Number	**Course Title**	**Credit Value**
PHYS 381	Mathematical Physics	3 credits
ENGR 210	Circuit Analysis	3 credits
ENPH 310	Electronics I	4 credits
ELECTIVE**	Elective I	3-4 credits

Summer Semester: (1 credit)		
Course Number	**Course Title**	**Credit Value**
ENGR 100	Production in Practice	1 credit

Third Semester (Fall): (14 credits)		
Course Number	**Course Title**	**Credit Value**
ENPH 320	Electronics II	4 credits
ENGR 330	Automatic Control Systems	4 credits
PHYS 392 or ENPH 360	Interfacing with Virtual Instrumentation	3 credits
ELECTIVE**	Elective II	3 credits

Fourth Semester (Winter): (14-15 credits)		
Course Number	**Course Title**	**Credit Value**
ENGR 340	Micro Processors and Embedded Systems	4 credits
ENGR 350	Sensors and Actuators	4 credits
ENGR 390	Mechatronics Project	3 credits
ELECTIVE**	Elective III	3-4 credits

Elective Options: Students must choose 3 elective courses from the following table. No more than one course per row in the table.		
Course Number	**Course Title**	**Credit Value**
MATH 152 or MATH 221	Linear Algebra for Engineering Linear Algebra	4 credits 3 credits
PHYS 225	Waves and Introductory Optics	3 credits
CMNS 155 or CMNS 235 + or ENGL 105	Intro to Workplace and Academic Communication Any CMNS course numbered above 235 Academic Writing	3 credits 3 credits 3 credits
PHYS 402	Advanced Optics	4 credits
PHYS 382	Modern Physics Laboratory I	3 credits
Math 255	Ordinary Differential Equations	3 credits

TOTAL PROGRAM CREDITS	**62-64 credits**

14. Specializations or options of the program *(if applicable)*

N/A

15. Program regulations *(standard policies apply unless superseded by program-specific regulations)*

a. Continuance and probation

Continuance will be based primarily on a student's performance from the time they start the program until the end; as a result, continuance GPA requirements will be computed only on the courses taken from start of the program plus program-specific courses taken prior to the entry to the program; other courses previously taken will not count for or against the student.

To remain in the program, a student must maintain a minimum GPA of 2.0 in all program courses.

To remain in the program, a student must maintain a minimum GPA of 2.0 in all courses taken from the time of admission to the program.

(Note that the above two calculations are the same if a student has not taken any program-specific courses prior to starting the program and does not take any additional courses outside the program while working on the diploma.)

If a student drops below the minimum GPA they will have one semester to rectify the problem. The EPDC may grant exceptions under extenuating circumstances.

b. Course repetition

No course in the program can be taken more than twice.

c. Readmission

Re-admission to the program is not guaranteed. Space must be available in the courses the student needs. The committee may choose to re-admit a student who has achieved a semester GPA of at least 2.0 in a semester in which he took at least 9 credits of courses

d. Residency

In addition to the standard UFV residency requirements, students must complete 7 of the named Physics or Engineering Diploma Courses at UFV.

e. Graduation requirements

The student must complete all required courses and required number of electives as specified by the program. The student must maintain a minimum GPA of 2.0 computed on all the program courses.

The committee may override specific course requirements if they deem another course can be substituted for the course a student is missing. If the student has completed the required courses but with a GPA below 2.0, the committee can allow a student to graduate by requiring additional course(s) at a performance level determined by the committee. (Specifically, this means a student missing a course may be able to take a Directed Studies course or other designated course to meet

the program requirements even if there is no room in the existing program course.)

It is possible for a student to take all courses in the program without being admitted to the program if seats reserved for diploma students were released for general admission and taken by the student. It is also possible that a student who failed to meet continuance requirements could complete the courses without meeting the re-admission requirements. In these cases the committee would determine if the student has successfully completed the graduation requirements as described above and recommend the student for graduation.

f. Maximum length of time to complete program

The diploma is designed to be completed in two years, and if a student is unable to complete in that time frame there is no guarantee that there will be space in the needed courses. All courses are to be completed within five years of the start of the program.

Appendix B:
Calendar Descriptions of Courses

Engineering Physics, Mechatronics Diploma Courses:
Calendar Descriptions

CMNS 155: Technical Communications for Trades (elective option)
Prerequisite(s): Admission into a trades program
This course is an introduction to the general principles and techniques of effective communications required in the workplace. Common written and oral communications on the job (including customer and co-worker relations) are the focus of the course including messages, simple reports, definitions, descriptions, instructions, and employment applications (forms, letters of applications, and resumes). The course also examines the barriers to effective communications and how these barriers can be reduced.

CMNS 235: Oral Communication (elective option)
Prerequisite(s): None
This course focuses on the principles and psychology of effective speaking. Specific areas include informal presentations to small groups, formal presentations, meeting management, the use of presentation aids, developing the voice, and improving body language. Videotaped feedback is an important part of the course.

COMP 152: Introduction to Structured Programming
Prerequisite(s): C+ or better in one of the following: Principles of Mathematics 12, Pre-calculus 12, or MATH 095. Competent in computer skills - see 'CIS Required Skills' section on the CIS department website for details
This course is an introduction to structured computer programming. Students will study algorithms and top-down design, and will implement algorithms in a procedural programming language. Lab exercises and programming assignments will emphasize scientific and numerical applications.
Note: COMP 150 cannot be taken for further credit.

ENGL 105: Academic Writing (elective option)
Prerequisite(s): See UFV Academic Calendar for full pre-requisite description
This course is a guided workshop for students whose programs require the ability to write university-level non-fiction prose. Selected readings from an essay anthology help students explore the principles and practice of writing clear and effective sentences, paragraphs, and essays. There will be an introduction to academic research and argumentation. The course is designed to prepare students for university-level scholarship and writing in a variety of disciplines.

ENGR 100: Production in Practice
Prerequisite(s): ENGR 210 or ENPH 310
Good design requires understanding the production process. This course gives students rudimentary hands-on experience in several industrial practices associated with welding, electrical systems , construction, and automotive work.

ENGR 210: Circuit Analysis

Prerequisite(s): PHYS 112; Pre or Co-requisites: PHYS 381

This course is an introduction to circuit analysis, a mathematical model used to represent a variety of engineering problems such as electric circuits. In particular, students will learn about phasor analysis and AC power; transfer functions; Bode plots; filters and resonance; transformers, and two-port networks.

ENGR 330: Automatic Control Systems

Prerequisite(s): ENGR 210

This course is an introductory course on automatic control. The main goal of the course is to provide students with basic tools in modeling, analysis, and design for linear feedback control systems. Students will learn how to model mechanical, electrical, and electromechanical systems as differential equations and transfer functions. The analyses in this course include stability of open-loop and closed-loop systems as well as time responses and frequency responses of low order systems. The design methods are divided into root-locus techniques and frequency response techniques using Bode plots for designing proportional-integral-derivative (PID) and lead/lag controllers. Students will also learn how to apply automatic control theory to real engineering problems with Matlab and through laboratory exercises. This course will give the basic knowledge for more advanced control courses, such as state-space control techniques, non-linear control, robust control, optimal control, adaptive control, digital control, sampled-data control, hybrid control, and system identification.

ENGR 340: Micro-Processors and Embedded Systems

Prerequisite(s): ENPH 320, ENPH 310, COMP 150 or COMP 152

This course covers basic microcomputer architecture; design and analysis of address decoders and memory systems; design and analysis of assembly language programs; and microcomputer systems design.

ENGR 350: Sensors and Actuators

Prerequisite(s): ENGR 330

This course provides an introduction to sensors and actuators for electromechanical, computer-controlled machines, and devices. Topics include operating principles, design considerations, and applications of analog sensors, digital transducers, stepper motors, continuous-drive actuators, and drive system electronics. Component integration and design considerations are studied through examples selected from applications of machine tools, mechatronics, precision machines, robotics, aerospace systems, and ground and underwater vehicles. Laboratory exercises strengthen the understanding of component performance, system design and integration.

ENGR 390: Mechatronics

Prerequisite(s): ENPH 320, ENGR 330, PHYS 392, ENPH 360

This is the capstone course of the Engineering Physics Diploma. Students will apply the knowledge gained in prior courses to specific projects. Typically, students will complete several projects. Students

will function as if they are in industry, with many interim reports given to the instructor as projects progress. Students will deliver oral presentations on their project and their written report. The students will assemble the robots and program them using feedback control strategies to make them fulfill tasks such as obstacle avoidance, trajectory planning, and material pick up.

ENPH 310: Electronics I
Prerequisite(s): PHYS 232
This course is the first of a two course sequence which builds on the analog and digital electronics topics first introduced in PHYS 232. This course is a mixture of lecture and laboratory, with the laboratory emphasizing the practical use of the various electronics components and lecture emphasizing the underlying theory which describes why the various electronics components behave the way that they do. Broad topics covered in this course include passive filters, diodes, transistors, operational amplifiers, fundamentals of digital logic and combinatorial digital logic. This course will also introduce software-based circuit simulation which is useful for both design and troubleshooting of actual circuits.

ENPH 320: Electronics II
Prerequisite(s): ENPH 310
This course is the second of a two course sequence which builds on the analog and digital electronics topics first introduced in PHYS 232. This course is a mixture of lecture and laboratory, but places a heavier emphasis on project and laboratory work than Electronics I. Broad topics covered in this course include conversion between analog and digital signals, further operational amplifier applications and topics, active filters, oscillators, differential and instrumentation and amplifiers, sequential digital logic, digital design, and Field Programmable Gate Arrays (FPGAs).

ENPH 360: Interfacing and Virtual Instrumentation
Prerequisite(s): PHYS 232 or (COMP 256 and MATH 124 and one of (PHYS 105, PHYS 112, PHYS 093 or Physics 12))
In this course students will learn how to create computerized control and analysis equipment for experimental work. This includes interfacing a computer or microcontroller, such as the Arduino microcontroller, to various instruments for data acquisition and instrument control using a state-of-the-art software platform such as National Instrument's LabVIEW. Emphasis is on the practical aspects of interfacing a computer or microcontroller to various instruments including timing issues, real-time data acquisition and instrument control, instrument status, and acquisition speed.

MATH 111: Calculus I (entrance requirement)
Prerequisite(s): One of the following: B or better in one of Principles of Math 12 or Pre-calculus 12; or B average in MATH 094 and MATH 095; or C+ or better in MATH 110; or at least 70% in MDPT.
The study of calculus represents a major step in your education. Mathematics, previous to this subject, dealt with the description of static phenomena. During the latter part of the 17th century, a mathematical description was developed to describe and predict changing phenomena. This mathematics of change is now called calculus. Topics include limits, derivatives, applications of derivatives such as analysis of function behaviour, optimization and related rates; antidifferentiation,

polar coordinates and parametric functions.
Note: Students may receive credit for only one of MATH 111 or MATH 141 (formerly MATH 115).

MATH 112: Calculus II (entrance requirement)
Prerequisite(s): MATH 111 with a C or better
Calculus I is concerned with finding the characteristics of change of a given quantity. In Calculus II, we examine the change in the reverse: if we know the way a quantity changes, can we determine what the quantity is? Topics include techniques of integration; application of the definite integral to various problems such as areas, volumes, fluid pressure and population growth; improper integrals and their applications; an introduction to differential equations; polynomial approximations to functions; and sequences and series.
Note: Students may receive credit for only one of MATH 112 and MATH 116.

MATH 152: Linear Algebra for Engineering (elective option)
Pre- or corequisite(s): MATH 112
This course covers the solutions to linear systems of equations, vector spaces, applications to 2D and 3D geometry, linear dependence and independence, matrix algebra, determinants, orthogonal transformations and bases, application to Fourier series, eigenvalues, diagonalization, symmetric matrices, the algebra of complex numbers, the differential equations of vibrational models and linear systems of equations. This course is designed for students seeking a career in engineering. Students intending on a BSc or BA degree are recommended to take MATH 221 instead of ENGR/MATH 152.
Note: UFV math degrees require MATH 221, not MATH 152. Credit cannot be obtained for both MATH 152 and ENGR 152. This course is also listed as ENGR 152.

MATH 211: Calculus III
Prerequisite(s): C or better in one of the following: MATH 112, MATH 116, or MATH 118
This course extends the concepts of first-year calculus from the one-variable setting to a multi-variable setting. Topics include 3-dimensional analytic geometry, euclidean spaces, partial derivatives and gradient, optimization, multiple integrals, and applications.

MATH 221: Linear Algebra (elective option)
Prerequisite(s): MATH 112 with C or better, or MATH 118 with a C or better
Ideas and techniques from linear algebra lie at the core of much of mathematics and its applications in other sciences and technology. Topics include systems of linear equations, matrix algebra and determinants, vector spaces, linear transformations, diagonalization, and inner product spaces.

MATH 225: Topics in Discrete Mathematics (elective option)
Prereqsuite(s): MATH 112 with C or better, or MATH 118 with a C or better.
This course introduces the student to some of the most useful types of combinatorial structures: graphs, trees, generating functions, and recurrence relations, all of which play an important role in the mathematics of computers and computation.

PHYS 111: Mechanics (entrance requirement)
Prerequisite(s): One of (Principles of Mathematics 12, Pre-calculus 12, MATH 095, or MATH 110) and one of (Physics 11, PHYS 083, or PHYS 100); or Physics 12; or PHYS 093.
Note: Students with B.C. Calculus 12, IB Math 12, or AP Calculus 12 A or B should contact the instructor or department head for permission to register.
Pre- or corequisite(s): MATH 111 highly recommended.
Note: MATH 111 with a C or better and MATH 112 are required pre or corequisites for PHYS 112.
This course is intended for students who are planning to study engineering science or life sciences. Topics covered include vectors, kinematics, dynamics, work and energy, collisions, rotational kinematics, rotational dynamics, simple harmonic motion, and gravitation. The object is to understand the fundamental laws of mechanics, to learn how to apply the theory to solve related problems, and to develop a feeling for the order of magnitude of physical quantities in real experiments.
Note: Students cannot take PHYS 100 or PHYS 101 for further credit.

PHYS 112: Electricity and Magnetism (entrance requirement)
Prerequisite(s): MATH 111 and one of (PHYS 111, PHYS 105 with a B, or PHYS 101 with a B+)
Pre- or corequisite(s): MATH 112
This course follows PHYS 111 and is designed for students who are planning to continue their studies in physics or any of the other sciences. Topics include electric fields, Gauss's law, electric potential, circuits, Kirchhoff's laws, magnetic fields, magnetic induction, and finally, a study of Maxwell's equations. The laboratory portion of the course uses experiments to reinforce the theory covered in class.

PHYS 221: Intermediate Mechanics
Prerequisite(s): (PHYS 111 and PHYS 112) or (PHYS 101 and PHYS 105 with a B+ or higher in each)
Pre- corequiste(s): MATH 221
This course extends the topics covered in Physics 111. Topics covered include kinematics, motion in polar coordinates, Newton's laws, momentum, work, some mathematical aspects of physics and vector analysis (gradient, divergence, curl, Stokes' theorem and Gauss's law), angular momentum, forced and damped harmonic motion, central forces and Lagrangian mechanics. The laboratory portion of the course includes experiments designed to supplement the theory covered in class.

PHYS 225: **Waves and Introductory Optics** (elective option)
Prerequisite(s): PHYS 221
Corequisite(s): PHYS 381 recommended
This course builds upon the foundations of mechanics presented in PHYS 221 by extending oscillatory motion from single point masses to continuous bodies. In particular, the course will introduce students to both longitudinal and transverse waves via the wave equation, and describe how energy can be transported through distortions of a continuous medium (like sound waves in air). Properties specific to waves like superposition and interference will also be investigated, and will see application in effects like wave diffraction. As light can be considered to be an electromagnetic wave, students will be able to apply these concepts to the study of Optics (Huygens Principle), and look at simple optical processes like

reflection, and refraction from mirrors and lenses. Lastly, the concept of matter waves and quantum theory using the de Broglie hypothesis will be introduced, which will set the stage for the study of Quantum Mechanics in PHYS 351. A small number of experiments will be performed in order to quantify many of the concepts studied.

PHYS 231: Introductory Thermodynamics
Prerequisite(s): PHYS 112
This course is designed for students who wish to pursue a career in engineering or physical science. This is an introductory course designed to study the fundamentals of heat, energy, and thermodynamics. Topics include temperature, heat, the first and second law of thermodynamics, phase change, and the kinetic theory of gases.

PHYS 232: Experimental Methods in Physics
Prerequisite(s): PHYS 112
This course is an introduction to the techniques involved in designing a physics experiment. There is an emphasis on electric circuits and electrical measurements, but practical methodologies useful in all experimental physics courses are developed.

PHYS 382: **Modern Physics Laboratory I** (elective option)
Prerequisite(s): PHYS 221 or PHYS 232
Corequisite(s): One of PHYS 302, 321, 322, 351 or 410 is strongly recommended
This laboratory course is a continuation of PHYS 382. Students must complete a different set of experiments than the ones done in PHYS 382 and must present a lab book at the beginning of the course to show the experiments previously completed.

PHYS 392: Interfacing and Virtual Instrumentation
Prerequisite(s): PHYS 232; or COMP 256, MATH 125, and one of (PHYS 105, PHYS 112, PHYS 093 or Physics 12)
In this course students will learn how to create computerized control and analysis equipment for experimental work. This includes interfacing a computer or microcontroller, such as the Arduino microcontroller, to various instruments for data acquisition and instrument control using a state-of-the-art software platform such as National Instrument's LabVIEW. Emphasis is on the practical aspects of interfacing a computer or microcontroller to various instruments including timing issues, real-time data acquisition and instrument control, instrument status, and acquisition speed.

PHYS 402: Advanced Optics (elective option)
Prerequisite(s): PHYS 225 and PHYS 312
Pre- corequisite(s): PHYS 351 recommended
This course builds on the introductory topics seen in Physics 225, but covers them in much more detail. Statements made in that course will be given formal proofs here, and extended to include reflection and refraction from arbitrary shaped surfaces. Fermat’s principle will be introduced, and applied to media with varying indices of refraction using the Calculus of Variations. Multiple component optical systems

will be considered, including telescopes, microscopes and the eye (along with the optical corrections for defects). Maxwell's equations will be solved for both plane and spherical waves, and polarization states will be dealt with via the Jones calculus. Frustrated total internal reflection will be explained using evanescent wave solutions, and the analogy with quantum mechanical tunneling made. Both near field (Fresnel) and far field (Fraunhofer) diffraction will be covered, with an emphasis on Fourier optics from various aperture shapes. Finally, the basic operation and types of lasers will be investigated including the so-called Einstein A and B coefficients. This introductory optics course surveys both geometrical and wave optics. Topics will include laws of reflection and refraction; interference and diffraction, Fourier methods and holography.

Appendix C:
New Course Outlines

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: Sept 2014
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: Sept 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

Engr 100 (at CWC – October 2013)	Phys	1
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Production in Practice
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

Good design requires understanding the production process. This course gives students rudimentary hands-on experience in several industrial practices associated with welding, electrical systems, construction, and automotive work.

PREREQUISITES: ENGR 210 or ENPH 310
COREQUISITES: none
PRE or COREQUISITES: none

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 30

STRUCTURE OF HOURS:

Lectures:	15	Hrs
Seminar:		Hrs
Laboratory:		Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify): Shop experien	15	Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: 18
Expected frequency of course offerings: Annually
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☒ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☐ No

Course designer(s): **Peter Mulhern**
Department Head: **Derek Harnett** Date approved: **Aug 26, 2013**
Campus-Wide Consultation (CWC) Date of meeting:
Curriculum Committee chair: **David Fenske** Date approved:
Dean/Associate VP: **Lucy Lee** Date approved:
Undergraduate Education Committee (UEC) approval Date of meeting:

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:
Perform simple shop manufacturing activities
Know the names, functions, and limitations of the standard tools and standard fasteners.
Be able to clearly specify a project that is to be constructed by someone else.
Know how to find some industrial code information.
Be able to estimate time and cost of simple projects.
Adhere to shop safety standards.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lecture
Shop experience

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☐ Examination(s) ☒ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

None
Students will need access to industrial codes

SUPPLIES / MATERIALS:

As dictated by the shop supervisor for that offering of the course

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

In-class quizzes to assess knowledge of safety and standards 20%
Shop work 80%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

Hands-on experience in
Welding
Metal fabrication
Automotive
Framing
Electrical/wiring
Plumbing

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: Sept 2014
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: Sept 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

Engr 210	Physics	3
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Circuit Analysis
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course is an introduction to circuit analysis, a mathematical model used to represent a variety of engineering problems such as electric circuits. In particular, students will learn about phasor analysis and AC power; transfer functions; Bode plots; filters and resonance; transformers, and two-port networks.

PREREQUISITES: Phys 112
COREQUISITES:
PRE or COREQUISITES: Phys 381

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 75

STRUCTURE OF HOURS:

Lectures:	75	Hrs
Seminar:		Hrs
Laboratory:		Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: 24
Expected frequency of course offerings: annually
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☒ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s): **Xiaolin Long, Peter Mulhern, Joss Ives**
Department Head: **Derek Harnett** Date approved: **Aug 26, 2013**
Campus-Wide Consultation (CWC) Date of meeting: **Jun 28, 2013**
Curriculum Committee chair: **David Fenske** Date approved: **September 20, 2013**
Dean/Associate VP: **Lucy Lee** Date approved: **September 20, 2013**
Undergraduate Education Committee (UEC) approval Date of meeting:

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- Describe key circuit elements including resistors, capacitors, inductors, and transformers.
- State the fundamental laws (Kirchhoff's Laws) and theorems (Thevenin/Helmholtz's and Norton/Helmholtz's equivalences) needed for circuit design and analysis.
- Analyze electrical circuits containing a variety of circuit elements using the basic laws and theorems.
- Simulate circuits on the computer using appropriate software such as SPICE.
- Calculate both steady state and transient responses in 1st and 2nd order circuits.
- Analyze single and three phase AC circuits.
- Apply both Laplace and Fourier transforms to circuit analysis problems.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lectures

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Fundamentals of Electric Circuits (Ed. 5), C. Alexander and M. Sadiku, McGraw-Hill Science/Engineering/Math 2012

SUPPLIES / MATERIALS:

None

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Assignments: 20%
Quizzes: 10%
Midterm Exam: 25%
Final Exam: 45%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

- Basic circuit variables, Ohm's Law (review)
- Voltage and current sources
- Real source models (Thevenin/Helmholtz's and Norton/Helmholtz's)
- Parallel connection vs. series connection (review)
- Kirchhoff's Laws: Voltage Law (KVL) and Current Law (KCL) (review)
- Modified Nodal Analysis, Loop Analysis.
- 1st order circuits (review)
- 2nd order circuits
- AC circuits including steady-state analysis, power analysis, 3-phase circuits, frequency response
- Two-port networks

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: Sept 2014
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: Sept 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

Engr 330	Physics	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Automatic Control Systems
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course is an introductory course on automatic control. The main goal of the course is to provide students with basic tools in modeling, analysis, and design for linear feedback control systems. Students will learn how to model mechanical, electrical, and electromechanical systems as differential equations and transfer functions. The analyses in this course include stability of open-loop and closed-loop systems as well as time responses and frequency responses of low order systems. The design methods are divided into root-locus techniques and frequency response techniques using Bode plots for designing proportional-integral-derivative (PID) and lead/lag controllers. Students will also learn how to apply automatic control theory to real engineering problems with Matlab and through laboratory exercises. This course will give the basic knowledge for more advanced control courses, such as state-space control techniques, nonlinear control, robust control, optimal control, adaptive control, digital control, sampled-data control, hybrid control, and system identification.

PREREQUISITES: Engr 210
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: **75**

STRUCTURE OF HOURS:

Lectures:	**45**	Hrs
Seminar:		Hrs
Laboratory:	**30**	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **18**
Expected frequency of course offerings: annually
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☒ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s): **Xiaolin Long**
Department Head: **Derek Harnett** Date approved: **Aug 26, 2013**
Campus-Wide Consultation (CWC) Date of meeting: **Jun 28, 2013**
Curriculum Committee chair: **David Fenske** Date approved: **September 20, 2013**
Dean/Associate VP: **Lucy Lee** Date approved: **September 20, 2013**
Undergraduate Education Committee (UEC) approval Date of meeting:

ENGR 330 **OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 2)**
COURSE NAME/NUMBER

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to

- Model simple and complex electrical and electromechanical systems.
- Evaluate linear and non-linear models and analyze the relationship between their inputs and the outputs.
- Design PID controllers for electrical and electromechanical systems.
- Design feedback control systems and analyze their performance.
- Communicate effectively using both oral and written formats.
- Collaborate on projects in small teams.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lectures, labs, presentations (oral and written)

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Principles of Control Systems, H. Werner

SUPPLIES / MATERIALS:

The necessary laboratory equipment will be provided to the students.

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Assignments: 20%
Labs: 10%
Midterm Exam: 25%
Final Exam: 35%
Final Project (Written and Oral Presentations) 10%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

1. Mathematical modeling of dynamic systems including transfer functions and state-space models
2. Transient response analysis of one-order and two-order systems
3. PID control theory
4. Stability analysis of open-loop and closed-loop systems

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: Sept 2014
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: Sept 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

Engr 340	Physics	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Micro-Processors and Embedded Systems
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course covers basic microcomputer architecture; design and analysis of address decoders and memory systems; design and analysis of assembly language programs; and microcomputer system design.

PREREQUISITES: Enph 320, Enph 310, Comp 150 or Comp 152
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 75

STRUCTURE OF HOURS:

Lectures:	45	Hrs
Seminar:		Hrs
Laboratory:	30	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **18**
Expected frequency of course offerings: Annually
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☒ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s): **Xiaolin Long**
Department Head: **Derek Harnett** Date approved: **Aug 26, 2013**
Campus-Wide Consultation (CWC) Date of meeting: **Jun 28, 2013**
Curriculum Committee chair: **David Fenske** Date approved: **September 20, 2013**
Dean/Associate VP: **Lucy Lee** Date approved: **September 20, 2013**
Undergraduate Education Committee (UEC) approval Date of meeting:

ENGR 340 **OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 2)**
COURSE NAME/NUMBER

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- Analyze the architecture of the HCS12 microcontroller.
- Write code using assembly language.
- Design address decoders and memory systems.
- Design parallel and serial interfaces.
- Design D/A and A/D converters.
- Translate from high-level programming languages (e.g., C) to assembly and machine language.
- Design simple embedded systems.
- Work effectively as a team.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lectures and labs

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

HCS12 Microcontroller and Embedded Systems (Ed. 1), M. Mazidi and D. Causey, Prentice Hall 2008

SUPPLIES / MATERIALS:

The necessary laboratory equipment will be provided to the students.

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Assignments: 15%
Quizzes: 10%
Midterm Exam: 20%
Final Exam: 35%
Labs (including write ups): 20%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

1. Basic microcomputer architecture and memory maps
2. Address decoders and memory systems
3. Addressing modes
4. Instruction sets
5. Assembly language
6. Parallel and serial interfaces
7. A/D and D/A converter systems
8. Microcomputer system design
9. Review of object-oriented programming: Data structures, algorithms, and programming techniques.
10. Introduction to embedded systems programming using high level languages (e.g., C).

Laboratory sessions include experiments on microprocessor-based hardware design; assembly and C language program development; programming and interfacing with I/O device; and sessions dedicated to the design and completion of a major laboratory project.

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OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: Sept 2014
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: Jan 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

Engr 350	Physics	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Sensors and Actuators
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course provides an introduction to sensors and actuators for electromechanical, computer-controlled machines, and devices. Topics include operating principles, design considerations, and applications of analog sensors, digital transducers, stepper motors, continuous-drive actuators, and drive system electronics. Component integration and design considerations are studied through examples selected from applications of machine tools, mechatronics, precision machines, robotics, aerospace systems, and ground and underwater vehicles. Laboratory exercises strengthen the understanding of component performance, system design and integration.

PREREQUISITES: Engr 330
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 75
STRUCTURE OF HOURS:

Lectures:	**45**	Hrs
Seminar:		Hrs
Laboratory:	30	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **18**
Expected frequency of course offerings: anually
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☒ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s): **Xiaolin Long**
Department Head: **Derek Harnett** Date approved: **Aug 26, 2013**
Campus-Wide Consultation (CWC) Date of meeting: **Jun 28, 2013**
Curriculum Committee chair: **David Fenske** Date approved: **September 20, 2013**
Dean/Associate VP: **Lucy Lee** Date approved: **September 20, 2013**
Undergraduate Education Committee (UEC) approval Date of meeting:

ENGR 350 **OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 2)**
COURSE NAME/NUMBER

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- Acquire and analyze the data from analog sensors and digital transducers
- Identify numerous examples of applications of sensors and actuators across a wide variety of fields.
- Demonstrate improved hands-on skills in assembling systems of sensors and actuators.
- Design and evaluate the controllers for the stepper motors and continuous-drive actuators.
- Collaborate in teams to complete projects.
- Communicate orally in an effective manner.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lectures, lab projects, presentations, examinations

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☐ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☒ PLAR cannot be awarded for this course for the following reason(s): The course has a lab

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Transducer and instrumentation trainer. Progressive Educational Systems.
Control Sensors and Actuators, Clarence W. de Silva, Prentice Hall 1989

SUPPLIES / MATERIALS:

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Assignments: 20%
Presentation: 10%
Midterm Exam: 10%
Final Exam: 30%
Labs (including report): 30%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

1. Basic control systems
2. Input transducers
3. Output transducers
4. Display devices
5. Signal conditioning circuits
6. Closed loop control systems

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: Sept 2014
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: Sept 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

Engr 390	Physics	3
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Mechatronics
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This is the capstone course of the Engineering Physics Diploma. Students will apply the knowledge gained in priorcourses to specific projects. Typically, students will complete several projects. Students will function as if they are in industry, with many interim reports given to the instructor as projects progress. Students will deliver oral presentations on their projects to the class, and will be graded on the quality of their presentation as well as the quality of their project and their written report.
The students will assemble the robots and program them using feedback control strategies to make them fulfill tasks such as obstacle avoidance, trajectory planning, and material pick up.

PREREQUISITES: Enph 320, Engr 330, Phys 392 or Enph 360
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 75
STRUCTURE OF HOURS:

Lectures:		Hrs
Seminar:		Hrs
Laboratory:		Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify): projects	75	Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **18**
Expected frequency of course offerings: annually
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☒ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s): **Xiaolin Long**
Department Head: **Derek Harnett** Date approved: **Aug 26, 2013**
Campus-Wide Consultation (CWC) Date of meeting: **Jun 28, 2013**
Curriculum Committee chair: **Dave Fenske** Date approved: **September 20, 2013**
Dean/Associate VP: **Lucy Lee** Date approved: **September 20, 2013**
Undergraduate Education Committee (UEC) approval Date of meeting:

ENGR 390 **OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 2)**
COURSE NAME/NUMBER

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- Synthesize knowledge gained in previous courses to build creative solutions to real-world mechatronics problems.
- Exhibit professionalism, strong organizational skills, and effective time management.
- Collaborate, in both leadership and subordinate roles, in small teams to complete major projects.
- Demonstrate advanced oral and written communication skills.
- Show their confidence and competence to future employers.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Projects including oral presentations and written reports

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☐ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☒ PLAR cannot be awarded for this course for the following reason(s):
This is the capstone course for the diploma.

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

SUPPLIES / MATERIALS:

Projects and materials designed/supplied by the instructor.

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Project #1 (including write-up and oral presentation): 30%
Project #2 (including write-up and oral presentation): 30%
Project #3 (including write-up and oral presentation): 40%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

1. Robots: assembly and programming
2. Obstacle avoidance
3. Trajectory planning
4. Picking up objects

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OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: Sept. 2014
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: Sept. 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

Enph 310	Physics	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Electronics I
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course is the first of a two course sequence which builds on the analog and digital electronics topics first introduced in PHYS 232. This course is a mixture of lecture and laboratory, with the laboratory emphasizing the practical use of the various electronics components and lecture emphasizing the underlying theory which describes why the various electronics components behave the way that they do. Broad topics covered in this course include passive filters, diodes, transistors, operational amplifiers, fundamentals of digital logic and combinatorial digital logic. This course will also introduce software-based circuit simulation which is useful for both design and troubleshooting of actual circuits.

PREREQUISITES: Phys 232
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces: **PHYS 362 & PHYS 372**
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 75

STRUCTURE OF HOURS:

Lectures:	**45**	Hrs
Seminar:		Hrs
Laboratory:	30	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **18**
Expected frequency of course offerings: Annually
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☒ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s): **Joss Ives**
Department Head: **Derek Harnett** Date approved: **Aug 26, 2013**
Campus-Wide Consultation (CWC) Date of meeting: **Jun 28, 2013**
Curriculum Committee chair: **David Fenske** Date approved: **September 20, 2013**
Dean/Associate VP: **Lucy Lee** Date approved: **September 20, 2013**
Undergraduate Education Committee (UEC) approval Date of meeting:

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- Analyze and design analog and digital electronic circuits at block level, and construct these circuits using discrete components
- Manage the devices tools and electronics components in a basic electronics laboratory
- Use software tools to simulate electronic circuits
- Explain how various basic electronics components work at both a fundamental and a practical level

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lecture, Demonstrations, Laboratories

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Electronics: A Systems Approach, Neil Story (4e, Prentice Hall)

SUPPLIES / MATERIALS:

The necessary electronics laboratory equipment will be provided to the students.

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

15% Assignments
20% Laboratory
10% Quizzes
15% Midterm Exam
40% Final Exam

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

- Thevenin circuits
- RC circuits and filters
- Diodes and semiconductor physics
- Bipolar Junction Transistors
- Field Effect Transistors
- Introduction to Operational Amplifiers
- Basics of digital logic
- Logic families and basics of internal gate structure
- Combinatorial logic

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: Sept 2014
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: Sept 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

Enph 320	Physics	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Electronics II
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course is the second of a two course sequence which builds on the analog and digital electronics topics first introduced in PHYS 232. This course is a mixture of lecture and laboratory, but places a heavier emphasis on project and laboratory work than Electronics I. Broad topics covered in this course include conversion between analog and digital signals, further operational amplifier applications and topics, active filters, oscillators, differential and instrumentation and amplifiers, sequential digital logic, digital design, and Field Programmable Gate Arrays (FPGAs).

PREREQUISITES: Enph 310
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces: **PHYS 332 & PHYS 342**
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 75

STRUCTURE OF HOURS:

Lectures:	**30**	Hrs
Seminar:		Hrs
Laboratory:	45	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **18**
Expected frequency of course offerings: Annually
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☒ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s): **Joss Ives**
Department Head: **Derek Harnett** Date approved: **Aug 26, 2013**
Campus-Wide Consultation (CWC) Date of meeting: **Jun 28, 2013**
Curriculum Committee chair: **David Fenske** Date approved: **September 20, 2013**
Dean/Associate VP: **Lucy Lee** Date approved: **September 20, 2013**
Undergraduate Education Committee (UEC) approval Date of meeting:

ENPH 320 **OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 2)**
COURSE NAME/NUMBER

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- Analyze and design complex analog and digital electronic circuits
- Construct complex electronic circuits using discrete components, Program Field Programmable Gate Arrays (FPGAs) or software simulation, as appropriate.
- Design and construct an independent project which synthesizes numerous topics from the Electronics I and II courses. Communicate to technical and non-technical audiences the purpose, behaviour and function of the project using authentic forms of the discipline

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lecture, Demonstrations, Laboratories

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Electronics: A Systems Approach, Neil Story (4e, Prentice Hall)

SUPPLIES / MATERIALS:

The necessary electronics laboratory equipment will be provided to the students.

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

10% Assignments
15% Laboratory
10% Quizzes
10% Midterm Exam
20% Final Project Written and Oral Presentations
35% Final Exam

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

- Further Operational Amplifiers topics
- Active filters and oscillators
- Differential and instrumentation amplifiers
- Sequential logic
- Analog/digital conversion
- Digital design (Mealy/Moore machines)
- Field Programmable Gate Arrays (FPGAs) and Verilog

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: Sept 2014
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: Sept 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

ENPH 360	Physics	3
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Interfacing and Virtual Instrumentation
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

In this course students will learn how to create computerized control and analysis equipment for experimental work. This includes interfacing a computer or microcontroller, such as the Arduino microcontroller, to various instruments for data acquisition and instrument control using a state-of-the-art software platform such as National Instrument's LabVIEW. Emphasis is on the practical aspects of interfacing a computer or microcontroller to various instruments including timing issues, real-time data acquisition and instrument control, instrument status, and acquisition speed.

PREREQUISITES: PHYS 232 or (COMP 256 and MATH 125 and one of (PHYS 105, PHYS 112, PHYS 093 or Physics 12))
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces: **PHYS 392**
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 60
STRUCTURE OF HOURS:

Lectures:		Hrs
Seminar:		Hrs
Laboratory:	60	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **18**
Expected frequency of course offerings: annually
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☒ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s): **Joss Ives**
Department Head: **Derek Harnett** Date approved: **Aug 26, 2013**
Campus Wide Consultation (CWC) Date of meeting: **Jun 28, 2013**
Curriculum Committee chair: **Dave Fenske** Date approved: **September 20, 2013**
Dean/Associate VP: **Lucy Lee** Date approved: **September 20, 2013**
Undergraduate Education Committee (UEC) approval Date of meeting:

ENPH 360 **OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 2)**
COURSE NAME/NUMBER

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- Create an outline of an algorithm to solve a problem in experimental control, monitoring, data acquisition, data display, data processing or data analysis.
- Write a program for the computer or microcontroller (using LabVIEW, python, Arduino sketches, or other suitable programming environment) that solves a problem in experimental control, monitoring, data acquisition, data display, data processing or data analysis.
- Design and build analog and digital circuits to perform basic signal processing, and input/output tasks. This includes interfacing with probes, sensors, indicators, computer controlled data acquisition devices or microcontrollers.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Students will work, in a laboratory setting, through exercises and experiments designed to help them develop proficiency performing tasks such as controlling experiments, acquiring data, processing data, and displaying data using a computer or microcontroller. There will also be student-designed projects. Occasional short oral presentations will be made by the instructor when needed.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☐ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☒ Other (specify): Evidence of industrial or related experience with sufficient overlap of the course material.

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

John Essick, Hands On Introduction to LabVIEW for Scientist and Engineers, 1ed, Oxford University Press (2008).

Travis and Kring, LabVIEW for Everyone, 1ed, Prentice Hall (2006).

Margolis, Arduino Cookbook,1ed, O'Reilly (2011).

SUPPLIES / MATERIALS:

A lab with analog electronics, digital electronics and electronics interfacing equipment, as well as access to computers with the LabVIEW program.

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Assignments based on experimental work: 30%
Lab reports based on experimental work: 30%
Project: 40%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

LabVIEW: Loops and Graphing

LabVIEW: The Mathscript Node

LabVIEW: Data Acquisition

LabVIEW: Data Files

LabVIEW: Shift Registers, Case Structure, Sequence Structure

LabVIEW: Curve Fitting, Fast Fourier Transform, and other Built-In Analysis VIs

Analog electronics components

Digital electronics components & Boolean algebra
Digital-to-Analog and Analog-to-Digital conversions
Interfacing Protocols and Standards
PID control
Sampling
Microcontroller basics
Interfacing with sensors and probes

Appendix D:
Library Collection Analysis

Library Collection Analysis

Hongfei Li has performed a library analysis for us (see below). The conclusions are that existing resources are adequate. Furthermore, the current yearly library budget allotted to the Department of Physics will be sufficient to cover the ongoing needs of both the physics and mechatronics programs.

Engineering Physics Diploma Program Proposal
Evaluation of Library Holdings to support the Program
Prepared by Hongfei Li
April 2nd, 2013

The UFV Library has a wide range of print and electronic resources to support the Engineering Physics program.

1. **Collection Sizes by LC Classification**

The following table includes the **circulating, reference, and video collections** of all campus libraries. The LC Call numbers below represent areas of study in the Engineering Physics program.

Call Number Range	Description	Number of Items
TK 7800 – 8360	Electronics	104
TK 7887.6	Analog-to-digital converters; Digital-to-analog converters	1
TK 452-454.4	Electric apparatus and materials; Electric circuits; Electric networks	9
Z 5838.D5	Digital Electronics	0
TL 589.4-TL589.5	Guidance systems and automatic control	0
HD 9696.A96-.A964	Automatic control equipment	0
TK 7895.E42	Embedded computer systems	1
TK 7895.M5	Microprocessors	2
Z 5643.M5	Microprocessors	0
TK 7872.D48	Detectors, Sensors, Sensor networks	0
TJ 223.A25	Actuators	0
TL 702.A37	Actuators, Control systems	0
TJ 163.12	Mechatronics	0
Z 5853.R58	Robotics	0
TL 1097	Space robotics	0

2. E-Books

The library collection now contains about 136,200 electronic books from suppliers such as Netlibrary, ebrary, and MyiLibrary. These items are not assigned call numbers and therefore are not represented in the collection counts by call number above.

3. Number of Titles by LC Subject Heading

The table below presents a small selection of LC Subject Headings pertaining to the Engineering Physics program. These numbers include electronic books.

Electronics 289	Detectors 118
Analog-to-digital converters 36	Sensors 2
Digital-to-analog converters 10	Sensor networks 93
Electric circuits 29	Actuators 12
Electric networks 6	Actuators, Control systems 25
Digital Electronics 39	Mechatronics 27
Embedded computer systems 164	Robotics 219
Microprocessors 33	Space robotics 4

4. Article Indexes

Database Name	**Description**
Most Relevant	
Applied Science & Technology Index	This database indexes over 850 magazines and journals in the following subjects: Acoustics, Aeronautics, Applied Mathematics, Artificial Intelligence, Atmospheric Sciences, Automatic Control, Automotive Engineering, Chemical Engineering, Chemistry, Civil Engineering, Communication & Information Technology, Computer Databases & Software Construction, Electrical & Electronic Engineering, Engineering & Biomedical Materials, Energy Resources & Research, Environmental Engineering, Fire & Fire Prevention, Food & Food Industry, Geology, Industrial Engineering, Machine Learning, Machinery, Marine Technology, Mechanical Engineering, Metallurgy, Mineralogy, Mining Engineering, Neural Networks, Nuclear Engineering, Oceanography, Optical & Neural Computing, Petroleum & Gas, Physics, Plastics, Robotics, Solid State Technology, Space Science, Textile Industry & Fabrics, Transportation, Waste Management, Other Industrial & Mechanical Arts
Arxiv.org	arXiv (pronounced "archive") is an e-print service in the fields of physics, mathematics, non-linear science, computer science,

	quantitative biology, quantitative finance and statistics. In many fields of mathematics and physics, almost all scientific papers are placed on the arXiv.
ScienceDirect	Coverage focuses on science and medicine, with some coverage of social sciences and humanities (particularly management, economics, psychology, and linguistics.) Includes full text scholarly journals published by Elsevier and its subsidiary publishers (Academic Press, Pergamon, Mosby, and Saunders). Searching Tips: You can limit your Search or Browse activities to only those ScienceDirect journals included in the UFV subscription (i.e., those with full-text articles).
SpringerLink	SpringerLink includes over 2000 scholarly journals and over 22,000 ebooks in the following fields: behavioral science, biomedical and life sciences, business and economics, chemistry and materials science, computer science, earth and environmental science, engineering, humanities, social sciences and law, mathematics, medicine, and physics and astronomy.
Also Relevant	
AccessScience	This database is a multi-media scholarly reference source in the area of science and technology, and is comprised of the following: McGraw-Hill Encyclopedia of Science and Technology (10th edition), McGraw-Hill Dictionary of Scientific and Technical Terms, Yearbook of Science & Technology, and approximately 3500 biographies of scientists.
Academic Search Premier	Academic Search Premier is a multi-disciplinary full text database containing full text for more than 4,650 journals, including more than 3,900 peer-reviewed titles. In addition to the full text, this database offers indexing and abstracts for over 8,450 journals. This scholarly collection offers information in nearly every area of academic study, including computer sciences, engineering, physics, chemistry, language and linguistics, arts & literature, medical sciences, ethnic studies, and more.

5. Periodicals

The UFV library now has a combined print and electronic periodical collection of approximately 62,000 titles. This includes magazines, trade journals, academic journals, and newspapers. All of these could be of potential interest, depending on the topic of a research paper.

The following table contains custom subject searches for full-text journal titles which relate very directly to the study of Engineering Physics program. The titles are drawn from many databases.

Tagged subject	Number of titles	Search Screenshot
Electronics	112	title all Electronics Search
Analog	8	title all Analog Search
Circuits	27	title all Circuits Search
Automatic Control	5	title all Automatic control Search
Microprocessors	3	title all Micro-processors Search
Embedded systems	15	title all Embedded systems Search
Sensors and Actuators	2	title all Sensors and Actuators Search
Mechatronics	3	title all Mechatronics Search
Robotics	14	title all Robotics Search

The following is the list of top journal titles for the subjects:

Analog Integrated Circuits and Signal Processing 1573-1979,0925-1030

Springer - CRKN - CRKN: fulltext 1997-01-01 (v.12 i.1) –

Journal of Circuits, Systems & Computers 1793-6454,0218-1266

Academic Search Premier - EBSCO: fulltext 1999-02-01 - (12 months embargo)

Journal of Automatic Control 1450-9903

Directory of Open Access Journals - DOAJ: fulltext 2008-01-01 -

Microprocessors and Microsystems 0141-9331

ScienceDirect CRKN (2011) - Elsevier: fulltext 1995-08-01 (v.19 i.6) -

EURASIP Journal on Embedded Systems 1687-3963,1687-3955

Hindawi Journals - Open Access - Hindawi Publishing: fulltext 2006-01-01 -

ALPSP Learned Journals Collection (CRKN) - Swets: fulltext 2006-01-01 -

Directory of Open Access Journals - DOAJ: fulltext 2006-01-01 -

Sensors and Actuators - A - Physical Sensors 0924-4247

ScienceDirect CRKN (2011) - Elsevier: fulltext 1995-01-01 (v.46) -

Mechatronics 0957-4158

ScienceDirect CRKN (2011) - Elsevier: fulltext 1995-02-01 (v.5 i.1) -

Journal of Robotics 1687-9619,1687-9600

Hindawi Journals - Open Access - Hindawi Publishing: fulltext 2009-01-01 -

ALPSP Learned Journals Collection (CRKN) - Swets: fulltext 2009-01-01 -

Directory of Open Access Journals - DOAJ: fulltext 2009-01-01 -

Appendix E:
Budget Analysis – *currently under development*

Appendix F:
Letters of Support

Re: Proposed Diploma of Engineering Physics (Mechatronics) at UFV
Date: September 13th 2013

The Science Co-op Program at the University of British Columbia offers a co-op option for every undergraduate major in the Faculty of Science, including engineering physics and physics. In 2012 the Science Co-op placed 25 physics and 123 engineering physics students with Canadian and international employers. As Director of the Science Co-op I am well aware of the career opportunities available and the skills required of the physics new grads. I have a good understanding of what the employers are looking for.

I have looked over the UFV's proposal for the Engineering Physics Diploma Program. The skills which the graduates of this diploma program will gain will give them a definite edge over those who pursue just a physics major degree. For physics graduates, in addition to a good foundation in physics and mathematics, today's industry requires a strong background in computer science, excellent design and hands-on skills and project work conducted in a team environment. The UFV proposal contains strong elements of all of these requirements. I very highly recommend offering a Co-op option and I assume that it can be added at a later stage.

In my view a strong computational ability is a must for today's science graduates and the more computer science courses (including programming languages, database management, data analysis etc.) an educational institute can offer the better. Obviously the number of courses that can be offered within a diploma program is rather limited. In addition, project and laboratory work and good communication skills play an important role in employability of the new graduates.

I fully support UFV bringing on this diploma and wish the University the best of luck with it.

Javed Iqbal, Ph.D.
Director Science Co-op and Adjunct Professor
University of British Columbia
Vancouver, BC

Support from UFV International:
E-mail Correspondence

Hi Tim, 4/04/2013

This is great news! [The Engineering Physics, Mechatronics Diploma program] will be very attractive especially for students in India and some in the Middle East. If we can offer these three options then there will definitely be a huge market. And I think $8000 is quite fair and reasonable. When do you think we can start recruiting?

Ravi Philips
Head of International Marketing
UFV International Education
ravi.philips@ufv.ca

Dear Tim, 18/03/2013

I had a look at your proposal for an Engineering Physics, Mechatronics Diploma. The proposed Diploma is expected to be a very popular program among international students. Markets where engineering programs are especially popular are India, China and Brazil. These are at the moment the markets where most of our international students come from. Over the years, engineering in general has always been the second most popular program in the international market and at times the most popular.

Factors that will contribute further to making the program popular among international students are:

- A clear pathway into the program with opportunities for students to upgrade to meet entrance requirements. This will be useful in India where most students only have Mathematics at grade 10 level and also for students with lower English scores.
- A clear pathway from the program to other post-secondary institutions.
- The possibility of obtaining a work permit upon graduation.
- Internship or co-op possibilities.

I believe that the uniqueness of the program and the growing employment market for this will also contribute to the program being extremely popular among international students. Best wishes with the development of the program! Please let me know if you need international partnerships as we can start looking for those.

Ora Steyn
Executive Director
UFV International Education
ora.steyn@ufv.ca

Appendix G:
Labour Market Information

Labour Market Demand

Our high-academic-level diploma is unique in the province, so it is not possible to find truly comparable programs and look at the employment outcomes of their graduates. We have therefore looked at employment outcomes from similar 2-year diploma programs and also from 4-year degree programs. We find that both have good employment outcomes which indicate that our graduates will do well.

In addition to this, our program working group has conducted a modest labour survey of our own (see below).

Our assessment of the labour market demand for this program is based on the following:

1. Survey of Local Employers
2. Comparable Two Year Diploma Programs (Employment Outcomes)
3. Comparable Four Year Engineering Programs (Employment Outcomes)
4. Earning Potential of BSc Physics Major Graduates

1. Survey of Local Employers

Ten employers were contacted, and six responded to our survey. The questions and responses are provided below.

Survey Questions:

1) Is your enterprise currently engaged or anticipates being engaged in design and engineering of electronic/mechanical systems? Yes/No
2) Do you have employees with electronics and/or mechanical engineering/technical skills? Yes/No
3) Over the next 2 to 5 years, how many employees with electronics and/or mechanical engineering/technical skills will you hire per year (both in terms of normal turnover and growth)? 0/1-2/2-5/more than five
4) How likely are you to hire individuals with the kind of education described in the proposed diploma program? (not likely, somewhat likely/ likely/ very likely)
5) Have you had or anticipate difficulty finding technically qualified employees of the kind described herein? (yes/no/possibly)

Employees Answers:

Employer	Name of Contact	Contact Position	1	2	3	4	5	Follow up/Employer Comment
Thomson Technology, 9087A 198th Street, Langley, BC, V1M 3B1	Max Moeini, P.Eng.	Technical Services Manager	Y	Y	3 to 5	likely	possibly	Good luck. We are looking to see more qualified people in Job market.

IMW Industries, Chilliwack	Colm Murphey P.Eng	Director of Engineering and Manufacturing	Y	Y	3	very likely, yes		A course on materials (e.g; metals, plastics, allows – the compositions and key uses; forming & fabrication techniques (molding, casting, machining, including the uses and benefits of each one) would be good for any student touching on the mechanical engineering field.
Ausenco, 855 Homer Street, Vancouver, BC V6B 2W2 Canada	Frank Szeto, P.Eng.	Senior Automation & Electrical Engineer	Y	Y	1 to 2	yes, likely	possible	This program is filling a gap, between VVI/trade school and UBC/SFU/BCIT, to educate engineering technicians with hands on experience. This is a highly recommended program for the engineering technicians.
CWA Engineers Inc.	Robert Cen, P. Eng.	Manager, Electrical and Control Department	Y	Y	>5	not likely	yes	This employer seeks only B.Asc graduates. Followed-up he specified maybe if we had a course in power engineering
IMW Industries, Chilliwack	Ben Boyd	Lead Engineer	Y	Y	3 to 5	somewhat likely	Yes, for experienced people that will work in Chilliwack. Possibly for new graduates	The more practical applications [in the program] the better. Three phase power and industrial controls are neglected in general in most programs. That doesn't really fit with this program very well but that is what we need.
Kardium Inc.	Dan Came's Boss.	CEO	Y	Y	>5	somewhat	Yes, we specifically want highly intelligent	Co-op would be good. Train to good full spectrum communicator.

							grads (usually degree not dip.)	

Only one employer said that they would be not likely to hire our graduates, whereas the other 5 expressed interest in hiring our grads. The employer who would not hire our graduates said they would, however, if we added a power engineering course to the program. Kardium was more concerned with intelligence which we think should be a strong suit for us.

Comments included:

- Make the waves course mandatory. (Our students need flexibility as they have three future paths)
- Add a course in power engineering (mentioned twice).
- Add a materials handling course
- Add a shop course (done)
- Co-op placements are important (we agree that UFV should set up a co-op in this area)
- Communication ability is important (we integrated this into the courses)

2. Comparable Two Year Diploma Programs

Our nearest neighbour, BCIT, offers two diploma programs in particular that can be used for assessing employability of graduates with similar training (although, as noted in the proposal, our proposed program will offer additional academic education than the typical two-year diploma program). The closest match for our program is their diploma in Electrical-Automation/Instrumentation (584D). The figures below are part of the BCIT (Electrical-Automation/Instrumentation Diploma) Student Outcomes Survey Report (from 2010, 2011, and 2012).

86% employed full time, with 77% saying their program was very useful to getting their job and 15% saying somewhat useful.

A somewhat similar program at BCIT is their diploma in Mechatronics and Robotics (7340) The figures below are part of the BCIT (Mechatronics and Robotics) Student Outcomes Survey Report (from 2010, 2011, and 2012).

90% were full time employed with 68% saying the program was very useful in getting their job and 32% saying somewhat useful.

3. Comparable Four Year Engineering Programs (Degrees)

There are several labour market studies that rank the earning potential and/or job prospects of degree graduates in different areas. Earning potential is a superb indicator of employment possibilities as the potential employers are forced to compete with each other to attract these highly valued workers.

The most comprehensive website we could find on this is www.payscale.com, which ranks 130 types of undergraduate degrees for earning potential. We show the top part below. The full table is available at

http://www.payscale.com/college-salary-report-2013/majors-that-pay-you-back

Please notice that engineering programs are all near the top of the list, and while mechatronics is not specifically included, both electrical (6) and mechanical (12) are, and rank quite high.

Rank	Major	Starting Salary	Mid-Career Salary
1	Petroleum Engineering	$98,000	$163,000
2	Aerospace Engineering	$62,500	$118,000
3	Actuarial Mathematics	$56,100	$112,000
4	Chemical Engineering	$67,500	$111,000
5	Nuclear Engineering	$66,800	$107,000
6	Electrical Engineering (EE)	$63,400	$106,000
7	Computer Engineering (CE)	$62,700	$105,000
8	Applied Mathematics	$50,800	$102,000
9	Computer Science (CS)	$58,400	$100,000
10	Statistics	$49,300	$99,500
11	Physics	$51,200	$99,100
12	Mechanical Engineering (ME)	$60,100	$98,400
13	Biomedical Engineering (BME)	$54,900	$98,200
14	Government	$42,000	$95,600
15	Economics	$48,500	$94,900
16	International Relations	$40,600	$93,000
17	Materials Science & Engineering	$60,100	$91,900
18	Industrial Engineering (IE)	$59,900	$91,200
19	Software Engineering	$59,100	$90,700
20	Environmental Engineering	$47,900	$89,700
21	Geology	$45,000	$89,400
22	Civil Engineering (CE)	$53,800	$88,800
23	Management Information Systems (MIS)	$51,600	$88,600
24	Biochemistry (BCH)	$43,200	$88,500
25	Chemistry	$44,700	$87,500
26	Electrical Engineering Technology (EET)	$58,400	$86,900
27	Information Systems (IS)	$50,900	$86,700
28	Construction Management	$49,500	$86,100
29	Mathematics	$48,500	$85,800
30	Finance	$47,700	$85,400
31	Molecular Biology	$40,100	$84,900
32	Computer Information Systems (CIS)	$49,000	$84,800
33	Mechanical Engineering Technology (MET)	$52,900	$83,400
34	Biotechnology	$41,400	$82,800
35	Information Technology (IT)	$48,900	$81,700

Rank	Major	Starting Salary	Mid-Career Salary
36	Industrial Technology (IT)	$49,700	$81,300
37	Food Science	$44,000	$81,100
38	Civil Engineering Technology (CET)	$49,500	$80,500
39	Industrial Design (ID)	$43,600	$80,300
40	Urban Planning	$39,000	$79,900
41	Advertising	$37,800	$77,100
42 - tie	Film Production	$37,500	$76,700
42 - tie	Supply Chain Management	$50,500	$76,700
44 - tie	Marketing Management	$40,700	$76,600
44 - tie	Telecommunications	$41,600	$76,600
44 - tie	International Business	$42,500	$76,600
47	Global & International Studies	$40,200	$76,500
48	Microbiology	$39,700	$76,200
49	Occupational Health and Safety	$49,600	$76,000
50	Classics	$35,300	$75,900
51	Architecture	$41,900	$75,200
52	Linguistics	$38,300	$74,900
53	Political Science (PolySci)	$40,300	$74,700
54	Accounting	$44,300	$74,500
55	Marketing & Communications	$39,100	$73,900
56	Environmental Science	$39,800	$73,600
57	American Studies	$40,900	$72,800
58	Philosophy	$38,300	$72,600
59	Biology	$39,100	$72,200

A second recent report by the National Association of Colleges and Employers (NACE) http://www.naceweb.org/uploadedFiles/NACEWeb/Research/Salary_Survey/Reports/SS_Jan2013_ExecSummary.pdf compares starting salaries (shown in the table below) gives broadly the same conclusion. It is interesting to see that UFV has representative programs in all categories except engineering.

- Business $53,900
- Communications $43,717
- Computer Science $59,221
- Education $40,668
- Engineering $61,913
- Health Sciences $49,196
- Humanities & Social Sciences $36,988
- Math & Sciences $42,471
- Overall $44,455

More locally this is from SFU's engineering program (not just Mechatronics but all areas)

SFUs Engineering program from a recent graduating class (survey conducted in 2011):

- 98% of students reported they were satisfied with the program
- 86% had a job related to their studies
- 80% would choose the same program again

4. Earning Potential of BSc, Physics Major Graduates

Source: http://fas.electra.surrey.sfu.ca/programs/mechatronic_systems_engineering

As can be seen in the 'payscale' table above, Physics itself comes in at number 11, which is right in the middle of the different engineering disciplines. We believe our physics degrees can bestow greatly enhanced job prospects on students by combining them with the engineering physics diploma. However as this program is unique, there is no labour market survey can tell us this (yet), but it does seem reasonable to those in the field.

In the NACE report (above) physics is grouped in the natural sciences, but this includes only a small number of physics graduates and a large number of graduates in other natural science disciplines so is not representative at all.

We conclude that four year engineering programs produce employable graduates.

To conclude this section, since graduates of both two year programs and four year programs have excellent job prospects, we have reason to presume that graduates of our two + one year program will do very well.

BC Diploma, Associate Degree, and Certificate Student Outcomes Survey - Quick Report

British Columbia Institute of Technology

This report shows data from the 2010, 2011 and 2012 BC Diploma, Associate Degree, and Certificate Student Outcomes Surveys.

Program: 548D: Electrical-Automation/Instrumentation (DIPL)

Former Students

64 students from this program were asked to complete the survey

- 91% were male, and 9% were female
- the typical age was 25

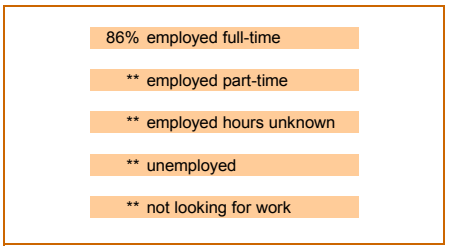
50 students completed the survey

- 100% graduated from the program

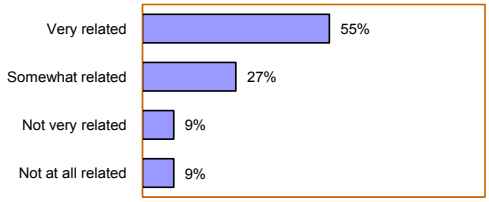
Employment

The typical hourly wage was $23.

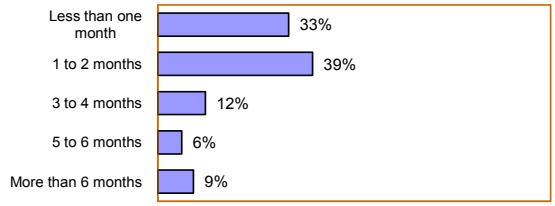
How many former students are employed?



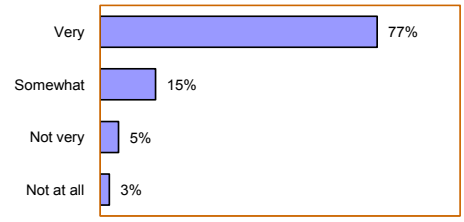
Employed former students were asked:
How related is your job to the program you took?



How long did it take you to find your program-related job?



How useful was your program in getting your job?



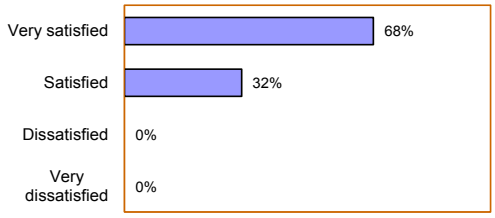
Top five program-related jobs	# employed in this program-related job	% of those employed in program-related jobs	Typical hourly wage
Tech. Occs. in Electr. & Electrical Eng.	19	53%	$24
Tech. Occs. in Civil, Mech. & Ind. Eng.	8 *	22%	$21
Civil, Mech., Elec. & Chemical Engs.	4 *	11%	**
Tech. Sales Specialists, Wholesale Trade	**	**	**
Computer and Info. Systems Professionals	**	**	**

* Means that fewer than ten students answered this question.
** Means that results are not shown because not enough students answered this question.
"n/a" means that there were no valid responses to the question.
NOTE:All percentages are rounded to whole numbers.

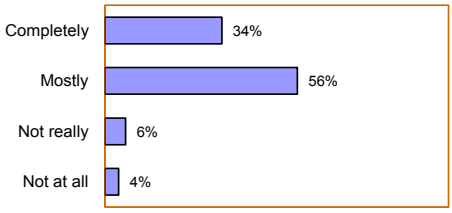
BC Diploma, Associate Degree, and Certificate Student Outcomes Survey - Quick Report

Satisfaction

How satisfied are you with your education?



Was your main goal for enrolling met?



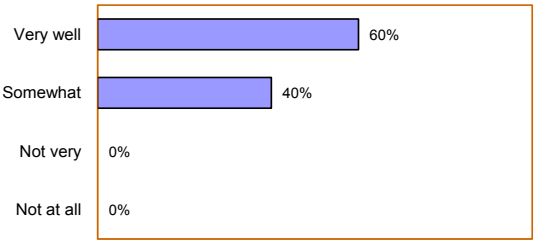
Further Studies

Of those who took further studies:

*	20%	received expected transfer credits
*	13%	did not receive expected transfer credits
	0%	did not expect transfer credits
	67%	did not answer transfer credit questions

Those who took further studies in a related field were asked:

How well were you prepared for further studies?



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"n/a" means that there were no valid responses to the question.
NOTE:All percentages are rounded to whole numbers.

BC Diploma, Associate Degree, and Certificate Student Outcomes Survey - Quick Report

British Columbia Institute of Technology

This report shows data from the 2010, 2011 and 2012 BC Diploma, Associate Degree, and Certificate Student Outcomes Surveys.

Program: 7340: Mechatronics and Robotics (DIPL)

Former Students

40 students from this program were asked to complete the survey

- 98% were male, and 3% were female
- the typical age was 26

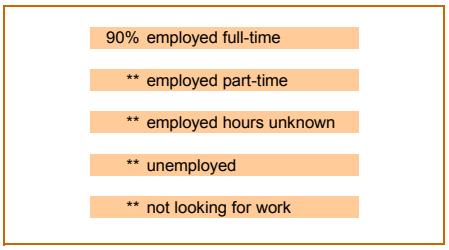
29 students completed the survey

- 100% graduated from the program

Employment

The typical hourly wage was $20.

How many former students are employed?



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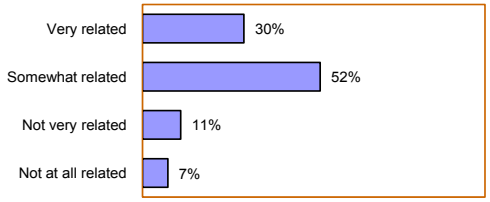
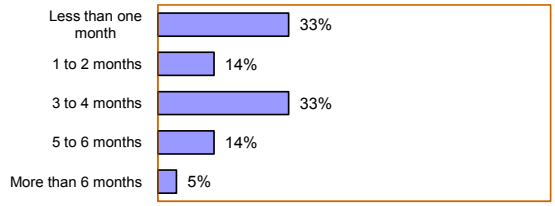
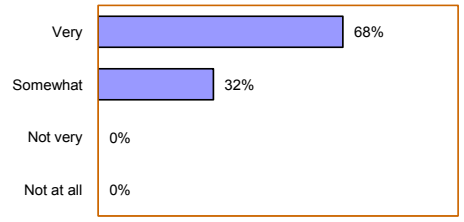


How long did it take you to find your program-related job?



How useful was your program in getting your job?



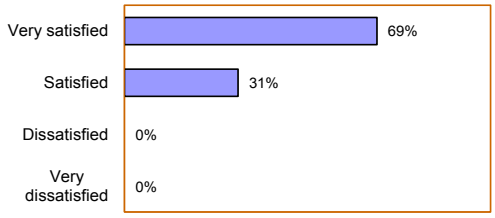
Top five program-related jobs	# employed in this program-related job	% of those employed in program-related jobs	Typical hourly wage
Tech. Occs. in Civil, Mech. & Ind. Eng.	11	50%	$18
Tech. Occs. in Electr. & Electrical Eng.	5 *	23%	$20
Civil, Mech., Elec. & Chemical Engs.	**	**	**
Physical Science Professionals	**	**	**
Other Assembly & Related Occupations	**	**	**

* Means that fewer than ten students answered this question.
** Means that results are not shown because not enough students answered this question.
"n/a" means that there were no valid responses to the question.
NOTE:All percentages are rounded to whole numbers.

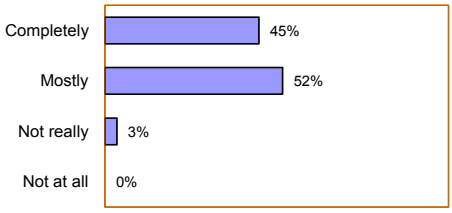
BC Diploma, Associate Degree, and Certificate Student Outcomes Survey - Quick Report

Satisfaction

How satisfied are you with your education?

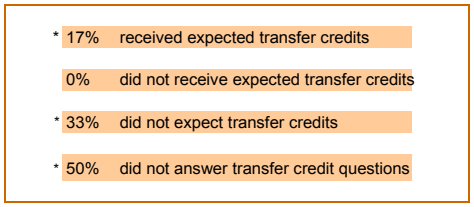


Was your main goal for enrolling met?



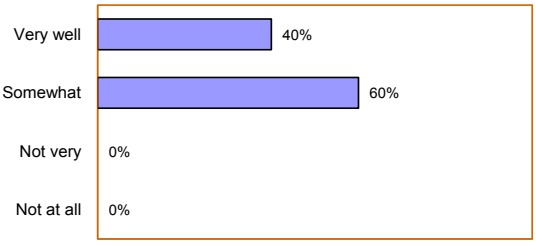
Further Studies

Of those who took further studies:



Those who took further studies in a related field were asked:

* **How well were you prepared for further studies?**



* Means that fewer than ten students answered this question.
** Means that results are not shown because not enough students answered this question.
"n/a" means that there were no valid responses to the question.
NOTE:All percentages are rounded to whole numbers.

Appendix H:
Student Survey

Student Demand

In fall 2013, we surveyed UFV Domestic Students. Students from UFV Physics 111 were surveyed after the Engineering Physics Mechatronics Diploma program was described to them. Please see the survey questions and results below:

Survey Questions:

1. If this program were in place for September 2013, would you sign up for it?
   a. Definitely
   b. Probably
   c. Maybe-not sure
   d. Probably not
   e. Definitely note

2. If you answered a. or b. to Question 1, what would be your primary reason(s) for taking this diploma program? (Check all that apply.)
   a. To get a good job as soon as possible
   b. To gain additional practical/employable skills as part of an undergraduate physics (or math) degree
   c. To transfer to an engineering degree program at another institution
   d. Other

3. At the moment, what program are you planning to follow here at UFV (Check all that apply)
   a. Engineering transfer in one year
   b. Engineering transfer over two years
   c. Physics
   d. Math
   e. Other

4. Do you have any additional comments or thoughts or questions for us?

Summary Survey Results:

Question 1: If the program were in place for September 2013 would you sign up for it?

Definitely	20
Probably	49
Not Sure	36
Probably not	37
Definitely not	19

Question 2: Why would you sign up

Job ASAP	46
Practical Skills	37
Transfer to Engineering Elsewhere	29

Question 3: At the moment, what are you planning to follow at UFV?

Engineering Transfer in One Year	16
Engineering Transfer in Two Years	46
Physics	30
Math	27
Other	0

Concept Paper
Engineering Physics – Mechatronics Diploma
September 2013

a. Name of Program: Engineering Physics Diploma in Mechatronics

b. Purpose/goals of the program

UFV currently offers only a one-year Transfer Program in Engineering. This puts us behind most colleges and universities that have engineering programs leading to diplomas or degrees. This diploma program would be the first terminal credential offered in engineering at UFV. Our research indicates that it will be a good qualification for those seeking employment in industry, and fit very well with our existing programs.

Many industries would be interested in our diploma graduates, but the kind of employer varies by location. In our region, the Fraser Valley, there are several engineering firms. There is also a large number of agricultural industries that are becoming automated. Automation, an integral part of Mechatronics, can provide marked benefits to a greenhouse, for example, by allowing the installation to be left unattended if sensors for pH, humidity and temperature are wired to a central computer, which then controls actuators that can squirt acid or alkali, open windows to control humidity and control blinds for temperature.

While this diploma represents a good addition to our offerings, on its own, it may also open up a path to further development of engineering programs at UFV where we can eventually get other engineering diplomas (such as electrical, mechanical, chemical), and/or fully fledged and accredited degree programs in engineering (most readily in Engineering Physics)

Other purposes include:

- generating a workforce for the existing high-tech industries of the Fraser Valley and be the kernel to start far more industries here;
- helping our local students get an engineering education here in the Fraser Valley;
- enhancing the job prospects of our current science degree students;
- filling our current upper level courses in physics which currently are only running at around 70% of their enrolment capacity.

c. Credential to be awarded: Engineering Physics Diploma in Mechatronics

d. Program Length or number of credits (or range):

62 credits (2 years, 4 semesters)

e. Audience (type of student served) and benefits to this audience

Every year we send well over 30 students to UBC, SFU and UVIC to get engineering degrees. We have surveyed our students and found that a large number of these would stay at UFV for the diploma in Engineering Physics (Mechatronics).

In addition, many students otherwise taking a pure science degree would include this diploma within their degree as an employment enhancement.

Engineering technology diplomas are very common in post-secondary institutions. Adding this program to our offerings would attract students from our region who are currently going to other institutions to obtain such a diploma. We anticipate many will now come, but we have not polled them as we already have far more interest from those students covered in the above two paragraphs than can fit into the proposed 18 seats. An additional benefit of this program is derived from its special nature as a diploma built on a first year of math and science—in essence, it is a three year (from high school) program. As such it is distinct from the four-year engineering degree and the two-year engineering diploma offered at other institutions. Our diploma will offer greater flexibility to students to prepare for well-paid employment.

f. Relation to local communities and their needs

The benefits to our community are a ready skilled workforce of local youth that are happy to work in the Fraser Valley. We know one of the big problems engineering industries in Chilliwack have is retention and recruitment; we assume the same to be the case in our other communities.

g. Relationship to UFV Strategic Plan, including possibilities for Indigenous and international content

We anticipate that 50% of this program's students will be, initially, international students. Since they will go through as a cohort, we expect that they will get to know each other, and each other's cultures, well by graduation time.

Numerous post-education surveys have shown that engineering degrees and diplomas are right at the top when it comes to getting satisfying jobs afterwards. Since employers value critical thinking and problem solving skills, and engineers tend to graduate with the highest earning potential, this program will have graduates with a very high level of critical thinking and problem solving. Because our diploma requires a full year of university for entrance, our graduates can achieve a high level of qualifications. We expect our graduates to contribute to the economy of the Fraser Valley by joining high tech firms and creating new ones.

h. Relationship to Existing Programs at UFV

We currently have a one-year transfer program in engineering to UBC, UVIC, and many individual courses to SFU. Graduates from this one-year program are perfectly placed to enter the diploma, as are students who have completed a first year of science containing math and physics. Once the diploma is running we hope to work with trades to look at laddering options from the electronics common core program.

Upon receipt of the diploma, students can ladder up to a BSc Degree at UFV. If electives are chosen appropriately:

- Physics Major (takes 1 more year)
- Math Major (takes 1.5 more years)
- Computer Science Major (in development).

A physics major is already a good career move, but one containing this engineering diploma will be even better.

A longer term vision would have the diploma be the basis of an agriculture technology degree. By adding knowledge of basic biology and chemistry along with several courses in agriculture, we could construct a degree containing the diploma that would allow graduates to visit agricultural facilities, understand the issues that the facility is facing and suggest automation solutions.

i. Anticipated links to further study, and to employment

Students may opt to use the diploma as a springboard to degree completion at UBC or SFU. We are hoping to get more specific transfer arrangements in place once it is up and running.

j. Delivery Methods

Delivery methods include: Lecture, Lab, Workshops, and Projects (both calculated and constructed).

k. Possible Resource Needs

Required resources include:

- One time equipment need of about $80,000.
- On-going instructor costs should be met by international student fees.

The program would work much better if the class maximum could be raised to 24 from the current limit of 18. This would require a new large physics/engineering lab. Given our assessment of the demand for this program, we believe that it would be profitable for the university to invest in building a larger lab.

l. Program Working Group

Approved Program Working Group members include:

Tim Cooper, PhD (Program Working Group Chair)
John English, P.Eng (Former Dean of Engineering at BCIT, current Dean of Trades at UFV)
Derek Harnett, PhD (Physics Department Head)
Joss Ives, PhD (Experimental Physicist now employed by UBC)
Peter Mulhern, PhD (Experimental Physicist and Head of Engineering Transfer Program at UFV)
Xiaolin Long, PhD, P.Eng. (IMW Industries Employee, Associate Professor of Engineering at Wuhan University of Technology (on leave) and UFV Physics Sessional Instructor)

Mechatronics Meeting Addressing CWC Comments

Aug. 1, 2013 in 1036 TTC
Present: John English, Tim Cooper, Lin Long, Derek Harnett, Peter Mulhern

The committee has gone over all the comments and have replies below. Most of the CWC comments were on section 12 (Academic Policies), so we have created an entirely new section 12, the rest were minor edits.

Comments from Rhonda Colwell

"Hi everyone,

I have read this proposal and Elaine's comments. Here are some additional questions / suggestions I have for this proposal:

Do you want to limit the number of courses a student in this program can repeat and still be eligible to graduate? Or are course repeats not going to be allowed?

What do you really want for Continuance in this program? The one line statement is unclear to me. Will you give students a warning after the first semester and then require them to withdraw when the second semester's grades are submitted? Or, will you automatically withdraw students from the program after the first semester's grades are submitted?

Your section on Conduct is a new one for me. Do you want to have this stated in the Academic Calendar?

The official course outlines for ENGR 210, 330, 340, 350, and 390 seem incomplete to me. Can more information be supplied in the Learning Outcomes, Textbook, and Student Evaluation sections?

Can the prerequisites for ENGR 350 be changed to just ENGR 330? PHYS 221 and PHYS 381 are prerequisites for ENGR 330. Including these courses in the prereqs for ENGR 350 seems redundant to me.

What do you want the prerequisites to be for ENPH 360? The use of brackets is very confusing for me.

What do you want the implementation date to be for ENPH 360? This information is missing on the form. Is it safe to assume September 2014 as with ENPH 310 and ENPH 320?

Thanks,
Rhonda"

- Let's adopt the BSc policy on upper-division course repeats.
- To remain in the program, a student must maintain a minimum GPA of 2.0 in all courses taken at UFV that apply to the program (including entrance requirements).
- Peter will look further at what happens when students fail to meet the continuance requirements. **Action: Peter**

- Let's just adopt the university's policy on academic and non-academic misconduct.
- For ENGR 210, 330, 340, 350, and 390, we need to beef up the Learning Outcomes, Textbooks, and Student Evaluation.
- We'll drop PHYS 221 & 381 as pre-reqs for ENGR 350.
- While a little complicated, we need to leave the pre-reqs for ENPH 360 the way the are.
- We'll go with a Sept 2014 implementation date for ENPH 360.

Comments from Simon Xi

"Hi Tim and the Mechatronics team,

It is good to see a new program spring up from Faculty of Science.

I have some questions and comments for your consideration.

7. Course Selection and Creation
It is better to stipulate the English entrance requirements like meeting the pre-requisite for ENGL 105. Engineers need strong communication skills. I will suggest further that ENGL 105 or equivalent be made compulsory in the program.

The four MATH and PHYS courses for entrance are to be taken over two semesters. Two courses for international students per semester may not bode well as typically they pay a flat tuition fee. They may add COMP 152 and/or ENGR 151, but that still makes three courses. In reality, is it possible to let them take some electives prior to program entry: Math 152 and an ENGL/COMS course? Doing so may erode revenue as the credit rate is different. If IE student have taken courses or receive applicable transfer credits before program entry, do we still ask them to pay $7,500 per semester? The problem occurred with DAC post-degree students. Are they still eligible for program entry? See related comments below.

It seems that the program runs on a co-hort basis. If a student fails a core course, he/she needs to wait for one year to retake the course?

12. Academic Policies

I hope this chapter will be aligned with the BSc regulations.

Admissions requirements:
Is GPA based on the four MATH and PHYS courses and/or CGPA? If students have completed courses applicable to the program, are those courses to be calculated into GPA?

Regarding "a student has already completed courses from the diploma prior to being accepted to the diploma…"
UFV has three intakes a year and the program is post-secondary entry, it is not fair to penalize students for taking courses before program entry.

11. Budget
This probably builds upon an ideal scenario when there is no attrition due to various factors. Incoming students need to spend a minimum two semesters before becoming eligible to apply, and they need to meet the entrance requirements. I wonder if the enrolment size can be increased. There should be general institutional cost of the program, for example, marketing internationally. 2-digit commission is to be paid from the tuition to

agents who refer students to UFV. “Assurance” from UFV International is better construed as market estimates. Whether this can materialize or not depends on the reality (Please refer to post-degree programs).

Domestic per credit rate is now $144.51.

3. Employment demand
I wonder if companies and firms outside of BC have been canvased. Job prospects are important to IE students. “They want to choose programs with a strong value proposition and very solid outcomes. They ask, ‘Will these programs get me jobs?’” http://www.universityaffairs.ca/the-rise-of-the-non-traditional-student.aspx

IE students tend to think of diploma as a two-year program. Since the program takes three years to complete, it might be better to offer another option as BSc Physics with Mechatronics concentration.

Thanks for the opportunity to comment. I look forward to a refined version.

Simon Xi
Educational advisor
UFV International”

- As an entrance requirement, students must meet the pre-requisites for ENGL 105
- We'll remove CMNS 235 from the list of program electives
- We'll add a comment that students intending to transfer to UBC will require ENGL 105.
- We anticipate that international students will take the program pre-requisites in their home country.
- The $7500 per semester fee is a block fee and will not be reduced for students who transfer electives into the program.
- If a student fails a course, then yes, he or she will likely have to wait a year to repeat it.
- This is not a BSc program and so need not have precisely the same rules and regulations. However, we will be lifting liberally from the BSc program with regards to continuance, for instance.
- We will be screening for exceptional students and so expect little in the way of attrition. Demand for the program from domestic students is high, so seats should never stay unfilled.
- General institutional costs have already been included in the budget as we have made the appropriate deductions from both domestic and international tuition.
- There are most definitely plans to incorporate a mechatronics minor or concentration within the physics degree.

Comments from John Todrick

“Hello Tim

The course sounds very interesting and appears to have a great deal of common content with courses such as Analog and Digital Electronics and others offered by the Electronics Technician Program in the Faculty of Trades and Technology at UFV. I also noted that the Dean of Trades and Technology John English sits on the program working group. Were there discussions held between Faculties regarding the ability of students to ladder from one program to the other, awarding PLAR for students in either program to reduce the completion time, or

shared resources? I couldn't find any references in the proposal but it would seem a natural avenue of exploration for a comprehensive university.

John Todrick"

- PLAR is available for all courses except the capstone project course. We would certainly want students from any of the trades or technical programs to receive credit for areas of study that they feel they have mastered. Block credit or course credit would have to be determined through a detailed examination of comparable courses and hours. That can be something we do when the program is in its final form and the outcomes of discussions we are having with UVic, SFU and UBC are complete. Further, we have had some conversation around areas of cooperation especially in areas of the curriculum where there would be benefit to be in a shop environment or applied setting. Lots of possibilities exist there but they will be more opportunistic and be driven by the instructors of specific courses.

- It would also be useful for students who have completed this diploma to have access to completing the electronics common core. Since that program is not offered as a series of courses but rather a as whole program it is not easy to see exactly what parts would receive credit and how that whole process could work. This is something we would want Trades and Technology to consider once the diploma program is in its final form.

- Please also note that the diploma program and its courses are designed around and premised on the student having completed a year of general science. The program proposal contains those details.

Comments from Lori Wirth

"Hello Tim,

Engn 390 indicates that PLAR cannot be awarded but the reason why is missing from the course outline. The Portfolio Assessment box is also checked which indicates it can be PLAR'd. So just need some clarification. I realize it is a Capstone to the entire Diploma so please clarify the PLAR section on that course outline.

Thank you,

Lori Wirth
Acting PLAR Coordinator (Prior Learning Assessment & Recognition)"

- We need to uncheck the Portfolio assessment box.
- PLAR cannot be awarded because this is a capstone course for the entire program

Comments from Elaine Harris

"Hi
This sounds like a program that could be a great opportunity for many students.

I don't think we have ever approved a program that has pre-established that half the seats for the intake will be allocated for international students in order to make it cost recovery, though. Have you considered any other way to make the program cost recovery or nearly cost-recovery, such as charging higher tuition fees? Higher fees have been approved for some programs such as Practical Nursing diploma ($13,218 for 4 semesters) and Graphic and Digital Design program ($12,241 for 4 semesters).

If this is approved, one advantage is that it makes recruitment considerably easier (since there are far more domestic applicants), ensuring that the seats can be filled and the intake proceed. It would also allow more domestic students the opportunity to take a program that they might really want, and that would create better feelings in the community.

A few other comments about the proposal:

Entrance requirements

- Would you consider stating a requirement of a minimum overall GPA of at least 2.0 on all post-secondary credits attempted, in addition to the B in PHYS 112 and B- in MATH 112? It is usual to require an overall GPA of an acceptable level for post-secondary entrance to programs, to ensure that a student has a good chance of success in a program.
- The comment that international students may be admitted on lower GPAs would not be needed if half the seats were not allocated for international students – but even if the program is approved this way, I am not sure I would say in the calendar that they may be admitted with lower GPAs. Perhaps it could be stated that since half the seats are allocated for domestic students and half for international students, domestic and international students will compete separately for seats (without explicitly pointing out that international students might have lower averages). We haven't had any previous programs with this sort of arrangement, so we are on new ground here, but the minimum grades in PHYS 112 and MATH 112 should apply to both groups if they are needed to ensure success.

Graduation requirements
My suggestion is to state that "all program requirements must be completed with a minimum GPA of 2.0 in order to graduate". The current statement is more of a continuance requirement than a graduation requirement.

It is unusual to state that a student could graduate without a 2.0 GPA, if they do additional courses that bring up the GPA to 2.0. Would you not want graduates to have at least a C average over all the required courses for the credential? A 2.0 GPA still allows for P's in some of the courses; a student with lower than a 2.0 average on the required courses might have a number of P or C- grades.

I just wanted to mention that there are two sections on continuance on page 33. Perhaps this was a cut and paste error?

Reserved seats - Reserved seats are based on program features, but not on type of student. If you have an admission policy to admit 9 international and 9 domestic, you don't need to mention that or use reserved seats to control that. You could just reserve 18 seats for students in the program, and whichever 18 students you admitted would have access. Currently, seats cannot be reserved by what semester a student is in, just by the program. So it may not be possible to prevent students in third term taking a first semester course – however, if you tell students they need to follow the semester courses as laid out that usually won't be an issue.

Thanks for the opportunity to provide feedback.
Elaine"

- We looked at the option of charging higher fees for domestics or going 50% international Ed. We decided we were uncomfortable that the taxpayer would subsidise the education of other students here, but not the engineers; this sets them up as second class citizens permanently as we have been told that fees cannot be reduced even if money becomes more available.

Moreover, we did our survey's without mentioning higher fees, so we don't have data on student demand with those higher fees.

- There are several programs at UFV that have seats specifically allocated for international students
- Tim has already responded to Elaine concerning program costs and the ratio of domestic to international students. See the email exchange.
- Sure, let's demand that students must have a 2.0 GPA in all university level courses attempted to get into the program.
- International Ed says that we can absolutely cap the number of international students at nine.

Comments from Employers (Came in simultaneously)

- Students should have more hands-on skills. In response we have added a new course, ENGR 100 which will be a one-week course, full time, offered at the end of the summer. This will be put on by a trades instructor, and will emphasise safety, machine tool operation and many other skills.
- Power electronics. The committee decided this should not be in the first version of the diploma, but as we grow the program and obtain more resources it would make a great elective.

Other Changes (Miscellaneous)

- The committee decided that for the diploma, as an alternative to Phys 221, students could take Engr 113+Math 255 + (Math 152 or Math 221). Students wishing to ladder to a physics major would still require Phys 221, but students who have come through and Engineering Transfer Program (here or elsewhere) might find it more convenient to do the other 3.
- As a result of the above change, the pre-recs for Engr 330 are changed to reflect the three-courses-instead-of one option.

Memo

To: FSCC

From: Derek Harnett, Head of Department of Physics

Date: Sept. 12, 2013

Subject: Proposal for a new course (ENGR 210)

If the course is a revision of an existing course, fill out A and C. If it is a new course, fill out B and C.

A. Course revision:

1. Rationale for change:
2. Summary of substantive changes: (A course outline with 'track changes' will be attached, so what is required here is that you draw attention to those areas of change in general terms. E.g. change in learning outcomes, class size limit, frequency of offering, materials required).

B. New course:

1. Rationale for new course
   - This is an introductory course in circuit analysis designed as part of the proposed Engineering Physics Diploma in Mechatronics.
2. How new course fits into program(s)
   - This will be a required course for the mechatronics diploma.
3. If a new discipline designation is required, explain why.

C. Budget and Learning outcome Issues

1. How does your course address the UFV Learning Outcomes?
   - 2, 3, 4
2. Is this course required by any program beyond the discipline? If so, how will this change affect that program or programs?
   - No
3. What consideration has been given to indigenizing the curriculum?
   - None
4. If any of the following items on the OCO have changed, or this course is new, explain how the change will affect the budget for your area or any other area:
   a. Credit value
   b. Class size limit
   c. Frequency of offering
   d. Resources required (labs, equipment)

- This course will not have any effect on the budget for physics or any other area at UFV. The budget implications of this new course (and several others) are outlined in detail in the mechatronics program proposal.

5. If this course is not eligible for PLAR, explain why.
   - This course is eligible for PLAR.
6. Are field trips required for this course? Will the dates be announced in the timetable? How are the trips funded?
   - No
7. Please provide an estimate of the typical costs for this course, including textbooks and other materials.
   - Textbook: approximately $150

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: September 2014
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: September 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

ENGR 210	Physics	3
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Circuit Analysis
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course is an introduction to circuit analysis, a mathematical model used to represent a variety of engineering problems such as electric circuits. In particular, students will learn about phasor analysis and AC power; transfer functions; Bode plots; filters and resonance; transformers, and two-port networks.

PREREQUISITES: PHYS 112
COREQUISITES:
PRE or COREQUISITES: PHYS 381

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 75
STRUCTURE OF HOURS:

Lectures:	75	Hrs
Seminar:		Hrs
Laboratory:		Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **24**
Expected frequency of course offerings: annually
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☒ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s): **Xiaolin Long, Peter Mulhern, Joss Ives**
Department Head: **Derek Harnett** Date approved: **August 26, 2013**
Campus-Wide Consultation (CWC) Date of meeting: **June 28, 2013**
Curriculum Committee chair: **David Fenske** Date approved: **September 20, 2013**
Dean/Associate VP: **Lucy Lee** Date approved: **September 20, 2013**
Undergraduate Education Committee (UEC) approval Date of meeting: **October 25, 2013**

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- Describe key circuit elements including resistors, capacitors, inductors, and transformers.
- State the fundamental laws (Kirchhoff's Laws) and theorems (Thevenin/Helmholtz's and Norton/Helmholtz's equivalences) needed for circuit design and analysis.
- Analyze electrical circuits containing a variety of circuit elements using the basic laws and theorems.
- Simulate circuits on the computer using appropriate software such as SPICE.
- Calculate both steady state and transient responses in 1st and 2nd order circuits.
- Analyze single and three phase AC circuits.
- Apply both Laplace and Fourier transforms to circuit analysis problems.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lectures.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Fundamentals of Electric Circuits (Ed. 5), C. Alexander and M. Sadiku, McGraw-Hill Science/Engineering/Math 2012

SUPPLIES / MATERIALS:

None

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Assignments:	20%
Quizzes:	10%
Midterm exam:	25%
Final exam:	45%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

- Basic circuit variables, Ohm's Law (review)
- Voltage and current sources
- Real source models (Thevenin/Helmholtz's and Norton/Helmholtz's)
- Parallel connection vs. series connection (review)
- Kirchhoff's Laws: Voltage Law (KVL) and Current Law (KCL) (review)
- Modified Nodal Analysis, Loop Analysis.
- 1st order circuits (review)
- 2nd order circuits
- AC circuits including steady-state analysis, power analysis, 3-phase circuits, frequency response
- Two-port networks

Memo

To: FSCC

From: Derek Harnett, Head of Department of Physics

Date: Sept. 12, 2013

Subject: Proposal for a new course (ENGR 330)

If the course is a revision of an existing course, fill out A and C. If it is a new course, fill out B and C.

A. Course revision:

1. Rationale for change:
2. Summary of substantive changes: (A course outline with 'track changes' will be attached, so what is required here is that you draw attention to those areas of change in general terms. E.g. change in learning outcomes, class size limit, frequency of offering, materials required).

B. New course:

1. Rationale for new course
   - This is an introductory course in automatic control systems designed as part of the proposed Engineering Physics Diploma in Mechatronics.
2. How new course fits into program(s)
   - This will be a required course for the mechatronics diploma.
3. If a new discipline designation is required, explain why.

C. Budget and Learning outcome Issues

1. How does your course address the UFV Learning Outcomes?
   - 2, 3, 7
2. Is this course required by any program beyond the discipline? If so, how will this change affect that program or programs?
   - No
3. What consideration has been given to indigenizing the curriculum?
   - None
4. If any of the following items on the OCO have changed, or this course is new, explain how the change will affect the budget for your area or any other area:
   a. Credit value
   b. Class size limit
   c. Frequency of offering
   d. Resources required (labs, equipment)

- This course will not have any effect on the budget for physics or any other area at UFV. The budget implications of this new course (and several others) are outlined in detail in the mechatronics program proposal.

5. If this course is not eligible for PLAR, explain why.
   - This course is eligible for PLAR.
6. Are field trips required for this course? Will the dates be announced in the timetable? How are the trips funded?
   - No
7. Please provide an estimate of the typical costs for this course, including textbooks and other materials.
   - Textbook: approximately $150

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: September 2014
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: September 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

ENGR 330	Physics	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Automatic Control Systems
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course is an introductory course on automatic control. The main goal of the course is to provide students with basic tools in modeling, analysis, and design for linear feedback control systems. Students will learn how to model mechanical, electrical, and electromechanical systems as differential equations and transfer functions. The analyses in this course include stability of open-loop and closed-loop systems as well as time responses and frequency responses of low order systems. The design methods are divided into root-locus techniques and frequency response techniques using Bode plots for designing proportional-integral-derivative (PID) and lead/lag controllers. Students will also learn how to apply automatic control theory to real engineering problems with Matlab and through laboratory exercises. This course will give the basic knowledge for more advanced control courses, such as state-space control techniques, nonlinear control, robust control, optimal control, adaptive control, digital control, sampled-data control, hybrid control, and system identification.

PREREQUISITES: ENGR 210
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 75

STRUCTURE OF HOURS:

Lectures:	45	Hrs
Seminar:		Hrs
Laboratory:	30	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: 18
Expected frequency of course offerings: annually
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☒ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s):	**Xiaolin Long**		
Department Head:	**Derek Harnett**	Date approved:	**August 26, 2013**
Campus-Wide Consultation (CWC)		Date of meeting:	**June 28, 2013**
Curriculum Committee chair:	**David Fenske**	Date approved:	**September 20, 2013**
Dean/Associate VP:	**Lucy Lee**	Date approved:	**September 20, 2013**
Undergraduate Education Committee (UEC) approval		Date of meeting:	**October 25, 2013**

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to

- Model simple and complex electrical and electromechanical systems.
- Evaluate linear and non-linear models and analyze the relationship between their inputs and the outputs.
- Design PID controllers for electrical and electromechanical systems.
- Design feedback control systems and analyze their performance.
- Communicate effectively using both oral and written formats.
- Collaborate on projects in small teams.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lectures, labs, presentations (oral and written)

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Principles of Control Systems, H. Werner

SUPPLIES / MATERIALS:

The necessary laboratory equipment will be provided to the students.

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Assignments:	20%
Labs:	10%
Midterm exam:	25%
Final exam:	35%
Final project (written and oral presentations):	10%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

1. Mathematical modeling of dynamic systems including transfer functions and state-space models
2. Transient response analysis of one-order and two-order systems
3. PID control theory
4. Stability analysis of open-loop and closed-loop systems

Memo

To: FSCC

From: Derek Harnett, Head of Department of Physics

Date: Sept. 12, 2013

Subject: Proposal for a new course (ENGR 340)

If the course is a revision of an existing course, fill out A and C. If it is a new course, fill out B and C.

A. Course revision:

1. Rationale for change:
2. Summary of substantive changes: (A course outline with 'track changes' will be attached, so what is required here is that you draw attention to those areas of change in general terms. E.g. change in learning outcomes, class size limit, frequency of offering, materials required).

B. New course:

1. Rationale for new course
   - This is a course in microprocessors and embedded systems programming designed as part of the proposed Engineering Physics Diploma in Mechatronics.
2. How new course fits into program(s)
   - This will be a required course for the mechatronics diploma.
3. If a new discipline designation is required, explain why.

C. Budget and Learning outcome Issues

1. How does your course address the UFV Learning Outcomes?
   - 2, 3, 7
2. Is this course required by any program beyond the discipline? If so, how will this change affect that program or programs?
   - No
3. What consideration has been given to indigenizing the curriculum?
   - None
4. If any of the following items on the OCO have changed, or this course is new, explain how the change will affect the budget for your area or any other area:
   a. Credit value
   b. Class size limit
   c. Frequency of offering
   d. Resources required (labs, equipment)

- This course will not have any effect on the budget for physics or any other area at UFV. The budget implications of this new course (and several others) are outlined in detail in the mechatronics program proposal.

5. If this course is not eligible for PLAR, explain why.
   - This course is eligible for PLAR.
6. Are field trips required for this course? Will the dates be announced in the timetable? How are the trips funded?
   - No
7. Please provide an estimate of the typical costs for this course, including textbooks and other materials.
   - Textbook: approximately $150

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: September 2014
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: September 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

ENGR 340	Physics	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Micro-Processors and Embedded Systems
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course covers basic microcomputer architecture; design and analysis of address decoders and memory systems; design and analysis of assembly language programs; and microcomputer system design.

PREREQUISITES: ENPH 320, ENPH 310, COMP 150, or COMP 152
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 75

STRUCTURE OF HOURS:

Lectures:	45	Hrs
Seminar:		Hrs
Laboratory:	30	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: 18
Expected frequency of course offerings: Annually
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☒ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s): **Xiaolin Long**

Department Head:	**Derek Harnett**	Date approved:	**August 26, 2013**
Campus-Wide Consultation (CWC)		Date of meeting:	**June 28, 2013**
Curriculum Committee chair:	**David Fenske**	Date approved:	**September 20, 2013**
Dean/Associate VP:	**Lucy Lee**	Date approved:	**September 20, 2013**
Undergraduate Education Committee (UEC) approval		Date of meeting:	**October 25, 2013**

ENGR 340 **OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 2)**
COURSE NAME/NUMBER

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- Analyze the architecture of the HCS12 microcontroller.
- Write code using assembly language.
- Design address decoders and memory systems.
- Design parallel and serial interfaces.
- Design D/A and A/D converters.
- Translate from high-level programming languages (e.g., C) to assembly and machine language.
- Design simple embedded systems.
- Work effectively as a team.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lectures and labs

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

HCS12 Microcontroller and Embedded Systems (Ed. 1), M. Mazidi and D. Causey, Prentice Hall 2008

SUPPLIES / MATERIALS:

The necessary laboratory equipment will be provided to the students.

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Assignments:	15%
Quizzes:	10%
Midterm exam:	20%
Final Exam:	35%
Labs (including write ups):	20%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

1. Basic microcomputer architecture and memory maps
2. Address decoders and memory systems
3. Addressing modes
4. Instruction sets
5. Assembly language
6. Parallel and serial interfaces
7. A/D and D/A converter systems
8. Microcomputer system design
9. Review of object-oriented programming: Data structures, algorithms, and programming techniques.
10. Introduction to embedded systems programming using high level languages (e.g., C).

Laboratory sessions include experiments on microprocessor-based hardware design; assembly and C language program development; programming and interfacing with I/O device; and sessions dedicated to the design and completion of a major laboratory project.

Memo

To: FSCC

From: Derek Harnett, Head of Department of Physics

Date: Sept. 12, 2013

Subject: Proposal for a new course (ENGR 350)

If the course is a revision of an existing course, fill out A and C. If it is a new course, fill out B and C.

A. Course revision:

1. Rationale for change:
2. Summary of substantive changes: (A course outline with 'track changes' will be attached, so what is required here is that you draw attention to those areas of change in general terms. E.g. change in learning outcomes, class size limit, frequency of offering, materials required).

B. New course:

1. Rationale for new course
   - This is a course in sensors and actuators designed as part of the proposed Engineering Physics Diploma in Mechatronics.
2. How new course fits into program(s)
   - This will be a required course for the mechatronics diploma.
3. If a new discipline designation is required, explain why.

C. Budget and Learning outcome Issues

1. How does your course address the UFV Learning Outcomes?
   - 4, 5, 8
2. Is this course required by any program beyond the discipline? If so, how will this change affect that program or programs?
   - No
3. What consideration has been given to indigenizing the curriculum?
   - None
4. If any of the following items on the OCO have changed, or this course is new, explain how the change will affect the budget for your area or any other area:
   a. Credit value
   b. Class size limit
   c. Frequency of offering
   d. Resources required (labs, equipment)

- This course will not have any effect on the budget for physics or any other area at UFV. The budget implications of this new course (and several others) are outlined in detail in the mechatronics program proposal.

5. If this course is not eligible for PLAR, explain why.
   - This course is eligible for PLAR.
6. Are field trips required for this course? Will the dates be announced in the timetable? How are the trips funded?
   - No
7. Please provide an estimate of the typical costs for this course, including textbooks and other materials.
   - Textbook: approximately $150

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: September 2014
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: September 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

ENGR 350	Physics	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Sensors and Actuators
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course provides an introduction to sensors and actuators for electromechanical, computer-controlled machines, and devices. Topics include operating principles, design considerations, and applications of analog sensors, digital transducers, stepper motors, continuous-drive actuators, and drive system electronics. Component integration and design considerations are studied through examples selected from applications of machine tools, mechatronics, precision machines, robotics, aerospace systems, and ground and underwater vehicles. Laboratory exercises strengthen the understanding of component performance, system design, and integration.

PREREQUISITES: ENGR 330
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 75

STRUCTURE OF HOURS:

Lectures:	45	Hrs
Seminar:		Hrs
Laboratory:	30	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: 18
Expected frequency of course offerings: annually
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☒ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s): **Xiaolin Long**

Department Head:	**Derek Harnett**	Date approved:	**August 26, 2013**
Campus-Wide Consultation (CWC)		Date of meeting:	**June 28, 2013**
Curriculum Committee chair:	**David Fenske**	Date approved:	**September 20, 2013**
Dean/Associate VP:	**Lucy Lee**	Date approved:	**September 20, 2013**
Undergraduate Education Committee (UEC) approval		Date of meeting:	**October 25, 2013**

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- Acquire and analyze the data from analog sensors and digital transducers.
- Identify numerous examples of applications of sensors and actuators across a wide variety of fields.
- Demonstrate improved hands-on skills in assembling systems of sensors and actuators.
- Design and evaluate the controllers for the stepper motors and continuous-drive actuators.
- Collaborate in teams to complete projects.
- Communicate orally in an effective manner.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lectures, lab projects, presentations, examinations

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☐ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☒ PLAR cannot be awarded for this course for the following reason(s): The course has a lab

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Transducer and instrumentation trainer. Progressive Educational Systems.
Control Sensors and Actuators, Clarence W. de Silva, Prentice Hall 1989

SUPPLIES / MATERIALS:

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Assignments:	20%
Presentation:	10%
Midterm exam:	10%
Final exam:	30%
Labs (including report):	30%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

1. Basic control systems
2. Input transducers
3. Output transducers
4. Display devices
5. Signal conditioning circuits
6. Closed loop control systems

Memo

To: FSCC

From: Derek Harnett, Head of Department of Physics

Date: Sept. 12, 2013

Subject: Proposal for a new course (ENGR 390)

If the course is a revision of an existing course, fill out A and C. If it is a new course, fill out B and C.

A. Course revision:

1. Rationale for change:
2. Summary of substantive changes: (A course outline with 'track changes' will be attached, so what is required here is that you draw attention to those areas of change in general terms. E.g. change in learning outcomes, class size limit, frequency of offering, materials required).

B. New course:

1. Rationale for new course
   - This is the capstone project course for the proposed Engineering Physics Diploma in Mechatronics.
2. How new course fits into program(s)
   - This will be a required course for the mechatronics diploma.
3. If a new discipline designation is required, explain why.

C. Budget and Learning outcome Issues

1. How does your course address the UFV Learning Outcomes?
   - 5, 6, 9
2. Is this course required by any program beyond the discipline? If so, how will this change affect that program or programs?
   - No
3. What consideration has been given to indigenizing the curriculum?
   - None
4. If any of the following items on the OCO have changed, or this course is new, explain how the change will affect the budget for your area or any other area:
   a. Credit value
   b. Class size limit
   c. Frequency of offering
   d. Resources required (labs, equipment)

- This course will not have any effect on the budget for physics or any other area at UFV. The budget implications of this new course (and several others) are outlined in detail in the mechatronics program proposal.

5. If this course is not eligible for PLAR, explain why.
   - This is the capstone course for the mechatronics diploma.
6. Are field trips required for this course? Will the dates be announced in the timetable? How are the trips funded?
   - No
7. Please provide an estimate of the typical costs for this course, including textbooks and other materials.
   - None

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: September 2014
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: September 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

ENGR 390	Physics	3
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Mechatronics
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This is the capstone course of the Engineering Physics diploma in Mechatronics. Students will apply the knowledge gained in prior courses to specific projects. Typically, students will complete several projects. Students will function as if they are in the industry, with many interim reports given to the instructor as projects progress. Students will deliver oral presentations on their projects to the class, and will be graded on the quality of their presentation as well as the quality of their project and their written report.
The students will assemble the robots and program them using feedback control strategies to make them fulfill tasks such as obstacle avoidance, trajectory planning, and material pick up.

PREREQUISITES: ENPH 320, ENGR 330, PHYS 392 or ENPH 360
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 75
STRUCTURE OF HOURS:

Lectures:		Hrs
Seminar:		Hrs
Laboratory:		Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify): projects	75	Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **18**
Expected frequency of course offerings: annually
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☒ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s): **Xiaolin Long**
Department Head: **Derek Harnett** Date approved: **August 26, 2013**
Campus-Wide Consultation (CWC) Date of meeting: **June 28, 2013**
Curriculum Committee chair: **Dave Fenske** Date approved: **September 20, 2013**
Dean/Associate VP: **Lucy Lee** Date approved: **September 20, 2013**
Undergraduate Education Committee (UEC) approval Date of meeting: **October 25, 2013**

ENGR 390 **OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 2)**
COURSE NAME/NUMBER

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- Synthesize knowledge gained in previous courses to build creative solutions to real-world mechatronics problems.
- Exhibit professionalism, strong organizational skills, and effective time management.
- Collaborate, in both leadership and subordinate roles, in small teams to complete major projects.
- Demonstrate advanced oral and written communication skills.
- Show their confidence and competence to future employers.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Projects including oral presentations and written reports

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☐ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☒ PLAR cannot be awarded for this course for the following reason(s):
This is the capstone course for the diploma.

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

SUPPLIES / MATERIALS:

Projects and materials designed/supplied by the instructor.

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Project #1 (including write-up and oral presentation): 30%
Project #2 (including write-up and oral presentation): 30%
Project #3 (including write-up and oral presentation): 40%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

1. Robots: assembly and programming
2. Obstacle avoidance
3. Trajectory planning
4. Picking up objects

Memo

To: FSCC

From: Derek Harnett, Head of Department of Physics

Date: Sept. 12, 2013

Subject: Proposal for a new course (ENPH 310)

If the course is a revision of an existing course, fill out A and C. If it is a new course, fill out B and C.

A. Course revision:

1. Rationale for change:
2. Summary of substantive changes: (A course outline with 'track changes' will be attached, so what is required here is that you draw attention to those areas of change in general terms. E.g. change in learning outcomes, class size limit, frequency of offering, materials required).

B. New course:

1. Rationale for new course
   - This is the first of two proposed courses in electronics. Based on feedback from third and fourth year physics students, the Physics Department intends for this course to replace a pair of upper-level physics courses in electronics. As such, electronics will not be covered in as much depth as before; however, students will not need to devote quite so many upper-level credits to its study.
   - This course is appropriate for either physics or mechatronics students.
2. How new course fits into program(s)
   - This will be a required course for the mechatronics diploma.
   - This class will count as an upper-level physics course.
   - This class will count towards the upper-level laboratory requirement of the physics honours degree.
3. If a new discipline designation is required, explain why.
   - ENPH stands for engineering physics. The courses designated as ENPH are those that the Department of Physics feels should count as either PHYS or ENGR credits, depending on program requirements.

C. Budget and Learning outcome Issues

1. How does your course address the UFV Learning Outcomes?
   - 3, 4, 5
2. Is this course required by any program beyond the discipline? If so, how will this change affect that program or programs?

- No

3. What consideration has been given to indigenizing the curriculum?
   - None
4. If any of the following items on the OCO have changed, or this course is new, explain how the change will affect the budget for your area or any other area:
   a. Credit value
   b. Class size limit
   c. Frequency of offering
   d. Resources required (labs, equipment)
      - Condensing two courses into one will actually make it less expensive for the Department of Physics to offer classes in electronics.
      - We already have the needed lab and equipment.
5. If this course is not eligible for PLAR, explain why.
   - This course is eligible for PLAR.
6. Are field trips required for this course? Will the dates be announced in the timetable? How are the trips funded?
   - No
7. Please provide an estimate of the typical costs for this course, including textbooks and other materials.
   - Textbook: approximately $150

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OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: September 2014
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: September 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

ENPH 310	Physics	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Electronics I
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course is the first of a two course sequence which builds on the analog and digital electronics topics first introduced in PHYS 232. This course is a mixture of lecture and laboratory, with the laboratory emphasizing the practical use of the various electronics components and lecture emphasizing the underlying theory which describes why the various electronics components behave the way that they do. Broad topics covered in this course include passive filters, diodes, transistors, operational amplifiers, fundamentals of digital logic, and combinatorial digital logic. This course will also introduce software-based circuit simulation which is useful for both design and troubleshooting of actual circuits.

PREREQUISITES: PHYS 232
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces: **PHYS 362 and PHYS 372**
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: **75**

STRUCTURE OF HOURS:

Lectures:	**45**	Hrs
Seminar:		Hrs
Laboratory:	**30**	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **18**
Expected frequency of course offerings: Annually
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☒ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s): **Joss Ives**
Department Head: **Derek Harnett** Date approved: **August 26, 2013**
Campus-Wide Consultation (CWC) Date of meeting: **June 28, 2013**
Curriculum Committee chair: **David Fenske** Date approved: **September 20, 2013**
Dean/Associate VP: **Lucy Lee** Date approved: **September 20, 2013**
Undergraduate Education Committee (UEC) approval Date of meeting: **October 25, 2013**

ENPH 310 **OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 2)**
COURSE NAME/NUMBER

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- Analyze and design analog and digital electronic circuits at block level, and construct these circuits using discrete components
- Manage the devices, tools, and electronics components in a basic electronics laboratory
- Use software tools to simulate electronic circuits
- Explain how various basic electronics components work at both a fundamental and a practical level

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lecture, demonstrations, laboratories.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Electronics: A Systems Approach, Neil Story (4e, Prentice Hall)

SUPPLIES / MATERIALS:

The necessary electronics laboratory equipment will be provided to the students.

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Assignments:	15%
Laboratory:	20%
Quizzes:	10%
Midterm exam:	15%
Final exam:	40%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

- Thevenin circuits
- RC circuits and filters
- Diodes and semiconductor physics
- Bipolar Junction Transistors
- Field Effect Transistors
- Introduction to Operational Amplifiers
- Basics of digital logic
- Logic families and basics of internal gate structure
- Combinatorial logic

Memo

To: FSCC

From: Derek Harnett, Head of Department of Physics

Date: Sept. 12, 2013

Subject: Proposal for a new course (ENPH 320)

If the course is a revision of an existing course, fill out A and C. If it is a new course, fill out B and C.

A. Course revision:

1. Rationale for change:
2. Summary of substantive changes: (A course outline with 'track changes' will be attached, so what is required here is that you draw attention to those areas of change in general terms. E.g. change in learning outcomes, class size limit, frequency of offering, materials required).

B. New course:

1. Rationale for new course
   - This is the second of two proposed courses in electronics. Based on feedback from third and fourth year physics students, the Physics Department intends for this course to replace a pair of upper-level physics courses in electronics. As such, electronics will not be covered in as much depth as before; however, students will not need to devote quite so many upper-level credits to its study.
   - This course is appropriate for either physics or mechatronics students.
2. How new course fits into program(s)
   - This will be a required course for the mechatronics diploma.
   - This class will count as an upper-level physics course.
   - This class will count towards the upper-level laboratory requirement of the physics honours degree.
3. If a new discipline designation is required, explain why.
   - ENPH stands for engineering physics. The courses designated as ENPH are those that the Department of Physics feels should count as either PHYS or ENGR credits, depending on program requirements.

C. Budget and Learning outcome Issues

1. How does your course address the UFV Learning Outcomes?
   - 3, 4, 5
2. Is this course required by any program beyond the discipline? If so, how will this change affect that program or programs?

- No

3. What consideration has been given to indigenizing the curriculum?
   - None
4. If any of the following items on the OCO have changed, or this course is new, explain how the change will affect the budget for your area or any other area:
   a. Credit value
   b. Class size limit
   c. Frequency of offering
   d. Resources required (labs, equipment)
      - Condensing two courses into one will actually make it less expensive for the Department of Physics to offer classes in electronics.
      - We already have the needed lab and equipment.
5. If this course is not eligible for PLAR, explain why.
   - This course is eligible for PLAR.
6. Are field trips required for this course? Will the dates be announced in the timetable? How are the trips funded?
   - No
7. Please provide an estimate of the typical costs for this course, including textbooks and other materials.
   - Textbook: approximately $150

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: September 2014
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: September 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

ENPH 320	Physics	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Electronics II
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course is the second of a two course sequence which builds on the analog and digital electronics topics first introduced in PHYS 232. This course is a mixture of lecture and laboratory, but places a heavier emphasis on project and laboratory work than Electronics I. Broad topics covered in this course include conversion between analog and digital signals, further operational amplifier applications and topics, active filters, oscillators, differential and instrumentation amplifiers, sequential digital logic, digital design, and Field Programmable Gate Arrays (FPGAs).

PREREQUISITES: ENPH 310
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces: **PHYS 332 and PHYS 342**
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: **75**

STRUCTURE OF HOURS:

Lectures:	**30**	Hrs
Seminar:		Hrs
Laboratory:	**45**	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **18**
Expected frequency of course offerings: Annually
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☒ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s): **Joss Ives**
Department Head: **Derek Harnett** Date approved: **August 26, 2013**
Campus-Wide Consultation (CWC) Date of meeting: **June 28, 2013**
Curriculum Committee chair: **David Fenske** Date approved: **September 20, 2013**
Dean/Associate VP: **Lucy Lee** Date approved: **September 20, 2013**
Undergraduate Education Committee (UEC) approval Date of meeting: **October 25, 2013**

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- Analyze and design complex analog and digital electronic circuits
- Construct complex electronic circuits using discrete components, Program Field Programmable Gate Arrays (FPGAs), or software simulation, as appropriate.
- Design and construct an independent project which synthesizes numerous topics from the Electronics I and II courses. Communicate to technical and non-technical audiences the purpose, behaviour, and function of the project using authentic forms of the discipline.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lecture, demonstrations, laboratories.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Electronics: A Systems Approach, Neil Story (4e, Prentice Hall)

SUPPLIES / MATERIALS:

The necessary electronics laboratory equipment will be provided to the students.

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Assignments:	10%
Laboratory:	15%
Quizzes:	10%
Midterm exam:	10%
Final project written and oral presentations:	20%
Final exam:	35%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

- Further Operational Amplifiers topics
- Active filters and oscillators
- Differential and instrumentation amplifiers
- Sequential logic
- Analog/digital conversion
- Digital design (Mealy/Moore machines)
- Field Programmable Gate Arrays (FPGAs) and Verilog

Memo

To: FSCC

From: Derek Harnett, Head of the Department of Physics

Date: Sept. 12, 2013

Subject: revision and renumbering of an existing course (PHYS 392)

If the course is a revision of an existing course, fill out A and C. If it is a new course, fill out B and C.

A. Course revision:

1. Rationale for change:
   - This course is intended to be a mandatory course within the proposed Engineering Physics Diploma in Mechatronics as well as a laboratory elective within the physics degrees. As such, we wish to change its designation from PHYS to ENPH (engineering physics) to emphasize its dual role.
2. Summary of substantive changes: (A course outline with 'track changes' will be attached, so what is required here is that you draw attention to those areas of change in general terms. E.g. change in learning outcomes, class size limit, frequency of offering, materials required).
   - We have changed the designation from PHYS to ENPH.
   - We have lowered the class maximum from 24 to 18 as the upper-level physics laboratory (A353) has only nine lab stations. Each station can accommodate two students.

B. New course:

1. Rationale for new course
2. How new course fits into program(s)
3. If a new discipline designation is required, explain why.

C. Budget and Learning outcome Issues

1. How does your course address the UFV Learning Outcomes?
   - 2, 3, 4
2. Is this course required by any program beyond the discipline? If so, how will this change affect that program or programs?
   - No
3. What consideration has been given to indigenizing the curriculum?
   - None
4. If any of the following items on the OCO have changed, or this course is new, explain how the change will affect the budget for your area or any other area:
   a. Credit value

b. Class size limit
c. Frequency of offering
d. Resources required (labs, equipment)

5. If this course is not eligible for PLAR, explain why.
   - This course is eligible for PLAR.
6. Are field trips required for this course? Will the dates be announced in the timetable? How are the trips funded?
   - No
7. Please provide an estimate of the typical costs for this course, including textbooks and other materials.
   - Textbook: approximately $150

UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: September 2014
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: September 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

ENPH 360	Physics	3
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Interfacing and Virtual Instrumentation
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

In this course students will learn how to create computerized control and analysis equipment for experimental work. This includes interfacing a computer or microcontroller, such as the Arduino microcontroller, to various instruments for data acquisition and instrument control using a state-of-the-art software platform such as National Instrument's LabVIEW. Emphasis is on the practical aspects of interfacing a computer or microcontroller to various instruments including timing issues, real-time data acquisition and instrument control, instrument status, and acquisition speed.

PREREQUISITES: PHYS 232 or COMP 256 and MATH 125 and one of PHYS 105, PHYS 112, PHYS 093 or Physics 12

COREQUISITES:

PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces: **PHYS 392**
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: **60**

STRUCTURE OF HOURS:

Lectures:		Hrs
Seminar:		Hrs
Laboratory:	**60**	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **18**
Expected frequency of course offerings: annually
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☒ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s): **Joss Ives**
Department Head: **Derek Harnett** Date approved: **August 26, 2013**
Campus-Wide Consultation (CWC) Date of meeting: **June 28, 2013**
Curriculum Committee chair: **Dave Fenske** Date approved: **September 20, 2013**
Dean/Associate VP: **Lucy Lee** Date approved: **September 20, 2013**
Undergraduate Education Committee (UEC) approval Date of meeting: **October 25, 2013**

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- Create an outline of an algorithm to solve a problem in experimental control, monitoring, data acquisition, data display, data processing, or data analysis.
- Write a program for the computer or microcontroller (using LabVIEW, python, Arduino sketches, or other suitable programming environment) that solves a problem in experimental control, monitoring, data acquisition, data display, data processing, or data analysis.
- Design and build analog and digital circuits to perform basic signal processing, and input/output tasks. This includes interfacing with probes, sensors, indicators, computer controlled data acquisition devices, or microcontrollers.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Students will work, in a laboratory setting, through exercises and experiments designed to help them develop proficiency performing tasks such as controlling experiments, acquiring data, processing data, and displaying data using a computer or microcontroller. There will also be student-designed projects. Occasional short oral presentations will be made by the instructor when needed.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☐ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☒ Other (specify): Evidence of industrial or related experience with sufficient overlap of the course material.

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS: *[Textbook selection varies by instructor. An example of texts might be:]*

John Essick, Hands On Introduction to LabVIEW for Scientist and Engineers, 1ed, Oxford University Press (2008).
Travis and Kring, LabVIEW for Everyone, 1ed, Prentice Hall (2006).
Margolis, Arduino Cookbook,1ed, O'Reilly (2011).

SUPPLIES / MATERIALS:

A lab with analog electronics, digital electronics, and electronics interfacing equipment, as well as access to computers with the LabVIEW program.

STUDENT EVALUATION: *[An example of student evaluation for this course might be:]*

Assignments based on experimental work:	30%
Lab reports based on experimental work:	30%
Project:	40%

COURSE CONTENT: *[Course content varies by instructor. An example of course content might be:]*

LabVIEW: Loops and Graphing
LabVIEW: The Mathscript Node
LabVIEW: Data Acquisition
LabVIEW: Data Files
LabVIEW: Shift Registers, Case Structure, Sequence Structure
LabVIEW: Curve Fitting, Fast Fourier Transform, and other Built-In Analysis Vis
Analog electronics components
Digital electronics components and Boolean algebra
Digital-to-Analog and Analog-to-Digital conversions
Interfacing Protocols and Standards
PID control
Sampling
Microcontroller basics
Interfacing with sensors and probes

MEMO

UNIVERSITY OF THE FRASER VALLEY

To: UEC

From: Sylvie Murray, Program Development Coordinator

CC: Peter Geller, Vice-Provost and Associate Vice-President, Academic

Date: 17/10/2013

Re: Short Programs Subcommittee of UEC

Please accept the attached report on the work of the Short Programs Subcommittee accomplished last year. The subcommittee was chaired by my predecessor, Cheryl Dahl.

I respectfully ask UEC to consider the following motions:

MOTIONS:

That UEC accept the report of the subcommittee's activities between September 2012 and April 2013, as submitted (pp. 2-3 below).

That UEC revise the membership and mandate of the Short Programs Subcommittee, as suggested (p. 4 below).

Report of Short Programs Subcommittee's activities between September 2012 and April 2013

Original mandate, from UEC, September 28, 2012, approved minutes, http://www.ufv.ca/media/assets/senate/uec/minutes-and-agendas/2012-13/UEC+Approved+Minutes+2012-09-28.pdf)

6.2 Short programs

C. Dahl presented some information on the development of short programs, which include any credentials less than a degree, such as A or B certificates and diplomas. The ministry does not currently provide standards for these programs that are comparable to those for undergraduate degree programs. Without set criteria, it can be difficult to evaluate the merits of new program proposals.

Other challenges related to short programs frequently include a lack of marketing, and difficulty in finding out who the students are (and whether they are successful) since many of these programs are completion certificates only.

C. Dahl proposed that UEC strike an ad-hoc UEC subcommittee to study/review/consider the issue of short programs (within UEC's terms of reference). C. Dahl, J. English, S. Bains, O. Steyn, and S. Hardman volunteered to participate on the committee; other members will be added as the subcommittee deems appropriate. Suggestions for additional members included W. Burton (Teaching and Learning), D. Thompson (chair of the Certificate committee), someone from Continuing Studies, and a representative from each faculty.

MOTION:
To establish an ad-hoc Short Programs Subcommittee to address the challenges facing short programs and to clarify the institutional expectations of them; to report to UEC and to be recommended to APPC and Senate.

Summary of deliberations

The subcommittee met twice and email exchanges took place between December 19, 2012 and April 2013. The subcommittee's composition was large and meetings were difficult to arrange. Its work was interrupted in the spring in anticipation of the Ministry releasing some guidelines, or standards, for short programs.

The group's discussion clustered around the following two general topics:

1) Lack of standards or definitions, and proliferation of short degrees. The group drew an inventory of the short programs currently offered at UFV and observed that:

- there is no working definition for short programs based on anything other than length;
- there are no well-developed standards for them comparable to degree-level programs;
- UFV offers a confusing array of short programs that appear to be performing the same function.

It was suggested that the group define the purpose of each credential from the perspective of the students (outcomes), and of the institution if different. These purposes could be used to divide the programs into rough categories or types (Dec 19, 2012, minutes).

A related point was raised about examining the definitions of credentials awarded to possibly include "Continuing Studies Certificate". Policy 64 ("Graduation Awards") is to be reviewed in light of this discussion. Possible categories to use to organize the various types of credentials: diplomas, certificates, and citations. The difference between post-degree, post-graduate, and post-diploma certificates was also noted as needing investigation.

It was noted that discussions taking place in the College of Arts' Certificate Advisory Committee intersect with the UEC subcommittee's discussions.

2) Streamlined process for review and approval: the governance and approval processes are not currently appropriate for evaluating, approving, and ranking them -- gaps in policy (Dec 19, 2012, minutes):

- Included Continuing Studies programs that must respond rapidly to market conditions to produce revenue, but must also be of quality

3) relationship between short programs of different types and the education plan process

Part of the second set of issues raised by the Short Programs committee, particularly in regards to the timely creation of Continuing Studies programs, is currently being addressed by an amendment to Policy 21 ("Undergraduate Course and Program Approval") allowing for an Expedited Program Approval Process. Most of the other issues discussed, however, remain to be addressed.

In order to address the outstanding issues, I suggest **that UEC revise the membership and mandate of the Short Programs Subcommittee**, as such:

- One UEC member, appointed by UEC
- One APPC member, appointed by UEC
- One Dean or Associate Dean, appointed by the Deans' Caucus
- Chair of the College of Arts Certificate Advisory Committee
- Director of Teaching and Learning
- Registrar (or designate)
- Program Development Coordinator (chair)

As needed, the committee will consult specific areas (international education, graduate school, continuing studies, specific disciplinary or Faculty areas not otherwise included in the committee, etc.)

Mandate: to clarify the institutional expectations and policies/processes in place for short programs, in light of practices and policies at other institutions, and emerging provincial standards. This work will include (but will not be limited to):

1) Definitions and quality assurance standards

- Review nomenclature, articulate definitions, and categorize different types, of "non-degree" credentials currently offered at UFV
- Inventory use of current short programs (number of students who declare or apply for the credential upon graduation over the last x years)
- Clarify relation to ILOs
- Prepare a Policy Request Form for policy 64

2) Policies/processes by which short programs are reviewed, revised, created, and integrated in our planning process:

- Review policies 21 (including proposed Appendix C: Expedited Process) and 209 in light of short programs. Suggest revisions if necessary
- Examine short programs' relation to Ed Plan and prioritization (e.g., is concept paper, and inclusion in Ed Plan, required for short programs). Suggest revisions to existing process if necessary.
- Examine short programs' relation to currently-proposed Program Discontinuance process (appendix C of policy 21).
- Clarify external review & approval required for short programs
- Review whether short programs have been reviewed as part of "Academic Program and Unit Review" policy 189 (especially for inter/multidisciplinary programs).

The Subcommittee will report to UEC and APPC in (or before) May 2014.

MEMO

UNIVERSITY OF THE FRASER VALLEY

To: Undergraduate Education Committee

From: Sylvie Murray, Program Development Coordinator

CC: Peter Geller, Vice-Provost and Associate Vice-President, Academic

Date: 24/10/2013

Re: Revision to Policy 21, Undergraduate Course and Program Approval

---

At its September 25 meeting, APPC reviewed a proposal for an Expedited Program Approval Process, and requested "that the UEC discuss the amended Policy 21 and recommend it to the Senate Governance Committee for revision."

The proposed Expedited Program Approval Process as reviewed (and slightly revised) at APPC is attached for your review.

I would also ask that you consider requesting other minor changes to policy 21. Namely:

- Addition of a bullet under section 2, p. 8 of Policy 21, to clarify that Honours are to be considered major program change. To read: "a new honours program in a field in which a major is currently offered" (placed after the bullet: "new fields of specialization, such as concentration"). This will clarify that the addition of an honours in a field in which a major is currently offered does not have to go through the approval process as a new program.
- To separate the Appendices A, B (and the proposed C) from the policy itself. This would make procedural changes possible without the need for Senate approval.
- Move CWC from before Faculty Council submission to after Faculty Council and the UEC screening subcommittee
    - Within the policy itself, change the definition of CWC as follows to reflect a change in where CWC fits into our process: "it ~~precedes~~ follows consultation with faculty councils"
    - Make relevant changes in all Appendices
- Clarify UEC's role in the development and review of program and course approval templates and guidelines (as specified in paragraph 9, p. 3).
    - Current language: The Office of the Program Development Coordinator will be responsible for developing and reviewing the program and course approval templates and guidelines in consultation with UEC. UEC will approve the templates and guidelines and any subsequent revisions.
    - Proposed revision: The ~~Office of the~~ Program Development Office~~Coordinator~~ will be responsible for developing and reviewing templates and guidelines for ~~the~~ program and course approval ~~templates and guidelines~~ in consultation with the UEC office. Revisions to the Official Undergraduate Course Outline and the Cross-Listed Course Outline will be submitted to UEC ~~will~~ for approval.~~e the templates and guidelines and any subsequent revisions~~.

MOTION: That UEC request a narrow revision of Policy 21 as presented.

1

concentration, students should be encouraged to complete the certificate over the concentration.

MOTION:
THAT APPC recommend to Senate the approval of the discontinuation of the Geography major Geographic Information Systems concentration as recommended by UEC, effective September 2013.
S. Pattridge/G. Palmer
CARRIED

3.6. Expedited Program Approval Process

A previous version of an Expedited Program Approval Process was discussed at APPC in March. It was suggested that the process should be presented in the form of a policy. The subcommittee (A. Chan, J. English, S. Pattridge, and N. Weinberg) met and thought it would be best to have the Expedited Program Approval Policy included in the existing Policy 21 – Undergraduate Course and Program Approval.

New wording for 2.2.a. was noted for clarification. On Page 11 of the policy, 2.2.a. will now read 'To skip the step requiring the concept paper's inclusion in the Education Plan and proceed directly to the regular full proposal phase as described in Appendix B.

It was also noted that Policy 209 – Graduate Course and Program Approval may also need to be amended in a similar way to allow for an expedited approval of graduate programs.

MOTION:
THAT APPC request that the UEC discuss the amended Policy 21 and recommend it to the Senate Governance Committee for revision.
S. Pattridge/M. Bos-Chan
CARRIED

4. ADJOURNMENT and NEXT MEETING

The meeting was adjourned at 4:30 pm.

The next meeting is October 16, 2013, 2:30 – 4:30 pm, A225/229

5. INFORMATION ITEMS

5.1. APPC website: http://www.ufv.ca/senate/standing-committees/appc/

UNIVERSITY OF THE FRASER VALLEY

September 12, 2013

Memo to: Eric Davis, Chair, Senate APPC

From: Samantha Pattridge on behalf of Adrienne Chan, John English, and Noham Weinberg

Re: Expedited Program Approval Process

A previous version of the proposal was presented to APPC and discussed on March 20, 2013. It was then suggested that the document should be presented in the form of a policy.

The subcommittee members (Adrienne Chan, John English, Samantha Pattridge, Noham Weinberg) met and discussed the document. We agreed that it was logical to include the Expedited Program Approval Process as a part of the existing Policy 21 – Undergraduate Course and Program Approval. A draft of the Policy with proposed amendments is attached. These amendments include:

1. A reference to the expedited process in the modified item 7 of Procedures/Guidelines on page 2.
2. A reference to the expedited process as Appendix C in the list of Appendices on page 5.
3. A new Appendix C describing the expedited process on pages 10-12.

Since Policy 21 falls under the auspices of the Undergraduate Education Committee, we propose the following motion.

MOTION: That APPC request that the UEC discuss the amended Policy 21 and recommend it to the Senate for approval.

We also note that Policy 209 – Graduate Course and Program Approval may also need to be amended in a similar way to allow for an expedited approval of graduate programs.

UNIVERSITY OF THE FRASER VALLEY

NUMBER	21
APPROVAL DATE	05-27-2005
LAST AMENDMENT	11-16-2012
LAST REVIEWED	
NEXT REVIEW DATE	06-2017

UNDERGRADUATE COURSE AND PROGRAM APPROVAL

AUTHORITY	Senate
PRIMARY CONTACT	Provost and Vice-President, Academic
RELATED POLICIES	

PURPOSE/PHILOSOPHY

UFV employs a process to scrutinize new and existing courses and programs to ensure that they meet both UFV and legislated standards and requirements.

POLICY

All new courses and programs and changes to existing courses and programs will undergo an approval process.

Approval will be guided by interests as articulated in the Strategic Plan and the Education Plan. The internal process includes various consultations and approvals by academic units, support areas, administrators, the Senate and its committees, and the Board of Governors.

This policy provides the guidelines and procedures pertaining to UFV's internal program and course approval processes.

Senate may delegate the authority to approve new courses and course changes to a Senate standing committee.

DEFINITIONS

Academic Unit: An academic unit includes but is not limited to faculties, schools, libraries, programs, centres, departments, and institutes.

Campus-Wide Consultation: The Campus-Wide Consultation process provides an opportunity for other academic units and service areas (e.g. Admissions & Records, Library, Student Services) to review and provide feedback about the course or program submission; it precedes consultation with faculty councils.

Official Course Outline: A legal document used for calendar copy, articulation, and other official documentation purposes, the Official Course Outline establishes the parameters for the course syllabus that instructors develop and provide to students.

Lower-level Course: A course that is a first- or second-year course; lower-level courses are generally numbered in the 100s and 200s.

Major Course Change: A modification to a course that affects the nature or focus of a course, options for students, or budget.

Minor Course Change: A modification to a course that has no effect on the nature or focus of a course, options for students, or budget.

Program: For the purposes of this policy, "program" refers to a collection of courses and associated requirements offered as a credential or an option within a credential. This includes, but is not limited to, a certificate, diploma, minor, extended minor, major, honours, degree, specialization, option, or

concentration.

Major Program Change: A modification to a program that affects the nature or focus of the program, options for students, or budget.

Minor Program Change: Any change which is not major, as described above.

Program Budget Analysis: A summary of the budget implications of a proposed new program or revisions to an existing program. It is to be attached to all new and revised Program Proposals when the proposal is submitted to Senate and its standing committees for approval. The Budget Analysis Template is available from the Office of the Program Development Coordinator.

Program Committee: A committee created to oversee the implementation and administration of a program and its courses. A Program Committee is approved by the Dean(s).

Program Proposal: The detailed description for a new program prepared on the Template for the Development of Program Proposals.

Program Working Group: A group of people formed in consultation with the Dean(s) (or the Provost) to proceed in the development of a course or program proposal for consideration in the approval process. This group may become the **Program Committee**, which will provide oversight of the program and its courses. The final composition of the group is approved by the Dean. Guidelines for the composition of Program Working Groups are found in the program and course approval resources provided by the Office of the Program Development Coordinator.

Recommendation: Providing advice, positive or negative, to inform approval decisions by subsequent committees.

Undergraduate Course: Any course numbered below 600, including continuing studies, vocational, and developmental courses.

Undergraduate Education Committee (UEC): A Senate standing committee that provides Senate with advice on all matters related to the undergraduate educational programs of the university, including policies, practices, and criteria for admission, evaluation, and promotion of undergraduate students.

Upper-level Course: A course that is a third- or fourth-year course; upper-level courses are usually numbered in the 300s and 400s.

PROCEDURES/GUIDELINES

1. The process to approve programs and courses shall include a series of structured consultations and approvals that give the UFV community opportunity to examine a program or course in terms of the quality of the curriculum, consistency of standards, attention to student needs, and adherence to UFV's Strategic Plan, mandate, and Institutional Learning Outcomes.

2. Changes made to the procedures and guidelines of this policy require the approval of Senate.

3. A *new course* requires the approval of UEC, or Senate upon recommendation by UEC, according to the process outlined in Appendix A.

4. Course changes will be classified as either *minor* or *major*.

5. A *minor* course change is to be approved by Faculty Council and submitted to UEC as an information item and for inclusion in the Calendar. The process for making *minor* changes to an undergraduate-level course and descriptions of *minor* changes are presented in Appendix A.

6. A *major* course change requires the approval of UEC, or Senate upon recommendation by UEC, according to the process outlined in Appendix A.

7. A *new* program requires the approval of Senate according to the process outlined in Appendix B. In exceptional cases, the approval can be obtained through the expedited process outlined in

Appendix C. No proposal can be put through the expedited process more than once.

8. The process for *major* and *minor* program changes is outlined in Appendix B. *Majar* changes require the approval of Senate. *Minor* changes are approved by UEC, and sent to Senate for information.
9. The Office of the Program Development Coordinator will be responsible for developing and reviewing the program and course approval templates and guidelines in consultation with UEC. UEC will approve the templates and guidelines and any subsequent revisions.

Reference: Section 35.2 (6) (b) of the University Act

APPENDICES

APPENDIX A: UNDERGRADUATE COURSE APPROVAL PROCESS

This appendix includes

1) the process for developing and obtaining approval for a new undergraduate course;

2) the process for making *major* changes to an existing undergraduate course; and

3) the process for making *minor* changes to an existing undergraduate course.

1. Approval Process for New Courses

1.1. The process for introducing a *new* course, generally, begins with the department/school or Program Working Group or Program Committee, which develops the Course Outline and prepares a memo that outlines the rationale and any financial implications of the new course using the Memo Template.

1.2. Upon department/school or Program Working Group/Committee approval, the Course Outline and Memo are submitted to the Dean for information and to the Campus-Wide Consultation for a period of one to four weeks.

1.3. Following the Campus-Wide Consultation, the department/school or committee sends the Course Outline and Memo to Faculty Council(s) for approval. Course developers must also respond to all comments submitted during the Campus-Wide Consultation process and include this response in the submission to Faculty Council(s).

1.4. Upon approval by Faculty Council(s) and Dean(s), the Course Outline and Memo are submitted to UEC for approval, then to Senate for information if approved. If there are significant budgetary implications, the Dean(s) may submit the Course Outline and Memo to the Budget Committee for review and recommendation to Senate. In such case, UEC will recommend its decision to Senate rather than approve the Course Outline.

1.5. Upon UEC or Senate approval, the UEC Assistant makes all necessary calendar changes and posts the new Course Outline on the web.

2. Approval Process for Major Changes to an Existing Course

The following are considered to be *major* course changes:

- a change for which new resources are required to deliver the course
- course deletions
- a change to a course title that reflects a change in the nature or focus of the course
- changes to the calendar description of a course that reflect a change in the nature or focus of the course
- changes that move a lower-level course to an upper-level course and vice versa
- change to the total number of credits for a course
- change to the hours assigned to components (e.g., total student contact hours, lecture hours, seminar hours) and/or length of a course
- change to the prerequisites or co-requisites for a course that restricts options for students or affects the students or programs of other academic units
- changes to learning outcomes that change the nature or focus of the course
- changes to the course content that change the nature or focus of the course
- change in the maximum enrolment for a course if it affects the quota for an educational

program within the academic unit or students or programs of other academic units

- changing or adding a delivery method for a course when the extra cost of the added delivery method will not be absorbed by the academic unit delivering the course
- changes that affect the students or programs of other academic units

2.1. The process for making *major* changes to an existing course, generally, begins with the department/school, Program Working Group, or Program Committee, which revises the Course Outline and prepares a memo that outlines the rationale and any financial implications of the course changes using the Memo Template. If there is no department/school responsible for the course, a committee representing the relevant discipline(s) will be struck.

2.2. Upon department/school or Program Working Group/Committee approval, the Course Outline and Memo are submitted to the Dean(s) for information and to the Campus-Wide Consultation for a period of one to four weeks.

2.3. Following the Campus-Wide Consultation, the department/school or committee sends the Course Outline and Memo to Faculty Council(s) for approval. Course developers must also respond to all comments submitted during the Campus-Wide Consultation process and include this response in the submission to Faculty Council(s).

2.4. Upon approval by Faculty Council(s) and Dean(s), the Course Outline and Memo are submitted to UEC for approval, then to Senate for information if approved. If there are significant budgetary implications, the Dean(s) may submit the Course Outline and Memo to the Budget Committee for review and recommendation to Senate. In such case, UEC will recommend its decision to Senate rather than approve the Course Outline.

2.5. Upon UEC or Senate approval, the UEC Assistant makes all necessary calendar changes and posts the revised Course Outline on the web.

3. Approval Process for Minor Changes to an Existing Course

The following are considered to be *minor* course changes:

- a change to an existing course that has no impact on programs or students of other academic units
- a change for which all associated costs will be covered by the academic unit
- a change to a course title for the purpose of correction or clarification
- change(s) to the calendar description of a course for the purpose of correction or clarification
- change of a course level from 1st to 2nd year (or 2nd to 1st year) and from 3rd to 4th year (or 4th to 3rd)
- change to the prerequisites or co-requisites for a course that expands options for students
- change to the frequency of a course offering
- changes to learning outcomes that do not change the nature or focus of the course
- changes in course content that do not change the nature or focus of the course
- changing or adding a delivery method for a course that does not affect the cost of delivering the course

3.1. The process for making minor changes to an existing course, generally, begins with the department/school or Program Committee, which revises the Course Outline and prepares a memo that outlines the rationale and any financial implications of the course changes using

the Memo Template.

3.2. Upon department/school or Program Committee approval, the Course Outline and Memo are submitted to the Dean(s) for information and to Faculty Council(s) for approval.

3.3. Upon approval by Faculty Council(s) and Dean(s), the revised Course Outline and Memo are submitted to the UEC Assistant who will make all necessary calendar changes, post the revised Course Outline on the web, and forward the changes as information items to Senate and standing committees as required.

APPENDIX B: UNDERGRADUATE PROGRAM APPROVAL PROCESS

This appendix includes

1) the process for developing and obtaining approval for a new undergraduate program;

2) the process for making *major* changes to an existing undergraduate program; and

3) the process for making *minor* changes to an existing undergraduate program.

1. Approval Process for New Programs

1.1. The process for introducing a new program, generally, begins when a Program Working Group presents its notice of intent to develop the program to the Dean(s) of the appropriate academic unit(s).

1.2. In the event that an appropriate Program Working Group does not exist and/or to ensure faculty representation on the Program Working Group, the Dean(s) will strike a Program Working Group. A Program Working Group must consist of a minimum of three people with teaching or research expertise in the subject area. If a new program is entirely discipline-based, at least one additional member from another discipline with teaching or research expertise in the subject area or related area should be added. The composition of a Program Working Group must be approved by the Dean before it submits any proposals to any approval body.

1.3. With the assistance of the Program Development Coordinator and in consultation with appropriate academic units and Dean(s), the Program Working Group will develop a Concept Paper.

1.4. The Concept Paper is presented to Faculty Council(s) for discussion.

1.5. After discussion at Faculty Council(s), the Concept Paper is presented to the Dean(s) for review and approval. In the case of a multi-disciplinary program involving more than one Faculty, approval is required from the Dean(s) who will have administrative responsibility for the program. If the Dean(s) do(es) not recommend approval, that decision can be appealed to the Provost or Vice-Provost.

1.6. Upon approval by the Dean(s), the program proposed in the Concept Paper is included in the Faculty's (or Faculties') submission to the Education Plan. Only upon inclusion of the program concept in the Education Plan, as approved by the Board, should a Program Working Group proceed with developing the Program Proposal.

1.7. The Program Proposal and draft calendar copy are submitted on the appropriate template to the Campus-Wide Consultation, including the Dean(s), for a minimum of four weeks. Developers must respond to all comments submitted during the Campus-Wide Consultation process and include this response in the submission to Faculty Council(s).

1.8. Upon completion of the Campus-Wide Consultation, the Program Working Group submits the Program Proposal, accompanied by responses to comments submitted during Campus-Wide Consultation, to the appropriate Faculty Council(s) for approval. For multi-disciplinary programs, the proposal is submitted to the Faculty(ies) that will have administrative responsibility for the program.

1.9. Upon approval of the program by the Faculty Council(s), it is forwarded to the Dean(s) for approval.

1.10. Upon approval by the Dean(s), the development of the program budget is overseen by the Dean(s) and the Program Development Coordinator.

1.11. The Program Proposal and responses to comments submitted in the Campus-Wide Consultation are submitted to UEC for review and recommendation to APPC. Simultaneously, the Program Budget is sent to the Senate Budget Committee for review and recommendation to APPC.

1.12. APPC will review the recommendations from UEC and the Budget Committee, determine if the proposed program is in line with UFV's institutional priorities, and make its recommendation to Senate. Programs will be prioritized by the Academic Planning and Priorities Committee.

1.13. Upon Senate approval, the Program Proposal is sent to the Program Development Coordinator for review and submission through the Office of the Provost and Vice-President, Academic to external agencies (e.g., Ministry or accreditation bodies) for approval. Normally, only proposals that are included in the Education Plan's implementation list are sent for external approval.

2. Approval Process for Major Changes to an Existing Program

The following are considered to be *major* program changes:

- any program revision that requires new resources beyond those provided by the academic units responsible for the program
- new fields of specialization, such as a concentration
- change to the duration, philosophy or direction of a program
- change to the majority of courses in an approved program
- change in requirements for admission, residency, or continuance
- change in admission quotas
- change which triggers an external review

2.1 The process for changing a program, generally, begins with the relevant academic unit or Program Committee, in consultation with the Dean(s) responsible. The changes and the rationale for the changes are outlined. NOTE: If the program changes require the approval of the Ministry, a full Program Proposal must be prepared and go through the process outlined for new programs.

2.2. Upon approval by the department/school or Program Committee, the proposed changes and rationale are submitted to the Campus-Wide Consultation, including the Dean(s), for a minimum of four weeks. Developers must respond to all comments submitted during the Campus-Wide Consultation process and include this response in the submission to Faculty

Council(s) and UEC.

2.3. After Campus-Wide Consultation, the revised program, accompanied by responses to comments submitted in the Campus-Wide Consultation, is submitted for approval to the appropriate Faculty Council(s).

2.4. Upon approval of the program change by the Faculty Council(s), it is forwarded to the Dean(s) for approval.

2.5. Upon approval by the Dean(s), the development of the program budget is overseen by the Dean(s) and the Program Development Coordinator.

2.6. The program change and responses to comments submitted in the Campus-Wide Consultation are submitted to UEC for review and recommendation to APPC. Simultaneously, the program change budget is sent to the Senate Budget Committee for review and recommendation to APPC.

2.7. APPC will receive the recommendations from UEC and the Budget Committee, review them as deemed appropriate, and make its recommendation to Senate.

3. Approval Process for Minor Changes to an Existing Program

The following are considered to be *minor* program changes:

- any change which is not major, as described above
- addition of new course options, where the new options have no budgetary implications
- deletion or substitution of a required course

3.1. The process for changing a program, generally, begins with the relevant academic unit or Program Committee, in consultation with the Dean(s) responsible. The changes and the rationale for the changes are outlined.

3.2. Upon approval by the department/school or Program Committee, minor changes are submitted to the Campus-Wide Consultation for a period of one to four weeks. Developers must respond to all comments submitted during the Campus-Wide Consultation process and include this response in the submission to Faculty Council(s) and UEC.

3.3. After Campus-Wide Consultation, the revised program, accompanied by responses to comments submitted in the Campus-Wide Consultation, is submitted for approval to the appropriate Faculty Council(s).

3.4. Upon approval of the program change by the Faculty Council(s), it is forwarded to the Dean(s) for approval, then to UEC.

3.5. Changes deemed to be minor are approved by UEC, and sent to Senate for information.

APPENDIX C: EXPEDITED UNDERGRADUATE PROGRAM APPROVAL PROCESS

This appendix includes

1) The criteria for applying the expedited program approval process;
2) The screening process and the composition of the Program Screening Committee;
3) The expedited process for developing and obtaining approval for a new undergraduate program.

1. Criteria for applying the expedited program approval process

1.1 The expedited program approval process may be requested for a new undergraduate program if at least one of the following circumstances applies:

a. There is funding available from an external source, with time constraints.

b. There is a sudden emergent need in the community for a narrow, focused theme, and there is a funding source.

c. There is a request for a partnership with a time constraint, and there is a funding source.

d. There is a clearly demonstrable opportunity for revenue generation to meet a specific demand, with time constraints.

e. There is an opportunity for capital or infrastructure injection, with time constraints.

In addition,

1.2. The program must be sustainable.

1.3. The program must be consistent with the strategic goals of UFV.

1.4. The program must be consistent with program priorities of UFV.

1.5. There are minimal adverse implications for other faculties, programs, and services.

2. Screening process and composition of the Program Screening Subcommittee

2.1. Every year, the Academic Planning and Priorities Committee will create its Program Screening Subcommittee (PSS) for a one-year term. The subcommittee will be composed of the Chair or Vice-Chair of the Academic Planning and Priorities Committee, the Chair or Vice-Chair of the Senate Budget Committee, the Chair or Vice-Chair of the Undergraduate Education Committee, and the Chair or Vice-Chair of the Graduate Studies Committee. Three members of PSS will constitute the quorum.

2.2. If in the Dean's opinion there is a need for expedited consideration of a program proposal, and under the assumption that the criteria outlined above are met, PSS will receive the Dean's request to expedite consideration of a program proposal and within 1-2 weeks will make one of the following three recommendations:

a. To expedite consideration of the proposal and proceed as described below.

b. To skip the step requiring the concept paper's inclusion in the Education Plan ~~step~~ and proceed directly to the regular full proposal phase as described in Appendix B.

c. To follow the regular program approval process as described in Appendix B.

2.3 If not satisfied with PSS's recommendation, the Dean can appeal the decision to the Academic Planning and Priorities Committee, whose decision on that matter is final.

3. Expedited Program Approval Process

3.1. The process begins when the Dean appoints the Program Working Group. In consultation with the Dean and the Program Development Coordinator, the Program Working Group develops a Concept Paper. The Dean then submits a request for expedited consideration of the program proposal to PSS. The request must clearly state how the criteria are met and must be accompanied by the Concept Paper and Statement of Budget Implications.

3.2. PSS considers the request and makes a recommendation within 1-2 weeks.

3.3. If the decision of PSS is to expedite program consideration, then the Concept Paper and Statement of Budget Implications are presented simultaneously and independently to the Faculty Council(s), Academic Planning and Priorities Committee, Undergraduate Education Committee, and Senate Budget Committee for approval of the program for the expedited process. If any of these committees objects to the expedited consideration of the proposal, the full proposal will be approved in a regular process as described in Appendix B.

3.4. In the case of approval for expedited consideration, each of these committees provides its feedback to the Program Working Group and appoints two representatives to the eight-member ad hoc Program Evaluation Committee (PEC). The PEC should be ready to receive the full proposal by the end of the sixth week after the Dean's submission of the request for expedited consideration.

3.5. At the same time (within weeks 3-6), the Concept Paper and Statement of Budget Implications are presented to the Deans' Council for consultation.

3.6. The Program Working Group incorporates the feedback from Deans' Council and the Program Development Coordinator into the Full Program Proposal, and the Dean submits the Full Proposal to PEC.

3.7. PEC makes its recommendation to Senate.

3.8. Upon Senate approval, if necessary, the Program Proposal is sent to the Program Development Coordinator for review and submission through the Office of the Provost and Vice- President, Academic to external agencies (e.g., Ministry or accreditation bodies) for approval.

UNIVERSITY OF THE FRASER VALLEY

UEC MEMORANDUM

UEC Chair: Samantha Pattridge
Phone: 4177

UEC Assistant: Ashley Hoogendoorn
Phone: 4571

TO: UEC members

FROM: Samantha Pattridge, Undergraduate Education Committee Chair

DATE: October 24, 2013

RE: Motion of support for Screening Subcommittee

Recently, I attended the Senior Academic Administrator's Forum at Langara College with Sylvie Murray, our Program Development Coordinator, and Peter Geller, our Vice Provost and AVP Academic. At this session, people involved in curricular approval from various institutions across BC discussed their processes and concerns.

We learned at this meeting that Thompson Rivers University, upon whose governance system ours is modeled, has implemented a Submission Preview Subcommittee. All curricular changes and additions/deletions are submitted to this committee after Faculty Council and before going to the Educational Programs Committee (their equivalent to our UEC). The purpose of this committee is to "review all proposals for clarity and completeness and determine whether they are consistent with current academic policies and practices." This committee also determines whether a change is minor or major.

The benefit to implementing such a committee is that proposals that come to UEC will have been screened for completeness, for adherence to policy and procedures, and for any implementation problems (such as Banner issues, for instance). UEC will then be able to focus more fully on curricular matters. Furthermore, many of the issues that have been dealt with at CWC in the past would be handled by this new committee, meaning that CWC could be moved to occur *after* the screening committee. CWC will then provide an opportunity for areas outside the proponent's faculty to raise concerns about proposals before UEC. Hopefully, this change would reduce the workload associated with and improve participation in CWC.

After discussing this idea with the Program Development Office, the Registrar's Office, and the Vice-Provost and AVP Academic, I would like to see if UEC would support the implementation of a UEC subcommittee to screen submissions. If we move to support the creation of such a committee, proposed terms of reference and membership will be circulated at the November UEC meeting for discussion and vote.

MOTION:

To support the creation of Terms of Reference and membership criteria for a proposed new screening subcommittee of UEC, to be discussed at the November meeting.

UNIVERSITY OF THE FRASER VALLEY

UEC MEMORANDUM

UEC Chair: Samantha Pattridge
Phone: 4177

UEC Assistant: Ashley Hoogendoorn
Phone: 4571

TO: UEC members

FROM: Samantha Pattridge, Undergraduate Education Committee Chair

DATE: October 24, 2013

RE: Motion of support for Co-Chair proposal

The role of UEC Chair is a complex one, in that the UEC Chair is called upon to make decisions about curriculum matters and about policy and the nature of changes. It takes several years on UEC to become familiar with the institutional processes and policies in order to be effective as chair.

I would like to know if UEC would support a recommendation to change the Terms of Reference to include co-chairs of UEC. We are not asking for a vote or full discussion today, only for a motion of support, with a full discussion and decision to occur in November.

The Co-Chairs would be a faculty member (as the current terms of reference state) and the Registrar or designate. This move would ensure the committee has the continuity it needs and is well represented with voices from both the Registrar's Office and faculty. It would also allow for distribution of the work of UEC, such that the Registrar's office could focus on the policy and procedural issues that arise and the faculty member could focus more on curriculum matters.

MOTION:

To support a recommendation to change the Terms of Reference to include co-chairs of UEC.

Report of the UEC Transfer Credit Subcommittee (TCS)
September 2013

Decision approved by the committee (approved by email vote):

Effective Term	**Precedent setting until**	**Institution Name: Life Chiropractic College West** **Location: Hawyard, California** **Recommended by: Allan Arndt** **Date of Approval: October 17, 2013**		**UFV Equivalent**	
		Course Name/Number or Program Name	**Qualifiers** (e.g. min. grade or GPA)	**Subject Code & Number** (e.g. CRIM 1XX)	**Credits**
		Anat 114 44 hrs neuroanatomy	C	Bio 3xx	11
		Anat 125 33 hrs embryology			
		Anat 610 20 hrs histology			
		Chem 121 55 hrs biochemistry			
		Path 632 22 hrs microbiology			

Recommendation rationale

These courses constitute a block of courses similar but not identical to a variety of upper level courses offered by UFV. For example, we offer a similar but not identical bio 385 neuroanatomy. Their credits are given on the basis of an 11 hour unit. I therefore adjusted credit given to reflect our 15 hour per credit ratio, resulting in 11 credits being given. The student is requesting this transfer in order to fulfill graduation requirements for the Bachelor of Kinesiology. Out of his entire first year Chiropractic program, these courses were selected to represent advanced studies with minimal overlap with any Kinesiology course. This recommendation has the support of both the Biology and Kinesiology departments.

Non-precedent-setting rationale

This a special block of courses chosen from the LCCW program to represent the 9 credits required by kinesiology majors outside their major. These courses were chosen so as to have minimal overlap with Kinesiology courses. We would prefer to consider such requests on a case by case basis.

Report of the UEC Transfer Credit Subcommittee (TCS)
September 2013

Decision approved by the committee (approved by email vote):

Effective Term	**Precedent setting until**	**Institution Name: Transport Canada** **Location: Canada Wide** **Recommended by: Jacenta Ramdial** **Date of Approval: October 17, 2013**		**UFV Equivalent**	
		Course Name/Number or Program Name	**Qualifiers** (e.g. min. grade or GPA)	**Subject Code & Number** (e.g. CRIM 1XX)	**Credits**
Spring 2013	Spring 2018	Private Pilot Licence	Valid PPL Licence	AV161, AV162	4

Recommendation rationale

A valid Private Pilot licence issued by Transport Canada is equivalent to AV 161 & AV 162 and students should receive full credit for these two courses.

The standards required to achieve this licence including the knowledge, ground school hours, written exam (PPAER), minimum flight requirements, and flight test are all identical to those required to complete AV161 & AV162.

UNIVERSITY OF THE FRASER VALLEY

UNDERGRADUATE EDUCATION COMMITTEE MEMBERSHIP 2013/14

AREA REPRESENTED	Terms of Office	MEMBER
Voting Members		
9 faculty members approved by Senate, at least 2 from Senate		
Faculty member of Senate	08-01-2012 to 07-31-2015	Maria Bos-Chan, Faculty of Access and Open Studies
Faculty member of Senate	08-01-2012 to 07-31-2015	Steven Marsh, Faculty of Social Sciences
Faculty	08-01-2012 to 07-31-2014	Les Stagg, Faculty of Professional Studies
Faculty	08-01-2012 to 07-31-2014	Judy Larsen, Faculty of Access & Open Studies
Faculty	08-01-2012 to 07-31-2014	Samantha Pattridge, Faculty of Humanities (Chair)
Faculty	08-01-2012 to 07-31-2014	Eric Spalding, faculty of Social Sciences
Faculty	08-01-2012 to 07-31-2014	Stan Manu, Faculty of Science
Faculty	08-01-2012 to 07-31-2014	Rod McLeod, Faculty of Trades & Technology
Faculty	08-01-2012 to 07-31-2014	Nancy Goad, Faculty of Health Sciences
Two deans or associate deans, approved by Senate	08-01-2012 to 07-31-2014	Susan Fisher, Associate Dean, Students, College of Arts
	08-01-2012 to 07-31-2015	Sue Brigden, Faculty of Access & Open Studies
One academic advisor	08-01-2012 to 07-31-2014	Rhonda Colwell
One staff member, approved by Senate	08-01-2012 to 07-31-2014	Simon Xi
2 undergraduate student, approved by Senate	08-01-2012 to 07-31-2014	Jenna White
	08-01-2012 to 07-31-2014	Anthony Iliev
University Librarian (or designated librarian) (ex officio)	On-going	Heather Compeau (designate)
Ex-Officio Non-Voting Member		
Provost & Vice-President, Academic (or designate)	On-going	John English (designate)
Associate Vice-President, Research & Graduate Studies (or designate)	On-going	Satwinder Bains (designate)
Executive Director, International Education	On-going	David McGuire
Senior Advisor on Indigenous Affairs	On-going	Shirley Hardman
Director, Enrolment Management	On-going	Jeff Lee (Donna Alary - Ed leave)
Director, Institutional Research	On-going	Vladimir Dvoracek
Director, Teaching and Learning	On-going	Wendy Burton
University Secretary & Registrar (or designate)	On-going	Al Wiseman/Darren Francis
Administrative Support		
Office of the University Secretariat		Ashley Hoogendoorn

CURRENT MEMBERSHIP: 24 members - 17 voting members and 7 non-voting member.

Quorum: Shall be a minimum of fifty percent (50%) of voting membership

Students and Community: An Update to the UFV Education Plan

October 2013

Submitted by:
Eric Davis, Provost and Vice-President, Academic

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Students and Community: An Update to the UFV Education Plan

What should our students learn? What have they learned by the time they graduate? How do we know what they've learned? Who are our students? Which should we recruit? How do we ensure their success? Which programs do they need and want? How many should we serve? How many students should be in each program? Education planning should begin with these questions and strive to answer as much of them as possible. Like virtually all other Canadian universities, we can answer some, but not all of these questions (and some of the answers are necessarily debatable). Our Learning Outcomes Project enables us to provide answers to the first three questions. Our Office of Institutional Research and Integrated Planning can answer the fourth. Strategic Enrolment Management, a priority for the current academic year, will provide answers to the numbers questions.

Many answers can be found in the *Appendices*, principally in the Deans' *Updates* of the incredible progress their Faculties have made in realizing most of the thirteen Strategic Priorities first developed in the 2009-2011 Education Plan. This year's *Education Plan Update* will outline the contextual factors shaping educational planning, identify post-secondary trends that are having or may have a significant impact on UFV, highlight necessary revisions to our Strategic Priorities, and reaffirm some of our most crucial commitments.

The Political Context

One could sum up the current message from government as follows: do more with less funding and more accountability. Tuition remains capped at about 2% annual increases and $45 million will be cut from advanced education over the next two years. Beyond these realities, one can generate a list of government concerns and AVED priorities that will shape education planning at all postsecondary institutions in British Columbia from a review of provincial planning, budget, and other government documents (*Ministry of Advanced Education Revised 2013/14 – 2015/16 Service Plan*, *Canada Starts Here: The BC Jobs Plan***,** the Premier's *Letter of Expectations* to each Minister, among many):

- A predicted skills shortage (one million job openings by 2020);
- Trades training for high school graduates and upgrading for older workers;
- Align postsecondary education with regional and industry needs and labour market demands;
- Partner with industry;
- Cost containment and fiscal discipline;
- "Increase collaboration, innovation, and partnerships" (*Service Plan* 12*)*;
- Flexibility: "Our [postsecondary] system must . . . be flexible. It must allow students to transfer between institutions and programs, as their educational needs evolve" (*Service Plan* 9);

- Improve and simplify transition from K-12 to post-secondary;
- Quality assurance and accountability, with a focus on learning outcomes;
- Increase participation in postsecondary education;
- Improve completion rates, with a focus on skills acquisition and learning and employment outcomes;
- Demographics and diversity: a focus on international and Aboriginal students.

This last priority is related to the presumed shrinking labour force and growing skills gap, because both immigrants and Aboriginal youth are the only growing populations in the province: "Aboriginal youth are the fastest-growing demographic in B.C. and we [the Province] have developed an education strategy to improve access and educational outcomes for Aboriginal learners" (*Service Plan* 12). As mentioned in last year's *Update*, this strategy is outlined in the Ministry of Advanced Education's *Aboriginal Post-Secondary Education and Training Policy Framework and Action Plan: 2020 Vision for the Future*. This document, referenced repeatedly in current Ministry documents, includes the aim of integrating Aboriginal languages, culture, and ways of knowing into our curricula and ensuring Aboriginal voice and vision in our governance system.

In addition, the Premier's *Letter of Expectations* to the new Minister of Advanced Education, Amrik Virk, requires all post-secondary "Boards to undertake an institution-wide core review of their programming to ensure student seats are being filled." Moreover, in the only reference to a specific university in all the ministry mandate letters, the Premier asks the Minister "to ensure that a Centre of Excellence in Agriculture is established at the University of the Fraser Valley (http://www.gov.bc.ca/premier/cabinet_ministers/amrik_virk_mandate_letter.pdf). Both requirements will have a profound impact on our Strategic Priorities, program planning/mix/prioritization, and enrolment management.

The Economic Context: Fiscal "Crisis" and "Unsustainability"?

Over the past few years, in a proliferation of books, articles, and pronouncements, economists and education scholars studying higher education have spoken of the "fiscal crisis in higher education" and "the broken business model" and "unsustainability" of the traditional university. "As many as a thousand colleges [in the U.S.] are at risk of closing or merging in the decade ahead because of poor finances," writes one editor at *The Chronicle of Higher Education*.[1]

For some, this is all too apocalyptic and some of the direst claims have not been properly substantiated, but the fiscal challenges of higher education are a national and international phenomenon.[2] Universities

[1] Jeffrey J. Selingo, *College (Un)Bound: The Future of Higher Education and What it Means for Students* (New York: Houghton, Mifflin, Harcourt, 2013)., xiv.

[2] Given the budgets brought in by governments, universities, and colleges across Canada this spring, the shockingly high number of layoffs and program closures they occasioned, and the widely publicized deficits and shortfalls—sometimes in the 40 to 50 million dollar range—many universities are wrestling with, one certainly cannot be complacent about our fiscal challenges.

and colleges throughout North America and around the world are closing programs and laying off employees. "The broken business model of higher education" has been the central topic at national conferences of Provosts and Vice-President, Academics in the U.S. and Canada. Budget challenges at any single post-secondary institution need to be seen in this broader context, even if there is disagreement on the precise nature of this context.

One widely cited analysis of this context is a report on Australian universities by the Ernst & Young accounting firm. *University of the Future: A thousand year old industry on the cusp of profound change*, was released in late October, 2012 and received a lot of international attention because its analysis can readily be applied to universities in much of the world. The argument of the report "is that the dominant university model in Australia — a broad-based teaching and research institution, supported by a large asset base and a large, predominantly in-house back office — will prove unviable in all but a few cases over the next 10-15 years." It identifies "5 key drivers of change" that will require a profound revision of the university business model if this institution is to survive:

1. Democratisation of knowledge and access —

"Now knowledge is open to anyone globally with a device and connectivity — not just facts and figures, but also analysis, interpretation, and curation of knowledge." The result, they claim, will be an unprecedented "education revolution" involving both new competition and new opportunities.

2. Contestability of markets and funding —

"Universities . . . will need to prepare for an environment where every dollar of government funding is contestable and any growth in funding comes from non-government sources — students, industry, philanthropists, and global collaborations — that are all fiercely competitive."

3. Digital technologies —

These technologies have transformed many aspects of our economy and culture and "higher education is next." How universities deliver education and people access it will change dramatically, as will what universities "sell" and how they "sell" it.

4. Global mobility —

"Global mobility will grow for students, academics, and university brands," thanks to MOOCs (Massive Open Online Courses) offered by the likes of Harvard and MIT, the proliferation of international branch campuses (200 as of November 2012), and competition from emerging markets (e.g., China). "The likely outcome over the next 10-15 years is the emergence of a small number of elite, truly global university 'brands'."

5. Integration with industry —

In the next decade, the significance of industry as customer, partner (and funder of research), and increasingly, competitor "in the certification and delivery of content," will grow.

In the literature of post-secondary apocalypse, "5" seems to be a popular figure. In North America, a far more popular source (the author is appearing on television talk shows) is College (Un)Bound: The Future of Higher Education and What it Means for Students, by Jeffrey J. Selingo. Though plagued by contradictory arguments and, at times, an absence of evidence, the book names "Five Disruptive Forces that Will Change Higher Education Forever," and UFV and other post-secondary institutions need to pay attention to them:

1. **A Sea of Red Ink** (university/college deficits and debt);
2. **The Disappearing State in Public Higher Education** (the steady decline in government funding);
3. **The Well of Full-Paying Students is Running Dry** (declining student populations, increased competition for them, and falling household income and the growing unaffordability of higher education);
4. **The Unbundled Alternatives are Improving** (private providers of learning, credentials—including "Badges"—and services, from residence management to advising and counseling; free providers of learning like the Khan Academy);
5. **The Growing Value Gap** (witness the proliferation of publications—and prospective students—questioning the "value" of a degree).

Selingo's book concludes with a primer of advice for prospective college and university students. In "Checklist for the Future," he includes the following tips:

- Calculate the Return on Investment;
- How Tech-Savvy is the College?;
- Find Out if the College Prepares Students for Their Fifth Job, Not Just the First;
- Study the Financial Aid Office Closely [What is the average debt-load of grads?] (208-11.)

Even without Selingo's advice, and similar recommendations from economists and journalists, parents and prospective students are asking questions about these things. Part of UFV's response to our economic context and challenges must be to prepare a response to these questions, especially the one about "return on investment."

Though arguably the wrong question to ask of higher learning, we need to be prepared with an answer to the question, *what is the return on investment if I (or my child) attends UFV?* If we accept the terms of the question, and arguably we should not, we can point to AUCC studies on lifetime earnings of university graduates versus those without higher education, or to provincial outcomes surveys that show a 90+ percentage of grads with employment and an even higher satisfaction rating

for their post-secondary education. But if we practise the empathy we say we teach, then perhaps this is an unsatisfactory answer for prospective students who understandably fear that by investing in university education they will be overwhelmed with debt and "delaying . . . life decisions such as getting married or buying a home" (Selingo 70). The choice between entering the work force immediately after graduation from high school or attending a post-secondary institution is particularly stark when your former classmate, upon graduation, left for the oilfields of Alberta and now, at the mere age of twenty-five, owns their own home in Chilliwack (a real-life example).

In defining the "UFV advantage," therefore, we need to think about more specific reasons why attending our institution is worthwhile, some, but not all, of which will be economic.

One key statement in the Ernst & Young report is worth quoting. After outlining a number of strategies universities can use to navigate their way through the crisis, the report states: "Regardless of the path chosen, universities will need to align new directions to their institution's core purpose and values." This is advice we should never forget; our success depends on it. Hence, when wrestling with the "5 key drivers of change," we must stay clear about what our core purpose and values are, which can be summed up in the titles of our Education Plan (*Students and Community*) or our Strategic Directions Statement (*Changing Lives, Building Community*). If we begin with these premises, we should be able to articulate convincing reasons why our students and communities should invest in UFV.

Enrollments and Tuition

Another aspect of the fiscal challenge is that growth in enrollments has led to "an unprecedented jump in tuition dependence." Measuring tuition as a percentage of operating revenue by province in Canada reveals that British Columbia ranks third, behind Ontario and Nova Scotia. In 1979, tuition represented 10% of operating revenue in B.C. In 2009, it was up to 40%. This raises questions about the sustainability of traditional revenue-generating strategies. These questions, combined with the decline in high school graduates in the U.S. and the growing pressures on family finances, led Moody's Investors Service to downgrade the entire Higher Education sector:

> For 2012, Moody's revises its outlook for the entire US higher education sector to negative. . . The new sector-wide negative outlook reflects mounting pressure on all key university revenue sources. . . The sector will need to adjust to the prospect of prolonged muted revenue growth.[3]

The cap on tuition increases in B.C. exacerbates this problem.

Related to these issues is the reality that the numbers of traditional university students are expected to decline in relation to the numbers of non-traditional and, therefore, often less well prepared students.

[3] *A Business Model Under Threat*, presentation at the Provost Roundtable of the Education Advisory Board, June 24, 2013.

Retention Initiatives and Building "Pathways" for New Student Populations

The demographic changes just discussed leave institutions like UFV with the profound challenge of relying on relatively low tuition rates for a high needs student population. The more high school graduates are replaced by non-traditional students (though, at most places, the high school graduate will remain the core of the undergraduate population), the greater will be the need to invest in various student support/success initiatives. Even including our high school graduates, at least 50% of our students are first-generation university students. The typical Fraser Valley student may be less costly to recruit, but more costly to retain.

In response to these challenges, the Education Advisory Board (EAB) recommends diversifying your student base and focusing on new populations. These include "low-income, high-ability" students, international English-language learners, college transfer students, and adult degree completers. To help ensure their success, it is recommended that institutions build "pathways" to recruit, support, and successfully graduate these students. "Pathways" facilitate a student's progression from entry to graduation. Institutions might provide summer bridging programs for low income, high ability students; an ESL pathway for English language learners; a smooth transition into third year courses for transfer students, which involves removing hurdles like prerequisites and late order of registration dates; using Prior Learning Assessment and Recognition (PLAR) to recognize the work and life experience of adult degree completers; this, in turn, is facilitated by having competency-based learning measures, something we are well on the way to establishing through our learning outcomes initiative.

The Integration of Learning and Work: PLAR, Co-op, Practicum Placements, Internships, and the Co-curricular Transcript

"The critical task for administrators," advises the EAB, "is to build a portfolio of programs that can share resources while appealing to a broad range of students and allowing them to meet a range of personal and career goals" (*Future Students, Future Revenues*). One critical task for UFV, given the growing numbers of working adults returning to school, is to make our institution the go-to one for those seeking or needing PLAR. We need to provide an efficient assessment of prior learning for all of our students, but particularly for adult students, for whom it is critical to their success.

This is one half of the learning and work connection. The other half involves continuing to make work experience a part of the curriculum.[4] It is essential that we ramp up Co-op Education for as many programs as possible. This is in addition to the number of courses and programs in which practicum placements and regional and international internships are integrated.

[4] See *The Globe and Mail* feature, "Work experience: Should it be part of the curriculum?", May 18, 2013.

Another way to integrate work and learning is through our Co-curricular Transcript. This gives credit for student learning beyond the classroom, and much of this learning takes place in on-campus work experiences.

The Completion Agenda

A greater percentage of the workforce is now expected to hold degrees, but the supply of degree holders is not keeping up with the growing demand. This economic problem is driving the "completion agenda." In the U.S., the federal and state governments are increasingly scrutinising the completion rates of post-secondary institutions and in some cases (e.g., Missouri, Kentucky, Indiana, Ohio, Washington, and Tennessee) shifting to performance-based funding. "A growing number of state governments are shifting allocations to reward those universities making measurable improvements."[5] New Zealand has already shifted from funding post-secondary institutions based on FTEs to funding based on completion rates. Whatever the educational dangers of this shift, it is an international phenomenon and the B.C. government publications show that it has already arrived here. The Premier's Letter of Expectations to the Minister of Advanced Education (June 10) asks the Minister, "in concert with the Boards of B.C.'s colleges and universities," to "set targets for post-secondary graduates that will enable our province to match the skills we need with the skills we are graduating." Similarly, AVED's *Revised 2013/14 to 2015/16 Service Plan* states that a core objective is to "increase participation and successful completion of all students."

It is not just governments who are concerned with completion rates and the reduction in average "time-to-degree."

> Students and families are beginning to consider factors such as time-to-degree and average debt load when they compare college costs, asking more pointed questions about completion rates, alumni involvement, and internships [and employment prospects] when they visit prospective campuses.

Hence, poor outcomes for the number of students completing programs and the time it takes them to do so may not just put our government funding at risk; it also might put tuition dollars at risk if we can't compete well on those measures with other institutions. "Graduating more students faster, and placing them in degree-worthy jobs, will be a critical competitive advantage for higher education institutions in the future."[6]

The EAB argues that research demonstrates a connection between reduced time to degree and improved graduation rates, on the one hand, and student success on the other.

> The longer students remain in school, the less likely they are to finish. Universities should aspire to graduate students in four years, not five or six. Council research shows that success rates

[5] *Hardwiring Student Success: Building Disciplines for Retention and Timely Graduation* (EAB 2009).
[6] *Next Generation Advising*, (EAB 2012), x.

> improve when students are shown a clear path to timely degree completion and given assistance with avoiding graduation obstacles.[7]

Hence the growing focus on degree or completion "pathways" for different kinds of students and the demand by governments that institutions reduce "the frequency of preventable graduation delays" (xiv) and bottlenecks caused by unnecessary prerequisites and requirements and timetables that do not permit smooth and timely graduation.

What factors might cause delays in student progress and, therefore, a less competitive status for UFV? "Many institutions offer a staggering array of courses and majors with complicated prerequisites and degree paths." That this description might apply to us is suggested by the fact that too many of our students complete their degrees with far more than 120 credits.

The research on best practices suggests there may be a number of ways to address these issues:

- Create multiple pathways for students to complete their programs and achieve their goals;
- Ensure flexibility and erosion of barriers into and between programs, disciplines, and Faculties;
- Have departments create "Degree Maps" with mandatory milestones that provide students with clear semester-by-semester guides to degree completion;
- "Reduce non-essential credits to improve time-to-degree while freeing up instructional capacity" (EAB);
- Create pre-major "exploratory clusters."

Such clusters "share a set of common prerequisite courses [and] make it possible for students to explore the curriculum without risking graduation delays, as any course within a track will count toward degree requirements for a host of affiliated majors."[8]

The focus on completion rates and time-to-degree and the shift to performance- or outcomes-based funding, some say, heralds shifts from credits earned and credit hours completed to learning outcomes and competencies demonstrated.[9] These shifts follow the general direction of the learning outcomes movement, a pedagogical movement that sought "to transform undergraduate education from a focus on faculty teaching to an emphasis on student learning."[10]

Seamless Transfer

Improving completion rates is related to the goal of improving student mobility between institutions. The EAB identifies transfer students as a growing and promising market, and BCCAT research supports this. Roughly 56,000 students transferred between institutions in BC in 2010-11, up from about 49,000

[7] *Hardwiring Student Success: Building Disciplines for Retention and Timely Graduation* (EAB 2009), xi.
[8] *Next Generation Advising*, xiv.
[9] Selingo, *College (Un)Bound*.
[10] Richard Arum and Josipa Roksa, *Academically Adrift: Limited Learning on College Campuses* (Chicago: University of Chicago Press, 2011).

in 2005-06. And the transfers have become multi-directional; students no longer just transfer to research universities as all institutions have become receiving and sending ones. Among other things, this means that drop-outs may not be failures, but simply movers.[11]

But mobility can also mean ease of articulation and transfer of courses. BCCAT research shows that letting students take courses elsewhere does not mean you will lose them; it means you will keep them.[12]

If UFV is to take advantage of this phenomenon, our admissions and registration processes, as well as our prerequisite and requirement rules, must be streamlined so that they do not disadvantage transfer students.

International Student Trends

Two trends are worth mentioning: the number of Chinese international students is expected to dramatically diminish as China expands its own university system. India may eventually follow, but a review of the past decade in international student mobility reveals a fact of some relevance to UFV: In 2002-03, India was not in the top 10 countries sending students to British Columbia; in 2011-12, it was fourth, behind China, the U.S., and South Korea.[13]

MOOCs

MOOCs have not fulfilled their promise regarding free credits, job placement, educational access for the poor and uneducated, and more. They may offer more promise as supplements, not alternatives. That said, universities are exploring their potential in a variety of ways, including developing MOMs—Massive Online Master's programs.

But perhaps the principal conclusion of the EAB research on MOOCs is that the "MOOC debate" is about something else: the flipside of traditional higher education, that is, openness and diversity.

The Question Behind the Question -

MOOC Questions Highlight Uncomfortable Issues for Higher Education

Why People Love MOOCs	What's Wrong with Higher Education
Open	How can we improve racial and socio-economic diversity?
Large-Scale	How can we overcome capacity bottlenecks?
Free to Students	Are we becoming unaffordable to most students?
Low Cost to Provide	Is it possible to bring down cost per student?

[11] Bob Cowin, *Student Transfer, Success, and Mobility in BC Post-Secondary Institutions,* (February 2013) http://www.bccat.ca/pubs/synthesisofresearch.pdf.

[12] Rob Fleming, Presentation to BCAIU VPAs, September 2013.

[13] Ibid.

Global Audience	Are we trapped by regional demographics?
Elite	How will we ever compete with wealthier, higher ranked universities?

(From *A Business Model Under Threat: Understanding the Enrollment Downturn*, Provost Roundtable, 2013)

MOOCs may not provide the best examples of innovative pedagogy—they appear to be the least innovative of online offerings—but they are indirectly challenging faculty and institutions to innovate.

> The adoption of online and hybrid course delivery, adaptive and automated assessment, evaluation of student learning outcomes, and competency-based credentials was well underway before the recent flurry of press around MOOCs. Yet by focusing the attention of the public, funding bodies, and faculty on these issues, MOOCs have greatly accelerated the appetite for and pace of change. On their own, these changes are unlikely to put large numbers of universities out of business in the coming decades, but they will pressure them to adopt new instructional approaches, be more flexible around credit articulation, and more clearly define their unique value in a changing higher education ecosystem.[14]

This is pressure we should welcome if we are to win the competitive wars for funding and students in an age of accountability and demographic changes. The Teaching and Learning Centre can foster a culture in which the participation of all faculty in teaching development is central; the offices of the Registrar and Assessment Services can assist all Departments with credit articulation for academic and workplace (and experiential) learning; and we can all reach consensus and clarity on UFV's "unique value."

Online Learning

The results of the Instruction Technology Council's survey of distance education at American community colleges confirm that demand for and provision of online learning opportunities "continues to grow—at a rate that is much greater than the demand for on-campus, face-to-face courses." (But the rate of growth has slowed.) From fall 2011 to fall 2012 distance education enrollments grew by 6.52%, while enrollment for the entire student population (including both face-to-face and online students) dropped by 2.64%. "For the past decade, online learning has been the predominant source of higher education enrollment increases."

A different examination of online learning at four-year institutions in fall 2011 "document[s] a 9.3 percent increase in the number of students who took at least one online course . . . well exceed[ing] a 0.1 percent decline in overall higher education student enrollment in 2011." "Online student completion rates, student-teacher interaction, and quality assessments at community colleges are higher than ever."

[14] http://www.eab.com/Research-and-Insights/Academic-Affairs-Forum/Studies/2012/Understanding-the-MOOC-Trend/Top-Lessons.

Challenges remain, including ensuring accessibility for students with disabilities and "providing virtual student support services" (tutoring, advising, career counseling, etc.). Another challenge is "growing competition for online courses from other colleges and universities."[15]

Trades Education

Post-secondary institutions need to give trades students employable skills **and** the opportunity to leverage these into more sustainable careers by incorporating a broader academic education and the soft skills employers say their employees need. We need to break the endless cycle for students of short-term training for short-term jobs followed by periods of unemployment and retraining for an updated or new short-term job. Educating trades students who can learn how to learn and adapt on the job is both socially and ethically more rational. "To paraphrase a well-known proverb, if you teach me the relevant skills and knowledge of my time, I will have a job today. If you instill in me imagination, drive and the ability to adapt to a future I cannot anticipate, I will have relevant jobs for a lifetime."[16]

It is possible that the new emphasis on skills training to fill the alleged skills gap will actually cut down access to universities as some people get streamed into narrow vocational training in short-term programs offered not just at colleges and private trainers, but by industry itself.

This makes all the more urgent our commitment to the integration into our university of trades education and our efforts to articulate to government and industry the advantages of a university in which trades education is integral.

Quality Assurance

The Ministry's concern with quality assurance has not diminished, but two things have changed the landscape of quality assurance for UFV: first, we have acquired Exempt Status. This is recognition of the quality of our program review practices and procedures. Second, the Green Paper has been discarded by the Ministry. What will replace it? In a presentation to a meeting of Provosts and Vice-President, Academics of the British Columbia Association of Institutes and Universities, the Assistant Deputy Minister in charge of the file, Ian Rongve gave some indication of the direction the Ministry will take. He said there will be support for innovation and entrepreneurship to allow institutions to be creative and responsive to student and community needs. There would also be an examination of how the Quality Assurance Framework interfaces with the Aboriginal Post-Secondary Education and Training Policy

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[15] *2012 Distance Education Survey Results: Trends in eLearning: Tracking the Impact of eLearning at Community Colleges.* Instructional Technology Council (April 2013).

[16] Karen Cator, "Technology will not replace teachers," http://www.linkedin.com/today/post/article/20130824042010-2906843-technology-will-not-replace-teachers.

Framework. And he stated that institutions must be responsive to changing student expectations of when, where, and how education is delivered.

Changes to Strategic Priorities

The thirteen "Strategic Priorities" articulated in the *Education Plan, 2009-11* were:

1. Student Recruitment, Retention, and Success
2. Enrolment Management
3. Indigenization
4. Internationalization
5. Environmental Sustainability
6. Indo-Canadian and South Asian Studies
7. Mennonite Studies
8. The Integration of Research and Teaching
9. Strengthening the Culture of Teaching and Learning
10. Community Partnerships, Forums, Events, and Conferences
11. Interdisciplinarity and Cross-Departmental/Faculty Cooperation
12. Recruitment and Retention of Faculty
13. Creative Resourcing

As the Dean of Arts' *Update* makes clear, "Mennonite Studies" has evolved into a broader, more popular theme of "Peace Studies." And while we have given more and more importance to agriculture in our activities and Education Plans, the government's decision to establish a Centre for Excellence in Agriculture at UFV requires that we establish **Agriculture** as the fourteenth strategic priority.

Strategic Enrolment Management (SEM), Program Prioritization, and Program Mix

Program prioritization and program mix discussions have been ongoing for the past two years, especially at Deans' Council and the Academic Planning and Priorities Committee. They have prepared us well for a SEM process, which we will launch this year and with which they are inextricably tied together.

Advising and Admissions Reviews

Last year's Advising and Admissions Reviews produced a number of recommendations that will occasion improvements in our service to students.

In particular, in its examination of advising activities across the institution, the Advising Review External Report identified a need to focus on co-ordination of activities, communication between areas, reduction of duplication, and alignment of mission.

A Task Force has been established with the following goal:

> Provide a plan for implementing suitable recommendations made in the External Report and for implementing alternative solutions to the remaining issues identified. The plan will address the core question: What are the vision, mission, organization/leadership structure, human resources, financial resources, technology, and facilities/equipment needed so that all advising areas take on fully the incorporation of both a holistic approach to developmental advising and a system wide coordination of support, leadership and communication? This plan will include the administrative decisions that need to be made and a description on the most efficient way to provide advising services. The plan will include an action list submitted to the offices of the Provost and Vice President, Academic and the Vice President, Students. (Terms of Reference for the Advising Review Task Force)

The Task Force will submit its plan by the end of October, 2013.

Learning Outcomes

In an October 2011 article in *University Affairs*, Harvey Weingarten, President of the Higher Education Quality Council of Ontario, wrote that Canada was behind Europe and the U.S. in answering the question, "what have our students learned?"

> Employers at all levels say they want employees who are critical thinkers and effective communicators, more reflective, better problem solvers, imaginative and capable of working in teams. These skills are attuned to today's knowledge-based and complex economies and equip students to address challenges we cannot even anticipate today. Many postsecondary institutions claim that their graduates have acquired these skills. But, until these claims are backed up by measurement, they remain untested assumptions. Currently, we lack the evidence and rigorous measurement to know whether these critical job and life skills are being achieved.[17]

The evidence and measurement are necessary, Weingarten claims, so that institutions can "assess and improve their teaching; for studen5ts to make better choices in selecting institutions; for greater government accountability; and for employers to know if the skills of the graduates entering the job market match their needs."

In 2011-12, UFV became the first post-secondary institution in British Columbia to identify its Institutional Learning Outcomes, the abilities that all students can demonstrate when they graduate. In 2012-13, almost all Departments/disciplines developed and aligned their program learning outcomes with those of the institution. This academic year, they will align their course learning outcomes with those of the program. Our next step is to develop methods of assessment appropriate for measuring the attainment of learning outcomes at all three levels and in all programs.

[17] Harvey Weingarten, "What have our students learned?" *University Affairs* (October 26, 2011).

But learning outcomes also give us a standard by which we can reinforce the activities that enable us to achieve our goal of providing "the best undergraduate education in Canada" and making UFV renowned for both teaching excellence and the study of it. They are the standard with which we should evaluate programs and new program proposals, as well as funding requests for new educational initiatives.

Collaboration

> This report makes the case that only when everyone on campus—particularly academic affairs and student affairs staff—shares the responsibility for student learning will we be able to make significant progress in improving it.
>
> --Powerful Partnerships, *Preamble* (American Association for Higher Education et al, 1998)[18]

In 2002, the Association of American Colleges and Universities stated that "the future success of higher education is dependent on collaboration across disciplines and units and between higher education and other sectors."[19] For UFV, these other sectors include school districts, other post-secondary institutions, business and industry, the health sector, criminal justice organizations, and community and cultural organizations.

There are organizational, educational, and financial reasons to re-imagine and restructure much of what UFV is and does along collaborative lines. This goes against the disciplinary and departmental grain of traditional universities, but business and industry went against their grain to embrace collaboration. Because they did, universities must now play catch up if they are prepare students for an interdisciplinary, integrated world.

Perhaps we cannot continue our current trajectory, which is based on the notion that if we create traditional disciplinary programs we will be able to compete with other post-secondary providers. Given our mandate to offer everything from Adult Basic Education to Masters' programs, we are not in a position to narrow down what we offer to a highly specialized point—many other universities are. But we can turn what might be considered a liability into a strength by integrating and combining our programming in ways that no one else can or does. So, for example, our Global Development Studies degree may not be unique in concept, but no other such program, to my knowledge, allows students to integrate trades credits/learning into the curriculum. And given the paucity of universities that offer trades education, almost no one else could.

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[18] Quoted in Adrianna J. Kezar and Jaime Lester, *Organizing Higher Education for Collaboration. A Guide For Campus Leaders* (San Francisco: Jossey-Bass, 2009), 1.
[19] Ibid., 14.

Rank and Tenure and the UFV Advantage

Our recently negotiated agreement on rank and tenure helps us define the UFV advantage because, unlike conventional models, it enshrines teaching excellence as the central criterion for tenure and promotion. It will facilitate the institutionalization of our vision of a teaching- and regionally-focused university.

It is not surprising that other new universities have asked to see our agreement. Any teaching university looking to move to a system of rank and tenure now has a model of how to do it without compromising their identity and core values.

The UFV Advantage

When editorialists and pundits complain about the deteriorating quality of undergraduate education and say that universities should change and become more undergraduate-focused, more teaching-focused, more student-focused, more relevant to their communities, they are, unwittingly, describing an institution that already exists. They are describing UFV.

Unlike many other universities and all private online providers, UFV has a connection to a clearly defined community and region. We are a place-based university. This is our *raison d'etre* and our peculiar strength.

If we really want to know the UFV advantage, we need only ask our students. Each year at New Faculty Orientation, we show a video of selections from student convocation speeches from 2008 to 2011. The core message of each student speech is about giving back, serving the community through *changing the community*, "challenging the status quos," as one of the students put it.

It's easy to be optimistic about a university that produces graduates like this, graduates that lead the social, cultural, economic, and environmentally responsible development of their communities, graduates who apply their critical thinking skills to public policy issues, graduates who change the world for the better—who create communities where, in the words of Andrew Delbanco, "self-interest and public interest are not at odds, but are two names for the same thing." 176

In the radically changing landscape of higher education, WE are the future. We are the future because of the recognition that undergraduate education is not what it should be and that universities need to put teaching, students, and community-engagement at the centre of what they do for undergraduate education. These have always been the core values of this institution. Our commitment to access, students, teaching, and community and regional relevance are strengths that we must build on and that others will try to copy. They have to. With public funding in steady decline, universities will only survive if they are relevant to their communities. So long as we are, we can do more than survive; we can thrive.

Faculty Updates

See Appendices.

2013 Updates

EDUCATION PLAN UPDATE 2013

Submitted to APPC

Faculty of Access and Open Studies

EDUCATION PLAN UPDATE 2013

Submitted by:
Dr. Sue Brigden, Dean

FAOS Education Plan Update Template, 2013

I Review and Reaffirmation of Institutional Priorities identified in Five-Year Plan

13 Priorities

1. Student Recruitment, Retention, and Success
2. Enrolment Management
3. Indigenization
4. Internationalization
5. Environmental Sustainability
6. Indo-Canadian and South Asian Studies
7. Mennonite Studies
8. The Integration of Research and Teaching
9. Strengthening the Culture of Teaching and Learning
10. Community Partnerships, Forums, Events, and Conferences
11. Interdisciplinarity and Cross-Departmental/Faculty Cooperation
12. Recruitment and Retention of Faculty
13. Creative Resourcing

a. Trends and Challenges in Higher Education (list the top challenges—no more than ten):

1. Changes to funding for English as a Second Language (ESL) programs in BC to be implemented in April 2014 requires post-secondary institutions to apply for federal funding for programs formerly funded by the BC government in our base budget.

b. New local demographic and employment data:

1. Abbotsford ranked 3rd in BC after Metro Vancouver and Metro Victoria in the number of non-Canadian born permanent residents making up its population. (Source: CIC Preliminary 2012 Data)
2. 31.6% of the population of Abbotsford has a non-official language as a mother tongue and 20% of the population use this as the primary language spoken at home (Source: 2012 Census)
3. 95% of former UFV ESL students surveyed by DEVSO in 2012 were likely to go on to further non-ESL studies and 89% felt their UFV ESL studies had prepared them for these studies. 95% felt their UFV ESL studies were helpful in achieving their most important goal. Of the students surveyed who were currently employed, 98% stated their UFV ESL classes had been helpful for them to use English at work. (Source: 2013 DEVSO report)

c. Local economic development priorities:

d. Trends in new programming elsewhere:

1. Countries that have sent students requiring extensive English language training overseas are now incorporating English into their school curricula at the elementary-school levels. They are often establishing English language training schools so graduating students can upgrade their skills in their home countries prior to enrolling in post-secondary programs in

other countries.

2. VCC is currently piloting a newly-created curriculum for adult English language instruction. This is Phase 2 of a provincially-funded performance-based curriculum project, which developed open-source materials that may be used by colleges and universities throughout the province for English language instruction programs for both domestic and international students. The pilot at VCC is Phase 2 of the project. Instructors using the new curriculum include non-VCC faculty seconded for the Fall 2013 term from other institutions, one of whom is from UFV. These instructors will act as resource people for institutions wanting to use the new curriculum when it becomes available in Phase 3 of the project.

e. Resulting necessary changes or adjustments to strategic priorities:

1. ESL must develop courses such as for-credit adjunct courses and modify existing courses so they becomes credit-bearing support courses for domestic and international students for whom English is an additional language to increase the success of such students in their chosen program (e.g., Business).

II Report on Non-Program Initiatives identified in the Five-Year Plan

This section identifies specific progress made in achieving the non-program priorities identified in the Five-Year Ed Plan (such as indigenization and internationalization) and can also include any new specific plans for the coming year. The section concludes with an evaluation of whether and how improvements should/can be made to improve your Faculty/College's progress towards achieving these goals.

1. Student Recruitment, Retention, and Success - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority*:

- The Dean's Office regularly sends out messages to all of its students with information about policy changes, important dates, links to UFV services, and invitations to contact the office and other support service for advice.
- Continuing Studies (CS) has increased students' access to instructors both in-class and via email.
- The ESL department worked with the Dean's Office and International Education to increase the monitoring and advising of University Foundation Program (UFP) students; this ensures students remain in the program's core courses and are unable to exceed the program requirements without a program waiver issued by the Dean. ESL also worked with OReg to ensure ESL program restrictions were programmed into Banner thereby preventing students from registering in university-level courses without a program waiver.
- Upgrading and University Preparation (UUP) worked with OReg to define programs and implement program restrictions for upgrading students based on their ABE level. The ABE program, which includes students at the fundamental, intermediate, and advanced ABE levels, prevents students from registering into university-level courses without a program waiver. The ABEUP program, which includes students who meet the ENGL 091 prerequisite and are pursing the BC Adult Graduation diploma, allows students to register in up to three (3) university-level courses for which they meet the prerequisites in order to meet the graduation requirements.

- UUP also visited more community agencies, delivered more on-campus tours for prospective students, and used social media to reach a broader audience.

2. **Enrolment Management** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*

   - The Dean's Office contacted all "at-risk" students via email to advise them of UFV's policies and expectations and provide information about students can go for educational advising, academic support, and personal counselling.
   - The Faculty will continue to revise the University Foundations Program to ensure it meets the needs of domestic and international students who are not accepted into a university-level program because they do not meet the admission requirements. The admission, program, and continuance requirements will be sent out to other academic and support units for feedback to ensure it meets needs of students and the university, including that of enrolment management.
   - The Faculty will recommend a number of modifications to the Program Paths, including suggested admission requirements, application procedures, and program expectations. Recommendations will include the discontinuation of some paths
   - Faculty instructors have enrolled extra students into their classes when necessary and where possible.
   - The recently-implemented program restrictions for ESL, UUP, and UFP students restrict access to university -level courses until writing skills are improved enough for them to be successful in university-level programs.

3. **Indigenization** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*

   - Course content of the Applied Business Technology (ABT) course Business English and Communications (ABT 135) has been revised to include multiple First Nations' components, including attendance at the September 18 IRSDL and journal reflections on the day's events.
   - UUP hired a First Nations instructor who teaches English and First Nations Studies courses; has purchased drums for each centre; is working to indigenize course content; acknowledges that we are on Stó:lō territory; and invites the Elders to welcome students.

4. **Internationalization** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*

   - ESL continues to support internationalization by promoting interaction among students from different countries through activities such as the UFV ESL department, video contests, and by profiling individual students on the ESL department Student Profiles webpage.
   - ESL is an active partner in the Welcoming Communities initiative of Chilliwack Community Services. In addition to hosting meetings of the advisory group for this initiative, ESL has committed to putting a series of workshops and presentations in 2013-2014 highlighting the immigrant experience of both recent and established immigrants in relation to language learning and culture adjustments.
   - UUP instructors are bringing readings from different cultures into classes.

5. **Environmental Sustainability** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   - ABT faculty and all CS personnel turn off lights when not in office and ensure all office and student computers are shut down at the end of the day.
   - ESL no longer purchases water bottles for hosted meetings or events. Faculty continue to be mindful of paper use and do use recycling boxes in their offices
   - UUP faculty and staff gave up desk-side trash cans for one only; turn off lights when not in their office and turn off computers when they leave for the day; ride bikes, walk to work, and carpool when possible; and are working to becoming a paperless office.
6. **Indo-Canadian and South Asian Studies** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   - ESL continues to offer English language preparation classes in Chandigarh for students accepted into the UFV BBA program there. Faculty who have taught in Chandigarh have returned to Abbotsford with new perspectives and insights into the culture and values of many of the Punjabi speaking students in our program here.
7. **Mennonite Studies** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   - CS has offered and will continue to offer workshops on Mennonite history/culture.
8. **The Integration of Research and Teaching** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   - Two ESL faculty members recently returned from sabbatical have shared their sabbatical work on ESL student transitions into academic studies with the department (and others within the UFV community). The department is now working on a strategy to support transitioning students, including the development of support courses and education workshops for non-ESL faculty and staff who work with multi-lingual students
   - Faculty are working together to understand what this will look like for their departments and to identify opportunities where integration can be achieved.
9. **Strengthening the Culture of Teaching and Learning** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   - ESL has created program outcomes for each of its certificate programs.
   - Faculty personnel attend multi-cultural events, forums, guest speakers, workshops, conferences all for the purpose of sharing some of what they learn with students and colleagues.
10. **Community Partnerships, Forums, Events, and Conferences** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
    - Work Experience–ABT continues to build relationships with external agencies that provide practicum opportunities for ABT students. Some of these relationships span thirty years, while others have been formed within the last few years. Many of these practicum hosts subsequently hire ABT grads.

- SD34/CTC–A long-standing relationship exists between ABT and the Abbotsford School District. Our fall intake regularly includes Abbotsford high school students (four in the 2013/2014 academic year); SD34 pays their tuition and provides their textbooks.
- Funding Agencies–a number of ABT students are funded either through government agencies (e.g. WorkBC) or their band (for First Nations students).
- FAOS personnel continue to represent UFV at a variety of tables by serving as members of many community organizations and committees.
- CS partners with various community organizations including members of the community on CS advisory boards.
- ESL is represented at Abbotsford Literacy Matters Association, the Literacy Matters Adult table, the Abbotsford School District ESL Advisory Committee, and is a frequent guest at the Multi-cultural Department Coordinator meetings of Abbotsford Community Services. ESL is also a partner in Chilliwack Community Services Welcoming Communities initiative.
- ESL had information booths at this year's Abbyfest (September), FVRL's Family Literacy event (January) and the ACS Diversity Health Fair (May). The ESL department head spoke in March to a group of Abby school district high school counselors about ESL at UFV and this led to a request for a presentation at a larger district meeting of counselors and teachers in May, which resulted in a visit and UFV campus tour of 35 Mouat ESL students and their instructors.
- UUP has a long standing community partnership in Chilliwack which will expand its programming in 2013-14; it is strengthening ties with the community of Hope and has already begun delivering some workshops; it participates in community meetings and events throughout the region; has attended program advisory committee meetings at Fraser Valley Institute (women's prison).

11. **Interdisciplinarity and Cross-Departmental/Faculty Cooperation** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*

- ABT faculty continue to provide in-house workshops (Word, Excel, Access, Outlook) for faculty and staff.
- CS has met and will continue to meet with faculty members in regards to teaching for CS and/or be on CS advisory boards.
- ESL and UUP continue to consult one another regarding appropriate placement of students whose first language is not English but who wish to take UUP and/or ESL courses. UUP and ESL continue to work on the updating the Foundation Program.
- UUP is involved with the Stó:lō project which is a twelve month program which involves UUP preparing students to enter trades or the Stó:lō Studies program.

12. **Recruitment and Engagement of Faculty** - *identify actions that your Faculty/College has adopted to further a human resources strategy to attract and engage outstanding employees, to retain, develop and foster their leadership skills, and to affirm their contribution to sustaining a vibrant and diverse scholarly community which values learning, social and personal development, embraces challenge and is committed to the respectful debate of ideas and views:*

    - Personnel are encouraged to share their experiences at department and council meetings and to participate in professional development activities and other university lectures and events; guests are invited to meeting to speak at meetings.

13. **Creative Resourcing** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*

    - Hope Centre developed a one-day computer workshop for unemployed youth that was paid for by Free Rein.

14. **Plans for improving your Faculty/College's progress towards achieving these goals (no more than ten):**

    - The Faculty will continue to review the Education Plan template and these goals on an on-going basis and faculty council, department, and department head meetings.
    - They will be incorporated into the curriculum development and review processes to ensure they are considered and addressed as appropriate.

III Report on Programs

a. Progress on Approved New Programs

Programs approved since September 2011:

Program	Senate Approval (Date)	Ministry Approval (Date)	Implement (Yes or No)
Management SKills for Supervisors Cert.	21/06/2013	n/a	Yes
Veterinary Administrative Assistant Cert.	21/06/2013	n/a	Yes
Human Resources Management Cert.	21/06/2013	n/a	Yes

b. Programs Recommended for Discontinuance or Suspension
none

c. Programs Recommended for Modification
The University Foundation Program
Program Paths
Applied Business Technology

d. Review of Programs in Development

Programs listed in the Ed Plan in development or nearing approval at Senate:
n/a

e. Newly Passed Concept Papers
n/a

f. Departmental Information

2012-13

Department	Domestic FTEs	International FTEs	Fill rates	Average Class Size
CS	200.18	1.27	68.8	13.4
ESL	127.61	178.26	85.4	17.1
UUP	298.43	13.36	99.4	22.3

2011-12

Department	Domestic FTEs	International FTEs	Fill rates	Average Class Size
CS	195.27	1.27	68.1	12.9
ESL	98.23	196.33	73	15.4
UUP	290.35	11.45	97.5	21.5

2010-11

Department	Domestic FTEs	International FTEs	Fill rates	Average Class Size
CS	211.94	.86	69.7	13.7
ESL	121.25	307.03	73.5	15.9
UUP	299.85	16.97	101.1	22.4

2009-10

Department	Domestic FTEs	International FTEs	Fill rates	Average Class Size
CS	188.40	1.72	72.6	14.4
ESL	141.76	287.01	79.7	16.1
UUP	317.58	13.55	97.5	20.9

g. Programs Reviewed and Scheduled for Review

Programs	Review Date
UUP	2015
ESL	2014

h. Major institutional or Faculty/College-wise challenges/required changes resulting from program reviews:

i. Programs with program learning outcomes aligned with the Institutional Learning Outcomes (ILOs):

- ESL Intermediate Certificate, ESL Advanced I Certificate, ESL Advanced II Certificate, ESL Academic Certificate
- UUP ABE Fundamental, Intermediate, Advanced, and Provincial Levels

j. Plans for improving your Faculty/College's progress towards achieving the ILOs (no more than ten):

- As courses and programs are reviewed and revised, the ILOs will be included as appropriate.

College of ARTS

EDUCATION PLAN UPDATE 2013

Submitted by:
Jacqueline Nolte, Dean

Education Plan Update Template, 2013

I Review and Reaffirmation of Institutional Priorities identified in Five-Year Plan

13 Priorities

1. Student Recruitment, Retention, and Success
2. Enrolment Management
3. Indigenization
4. Internationalization
5. Environmental Sustainability
6. Indo-Canadian and South Asian Studies
7. Mennonite Studies
8. The Integration of Research and Teaching
9. Strengthening the Culture of Teaching and Learning
10. Community Partnerships, Forums, Events, and Conferences
11. Interdisciplinarity and Cross-Departmental/Faculty Cooperation
12. Recruitment and Retention of Faculty
13. Creative Resourcing

a. Trends and Challenges in Higher Education:

1. declining public funding for universities; related to this is the need to produce persuasive public narratives regarding the benefits of HE
2. establishment of priority programs, identification and marketing of unique strengths and ethos
3. delivery of relevant and dynamic pedagogies related to student needs
4. innovative strategies to counterbalance tuition restrictions and budget cuts
5. development and strengthening of international partnerships coincident with mission
6. regional collaboration among HE institutions to strengthen students' choices and to avoid duplication of weak program areas
7. commitment to differentiation in the H.E. sector e.g. maintaining commitment to intimate learning experiences while ensuring class sizes are small but economically viable
8. sustainable budgeting, investment and acquisition of physical and technological infrastructure
9. productive public-private partnerships to support building infrastructure (e.g. UHub at UFV)
10. inspiring and supporting success amongst diverse faculty and learners

b. New local demographic and employment data:

1. Abbotsford: population of 140,235 (2012 BC Stats); the dominant age group is 40 to 49 years old; diverse community made up of many different ethnic and cultural groups; 20% of population is of South Asian descent; 13.6% of the population speaks Punjabi; 1% speaks German; 1% speaks Korean and .9% Chinese. Top employment sectors in Abbotsford are Trades (14,300); Manufacturing (11,100); Construction (9,800); Health care /Social (9,500); Transportation / Warehouse (7,000) (2012 BC Stats).
2. Chilliwack: 2012 BC Stats population count is 79,617; 82,626 cited at

http://www.chilliwackeconomicpartners.com.

Chilliwack has a diverse and growing economy from agriculture to manufacturing to retail and wholesale trade to professional services. Chilliwack's service and retail sectors account for approximately 50% of the GDP and largest industries within these categories are: Retail and Wholesale Trade at 12%; Finance, Insurance, Real Estate at 11%; Public Administration at 9%; Health at 6%; Education at 6%. The goods producing industries have been growing with manufacturing accounting for 13%, construction at 8% and agriculture and forestry at 5% of Chilliwack's GDP (http://www.chilliwackeconomicpartners.com).

3. Mission 37,614 (2012 BC Stats). The 2012 Mission Business Retention and Expansion Plan identifies waterfront development and downtown revitalization, technology, manufacturing, and retail growth. Other areas of focus include tourism and the film industry.

c. Local economic development priorities:

1. See above. Of relevance to Arts is the development of the Abbotsford U District and opportunities for UHub.
2. See above. Sectors of specific relevance to Arts encouraging growth in Chilliwack include film, as supported by Chilliwack Film Commission and tourism, as in agri-tourism, outdoor activities and festivals (http://www.chilliwackeconomicpartners.com). Considerable financial investment will be required to build up film offerings but the Media Arts Degree is of relevance here and the Theatre Program continues to offer its programs in Chilliwack. Links between Geography and Agriculture could be strengthened.
3. See above. The GDD program is well placed to grow and expand and direct students into the forthcoming Media Arts Degree

d. Trends in new programming elsewhere:

1. Integration and internationalization of humanities and social science research; programs that integrate intercultural components; interdisciplinary research and transdisciplinary concepts
2. A greater emphasis on creativity in education, the creative use of technology, provision of knowledge and skills and problem-solving approaches
3. Links between post-secondary institutions and employers in the private, public and not-for profit sectors
4. Humanities and social science programs that focus on: indigenous relations; governance and environment; effects of accelerated change on social and physical habitats; media, technologies and literacies; studies of migration flow as a political, social, cultural and productive factor; a multi-ethnic Canada and reflections on the constitution of identity; crises and prospects of democracy and intersections between the political and the religious; institutional and social dimensions of innovation and creativity; time and memory as social formations and as political issues; focus on human, social and cultural capital, the experience economy and measures of value; renewed focus on issues of financial stability and economic governance; continued focus on issues of constitutionalism and formal citizenship as well as on different types of citizenship or non-citizenship; new forms of participation

in the public sphere; aging; focus on the interface of humanities, social sciences and biotechnologies

e. Resulting necessary changes or adjustments to strategic priorities:

1. Build support for UHub with increased focus on interface of new teaching and learning technologies/modalities, performance techniques and creative media
2. Ensure emphasis on delivery of skills in new degree proposals and encourage 2nd language requirement in the revised BA framework
3. Redirect resources to deliver the Economics Major and the Media Arts Degree; shift focus from Mennonite Studies to Peace Studies
4. Begin exploring clustering of disciplines, starting with the School of Creative Arts; strengthen cross-faculty collaboration

II Report on Non-Program Initiatives identified in the Five-Year Plan

This section identifies specific progress made in achieving the non-program priorities identified in the Five-Year Ed Plan (such as indigenization and internationalization) and can also include any new specific plans for the coming year. The section concludes with an evaluation of whether and how improvements should/can be made to improve your Faculty/College's progress towards achieving these goals.

1. Student Recruitment, Retention, and Success:

Arts has engaged in a SEM exercise that has started with the discussion of a mission statement that will drive decisions regarding program mix and resource allocation. At our first SEM retreat, heads discussed the College of Arts developing a greater focus on ensuring the success of program students, particularly in the light of the mandate of FAOS to address the success of open access students. Most disciplines in Arts have very high fill rates and struggle with large wait lists.(A couple of small departments without degree programs have lower fill rates but none below 70%; these are being looked at through the Program Review process.) Related to this high demand is the challenge of capping growth in certain program areas by focusing explicitly on catering to Program students, and in some areas (e.g. Psychology) focusing on the needs of majors.

New programs are doing well. The Global Development Studies Degree has a total intake of 36 students. The new GDD Diploma program anticipates a full intake and has excellent retention. The relatively new major in Philosophy is experiencing an increase in declarations.

Monthly College of Arts Department Heads meetings and presentations at Faculty Council ensure a seamless link between academic and support services.

What follows are examples of specific department initiatives:

RECRUITMENT:

Arts Advice contacts all applicants to College of Arts programs, hosts orientation sessions and submits information to the High School Enewsletter. It provides new students with information about advising services, resources, and links to website. It targets those who are coming from high school with 1st Year information, ARTS 100, first year study themes, etc.

The English department has increased use of the web and social media. In FD, “Fashionology” is a new Facebook page developed to reach out to students, community and alumni. FD tweets and blogs, sends “E-mail Blasts’ and has a data base of e-mail contacts of Home Ec teachers province wide. FD sends BFA and Diploma cards to over 100 high schools province-wide, has a ½ page colour advertisement in the Telio program, advertises in Threads local industry magazine and uses Google Ads to increase its program profile on the internet. The Graphic and Digital Design department launched the GDD Design Mission blog featuring program news, student projects and program initiatives http://blogs.ufv.ca/graphicdesign/. Geography engages students through various on-line platforms, including Twitter, Facebook, and the departmental website, and is looking to create a listserve to keep in touch with current and former students.

Arts advisors attend the high school counselors’ liaison day, hosted by the Recruitment Office. The BFA advising office hosts an annual event for direct high school entrants. The School of Criminology and Criminal Justice offers one section of Crim 100 at a high school in Agassiz. The Fashion Design department visits high schools province-wide and hosts tours for various out of town schools. FD offers in-class workshops to local high schools and runs Summer fashion camp for ages 14-18. Student volunteers from Geography and GDS promote both programs through outreach to local secondary schools. A Spanish student volunteered her time in the Abbotsford community by assisting Spanish students at Yale Secondary School. The Visual Arts department has contact with high schools in Chilliwack and Abbotsford School of Integrated Arts. The department hosts an exhibit of high school students' work. Economics is looking into the “concurrent studies" programs at Kwantlen and SFU Surrey to propose a similar program for High School students at UFV. The department is in contact with high school teachers in the Fraser Valley, providing advice and suggestions for an Econ 12 course at Mission. The Associate Dean of Students applied for 3 work-study positions and, in collaboration with a faculty member from the English department, created a literacy-based after-school enrichment program for students at Deroche Elementary school. This will be offered again next year.

Most departments offer scholarships to students every year

The Psychology department improved the flow of information between the department and advising and OReg so that students receive consistent answers to queries and other departments become aware of Psychology requirements. The FD department worked closely with OReg to ensure a seamless application process.

In the Fall, Arts Advice hosts an Arts Meet & Greet event where students are introduced to Arts programs and disciplines, campus services, associations, etc. The School of Criminology and Criminal Justice, VA department, FD department and GDD department

hold orientations for their program students. A reception for French Minor and Extended Minor students was organized in February to advertise the program as well as available bursaries and scholarships. The Psychology department held advising events such as information on the honours program, applying to grad school and careers in psychology.

The new high school student film festival is working to connect high school students to the History Department and to UFV in general. The Fashion Show attracted students from all over the province as well as student volunteers who receive exposure to the FD program. Diploma and BFA exhibitions serve to showcase the BFA program. FD exhibits at Convocation, Fibres West and Port Moody – Art to Wear showcase the FD program. Student volunteers from Geography and GDS actively promoted both programs through displays at 7 Oaks Mall. A Spanish native speaker hosts "Hay Wey" every Friday morning on a volunteer basis through UFV '"CIVL Radio 101.7 FM". This show was created for the Spanish community of the Fraser Valley and for promoting Spanish culture and language. A "piñata" workshop was offered to Spanish students.

The Dean works with IR to track applicants and department heads keep their own data as in the FD department, which tracks all who have expressed interested in the program.

The Associate Dean of Students is working with faculty members to explore a block transfer with Kwantlen Polytechnic University for FD Diploma students into the KPU degree. She is exploring articulation with Selkirk College related to Peace Studies programming, transfer of the Okanagan College Diploma in Writing and Publishing into UFV's BA, and an articulation agreement with Royal Roads University's interdisciplinary, professionally oriented bachelor's program.

The FD department worked with the Alumni department to widen its social network.

RETENTION

Students in the BA, BGS and BFA programs are advised by advisors in Arts Advice. Advising also takes place within the School of Criminology and Criminal Justice, the Theatre department and the FD department. Within the departments, students' progress in programs is recorded so students maintain a clear understanding of their goals. Departments have been introduced to PASS and refer students to this program Arts Advice has designed and delivered workshops that target the specific needs of our student population. A couple of the workshops were on goal setting for first year students and an Arts Academic Success workshop for academically at-risk students.

In winter 2013 Arts Advice launched a Peer Mentoring program designed to help first-year Arts students learn how to succeed in university. Funded by a $20,000 grant from the Royal Bank, peer mentors (successful students in their third or fourth year) helped first-year students develop university-appropriate study skills, manage their time effectively and set realistic and achievable goals. The mentors also helped the first-year students learn how to navigate campus systems and take advantage of campus resources and opportunities.

The School of Criminology and Criminal Justice also offers mentoring opportunities to students. The FD department has started to encourage mentoring relationships between first and second year students. Spanish students have been offering up to 10 hours per

week as volunteers, peer mentoring UFV Spanish students at the first and second year levels. The Psychology department runs a peer tutor program from the Psychology Resource Room, supports student study groups, guides students towards research and volunteer opportunities, and generally creates a welcoming and supportive culture that is student led. The Philosophy department appointed a faculty member as student mentor/advisor. SCMS has increased its faculty mentoring of students.

The College is pleased to announce the opening of a Humanities Resource room come September. This will allow English students, Communications students, History students and Philosophy students a space to meet, work and network. Ideally each of these Humanities programs requires its own student hub but this is a great start. A room has been identified for a student hub for VA students in the C building and requests submitted to the Executive Director of Campus Planning.

The School of Criminology and Criminal Justice provides financial support to student societies. The Fashion Design Student Association enables students to feel part of UFV's social community. A more active History student association (AHS) is working to build a stronger History student community. The Philosophy Department has increased interaction with the Philosophy Student Association. The Political Science Student Association was involved in launching the All Candidates Debates at UFV campus. A lot of effort has gone into revitalizing the VA Student Association, with a focus on transition and succession planning.

All departments are engaged in improving access to classes. A number of departments took part in the CEP timetabling pilot. Various departments have increased online and hybrid offerings. The Communications department is developing a three-year degree model to provide a shorter path to graduation for qualified students. The School of Criminology and Criminal Justice ensures that as many first and second-year courses are taught by full-time faculty members and employs sessional instructors who work within the criminal justice system. Geography will be utilizing course reserves for 1st and 2nd year students to ensure access to lab science courses in a timely manner within their degree. The Psychology department improved access in a number of ways by: redesigning the first year curriculum to better serve non-program students and to ensure their success by increasing the writing requirement; adding the English prerequisite back to first year psychology to improve readiness in students taking the course; specifying criteria for declaring the Psychology major (previously there were none) and guiding students to declare at second year, which makes access to and movement through the third and fourth year courses smoother.

Revisions to curricula ensure student retention. Communications has further highlighted the benefits of intercultural communication in its curriculum and methods. The School of Criminology and Criminal Justice introduced new courses on psychopathy, mental disorder and crime, prostitution, terrorism, qualitative research methods, techniques of crime prevention, and innovations in Canadian public safety. The School introduced an Honours program, liaises with government and criminal justice agencies to link students with research and practicum opportunities and coordinates writing assignments across all classes so that students are exposed to numerous academic approaches. Students in FREN 225 (French Culture and Language via the Media) now face the exciting prospect of developing an online French student magazine published on the department website. In 2013/14 Psychology will put through changes to statistics course and changes to

second year and upper level courses to improve the prerequisite structure. SCMS graduate numbers are increasing as the department develops practical concentrations that expand students' career options and improve their chances in grad school (e.g. the Research Concentration). SCMS plans to develop new concentrations in areas like Social Justice and Cultural Studies that will further increase options for students.

A number of departments emphasize and support undergraduate research. Most departments provide students with opportunities to make presentations at conferences.

Where we have challenges with retention, programs such as the Fashion Design department are now conducting exit interviews with students to assess how to better assist students attain their goals.

Specific Examples of Student Success
•Communications nominated two students for Undergraduate Research Excellence Awards; both students successfully applied to grad schools and one has a paper in publication. Erin Hailstone recently completed her Bachelor of General Studies degree at UFV with a minor in Communications and has been accepted into a graduate program at the University of Calgary in Educational Research, Adult Education - Work and Learning beginning this July.

•Two English major students were accepted for MA programs in English, one at Queens, another at UBC with SSHRC grant. An English student, Taylor Stone won a Joseph-Armand Bombardier - Canada Graduate Scholarship.

• A Geography student, Kelly Hodgins, won a Joseph-Armand Bombardier - Canada Graduate Scholarship. Geography graduate, Paul Stephany, has been accepted into Graduate studies at the University of Guelph.

•Fashion Design student Ning Hao was chosen as one of the 25 to showcase her design at Montreal Fashion Week through the Telio "Canadian Breakthrough Design Completion 2013".

• Philosophy student Curtis Robinson has accepted a full scholarship from the University of Guelph in Ontario where he plans to complete a master's program in Philosophy.

•A Psychology student, Sol Sun, won the Governor General's medal, the Dean's medal in Social Sciences and an Alexander Graham Bell - Canada Graduate Scholarship. He has been accepted into Graduate School at University of Toronto.

•A History/Political Science student, Marin Beck, won the Deans medal in Humanities. History graduates continue to achieve beyond UFV, earning graduate degrees, teaching credentials, and SSHRC scholarships.

•The Writing in a Second Language Prize was attributed to Fr. 319 student Erin McAuley $2000 in Scholarships for Advanced French students are awarded annually by MOLA.

•Increasing numbers of Philosophy majors have been accepted into graduate programs.

•A Sociology major, Jordan Todd, won a Joseph-Armand Bombardier - Canada Graduate Scholarship. Significant numbers of SCMS graduates are gaining places in graduate schools across Canada and in other countries.

2. Enrolment Management - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*

College of Arts department heads' retreat in August focused on SEM. We will continue this discussion at CAC and develop a draft mission statement for Arts this semester so that program mix and resource distribution can occur in accordance with this mission. At the retreat we looked again at the idea of learning communities and a “foundation” year for first-year BA students. This could help us manage enrolments in some over-subscribed areas.

The Geography department has developed a draft strategic enrolment management plan. The VA department is holding steady on its 20/20/20 enrollment plan. 20 diploma, 20 direct entry BFA, and 20 laddering BFA. The School of Criminology and Criminal Justice is considering reducing the number of students accepted into the program to reduce the size of the program over time. We will work with the School create a more cohort-like structure and to ensure that enrolment numbers for upper-level courses are more predictable.

Arts Advice works closely with Institutional Research to monitor students’ progress, suggest reports for tracking, etc. It works with OReg to review and provide input to new and existing policies and practices and how they affect students. Arts Advice contacts students at key points in their academic studies (declaration, etc.) and advisors contact students who in Arts Studies to inform them if they meet the entrance requirements for Arts programs. Arts Advice contributed to the development of a declaration policy for BA students (must declare at 60 credits) and BFA students will be required to formally declare come Fall 2013.

A number of departments participated in the CEP timetabling pilot, which had attendant challenges but will hopefully prevent unnecessary duplication in future iterations. The impact of these changes on the Abbotsford timetable has yet to be addressed.

We will continue to share the strategies that departments are already using to see if they can be more broadly implemented. GEOG reserves seats for first-year students so that upper-level students seeking a lab science do not crowd out intending major students. The School of Criminology and Criminal Justice encourages students to declare their major early enough so that they can benefit from reserve seating. The School ‘clusters' its courses at Mission and Chilliwack campuses in order to increase enrolments. History has conducted a full overview of all courses and enrolments for the past five years and has made decisions to remove some courses from the calendar and to offer others more frequently. Psychology has succeeded in reducing waitlists for its major students but the number of students declaring a Psychology extended minor seems to be increasing and the department is unable to serve them adequately. The department reassigned resources slightly from lower level to upper level. Students can now take either 101 or 102 ensuring flexibility and fill rates for 102. Seat reserves are used to ensure those students who need courses to move through the program get them first, and only when those needs are fulfilled do students who are taking the upper level courses for other reasons have access. Unfortunately, many other Arts students who would like to take a few upper level psychology courses as electives cannot do so. The department will try limiting the number of students who can declare a Psychology extended minor (with priority to those students who need an extended minor to graduate) to attempt to reduce complaints about inadequate seats to complete the extended minor program. SCMS reaches almost 95% seat utilization in the department overall. Cross listing of courses has had a positive impact on SCMS enrollments. From 2008-2009 to 2011-2012 there was a 27.1% growth in seat utilization in cross-listed courses from 75.3% to 95.7%. The VA department now conducts two portfolio reviews per year and the smaller winter intake helps fill in numbers when applicants don’t arrive in September.

3. Indigenization:

This past year the College of Arts has made considerable progress in the process of Indigenization. *The Indigenizing the Academy Conference* (ITA) in August 2012 at the Canada Education Park (CEP) was well attended by College faculty and staff, and resulted in extensive activity - including College participation and learning in the *Eighth Fire Idle No More Gathering* at the CEP in February 2013; the Lloyd Barber Summit on Aboriginal Education at the University of Regina; the first working group on Indigenization between UFV and local area school districts; and the creation of a dedicated interactive website on Indigenization and best practices at UFV.

Independently, the Departments of Geography and History provided the sections and instructors for the fourth and largest intake of the Indigenous Maps Films Rights and Land Claims Certificate, comprising 22 students, several of them of Indigenous ancestry. The College was the lead organizer of and provider of eight upper level courses that would allow graduates of the Nicola Valley Institute of Technology (NVIT) Chemical Addictions Cohort to complete a UFV BGS. This was coordinated by the Associate Dean of Faculty with the cooperation of the Departments of Communications, English and Social and Cultural and Media Studies and sections provided in Indigenous Peoples Knowledge and assistance from the Office of the Vice-Provost. This cohort of eighteen students is completing the sixth of these eight courses as this is being written and has proven to be one of the most innovative cross-cultural programs ever established at this university. The BGS Advisor supports the students in this cohort to help them achieve success as they work towards completion of the BGS degree. NVIT has now selected UFV as its partner for future cohorts and we are anticipating the second cohort being established sometime in 2014 or early 2015. Internally, the first permanent appointment in Indigenous Studies is now completing her first year and has already taught courses in History, Criminology, First Nations Studies and Indigenous Peoples Knowledge (including two courses in the NVIT cohort). Discussion over the creation of a Department of Indigenous Studies is underway.

In the Communications department, one faculty member is leading the way in the indigenization of teaching and assessment practices. In Criminology, program learning outcomes are being indigenized. The School offers Crim 211: Indigenous People, Crime, and the Criminal Justice System and offers a scholarship for a student doing research on an Aboriginal criminal justice issue. The English department has made changes to the English major to promote Indigenization. The Fashion Design department displays Indigenous content in its open-house displays and has cross-listed courses for the Indigenous Arts Certificate. In the Geography department, Indigenous materials, perspectives, and engagement are integrated into numerous human Geography and Global Development Studies courses. History will contribute one course to the new Stó:lô Nation/UFV partnership (HIST 103). An intensive one-year Stó:lô Certificate program will begin next academic year and will enable a small cohort of Stó:lô students to pursue intensive Halq'eméylem studies. Philosophy faculty members participated in *Indigenization by Design Workshop* and increased the use of work by Indigenous philosophers in courses. One faculty member created a bibliography of Indigenous philosophy which was shared within the department. In Psychology, some upper levels

have content support in the textbooks, such as the Child Psychology and Developmental Psychopathology courses. Plans for the coming year include trying to revive the First Nations Psychology tutor program. Many SCMS courses, particularly in Anthropology, Sociology and Latin American Studies continue to provide a significant indigenous focus. A number of faculty have graduate or research specializations in Indigenous studies and organize and participate in Indigenization events and sit on the Indigenous Studies Advisory Committee. Two Anthropology faculty members are currently experimenting with an online BC First Nations course that incorporates guided field trips to locations like the Coqualeetza Cultural Education Centre. The Theatre department presented *Ernestine Shuswap Gets Her Trout* by First Nations playwright Tomson Highway as part of the department's annual season of theatre. The department offered THEA 250 *Storytelling*, a second year course with significant Indigenous content, in the Gathering Place on the new CEP campus. The department has organized an Indigenous play reading series for 2013/14 in cooperation with the Stó:lô Nation / Stó:lô Research and Resource Management Centre. VA is continuing with the Indigenous Arts Certificate. *The Lens of Empowerment* project was a great success, resulting in two faculty members travelling to Loughborough UK with a student exhibition and three students who shared their experiences of indigenous methodologies on a panel at a conference of professors and practicing artists. The department hired a new faculty member in Art History with expertise in First Nations issues.

4. Internationalization:

The College will work with the new Director of International to establish targets for Internationalization. We are committed to internationalization from the perspective of improving global competency and outgoing mobilization of our students as well as creating interesting and comfortable programs of study for incoming International students. Toward the former, we have redesigned the BA breadth requirements to promote global citizenship and competencies. An example of the latter includes Arts Advice working with Science without Borders students to place them in Arts courses as needed for their programs/interests.

Some departments have significantly more international students than others, for example, CMNS courses continue to be popular with International students with 30% of FTEs coming from International students in 2012/13. Criminology is working with International Education to develop partnerships with Universities in the UK and China. Fashion Design works closely with International Education on partnerships in India and potential partners in China, Korea, and Ghana. In GDD, five students from Brazil will occupy seats in a number of courses next year. Theatre hosted two exchange students from the University of East London during the Winter 2013 semester. The Spanish instructor obtained an Internationalization Grant to visit several Mexican universities this summer in order to establish exchange agreements with them. She will be accompanied by one of her Spanish students.

This past year, a faculty member in Communications received a course release from International Ed. to improve our visiting scholar information policies (both incoming and outgoing) and developed intercultural orientation packages for students. The GDD Coordinator participated in an international design education conference focused on

globalization (conference was organized by AIGA: American Institute of Graphic Arts — US professional association for graphic designers). Faculty members in Philosophy have attended and been invited to speak in Taiwan, South Korea, England, and the USA. One Geography faculty member is working with UN Habitat Youth Fund to develop an on-line, mobile course delivery platform for a new program in Entrepreneurship. She is also working on a climate change and planning course that can be delivered via mobile devices as well as through traditional formats, for both in situ and international student audiences. A Psychology faculty member continues her research partnership with institutions in the UK.

The School of Criminology and Criminal Justice has internationalized its undergraduate curriculum. Faculty and students conduct research on international issues and in other countries and faculty and students participate in international conferences. The English department has changed its English major to promote courses with an international focus. SCMS houses degrees and certificates in Latin American Studies, Indo-Canadian Studies, International and Development Studies and Diaspora Studies. It also participates in the BA in Global Development Studies. VA is exploring post degree certificate options for Brazil connections and History is developing a certificate for international interest.

Work continues on establishing partnerships with International institutions. A History faculty member travelled to Spain in 2012, signing memorandums of understanding with Spanish universities. Another History member is in talks with the University of Gloucestershire regarding student exchanges. Two Visual Arts faculty members recently had UFV Internationalization Fund applications accepted, which will result in partnerships in India and China. The department head of VA recently travelled to Shanghai to negotiate a 2 + 2 partnership.

Faculty members from FD and History received internationalization funding for a 2013/2014 trip to Peru in preparation for organizing a student field trip in 2015. MOLA's Japan Study Tour will take place May 30 to June 20. A Mandarin Field School to Wuhan University will take place in the Summer of 2013. SCMS collaborates on study tours to India and Mexico. One faculty member is working with the Modern Languages Department to establish a semester abroad program for Spanish and Latin American Studies. Geography led a study tour to Arizona.

The Geography department has continued engagement with international NGOs in research and student internship opportunities, including in Tanzania, Kenya, India, and China. SCMS faculty supervise international internships for students and some are actively engaged in international research.

In addition to the above, some committee work in Arts is directed toward internationalization e.g. a Psychology department member sits on the Internationalization Fund committee. The Dean of Arts sits on the India Management Committee. A Russian Consortium of faculty was established, led by a History instructor, to maintain and build connections with Russian educational partners. Related to this, the Associate Dean and Dean have held meetings with representatives of the Russian government in Ottawa and the Russian Honorary Consul in Vancouver.

5. Environmental Sustainability:

The Environmental Studies Degree program working group continues to work on the degree proposal, drawing from across a range of disciplines such as Geography, Communications and Philosophy. It is hoped that this EVST degree will develop in close collaboration with the proposed degree in Agriculture, given that UFV has been identified as the place for a Centre of Excellence in Agriculture in the new HE ministry mandate.

Various sustainability curriculum initiatives are underway in departments. Most of Geography courses and researchers are engaged in issues pertinent to environmental sustainability. In Communications, students write reports on Sodexo's claims of sustainability and learn about how Sodexo may have a positive global impact. Environmental sustainability is addressed in FD 171 Textiles. In GDD sustainability principles for design practice are introduced through student projects. Students attended a GDC event promoting "progressive social, economic and environmental principles." (GDC: Society of Graphic Designers of Canada) http://blogs.ufv.ca/graphicdesign/2012/12/31/gdd-outing-practivism-2/. Sociology and Anthropology offer specific courses on the environment, environmental sustainability and environmental justice. Most LAS courses include some environmental content, especially in the context of resource exploitation and development. Many other courses teach a contextual and theoretical basis for understanding environmental threats and sustainability.

Many Geography faculty members engage in research related to environmental science and sustainability. Recently, Scott Shupe in Geography won a 4-year grant from the Earthwatch Institute, worth over $42k, to conduct land cover mapping in Metro Vancouver, so as to better understand peri-urban and urban aquatic environments and environmental change. Jonathan Hughes continues his work on the geochemistry of paleoflood deposits in the Fraser Lowland, which helps contribute to understanding river behaviour over time. Steve Marsh continues his work in water sampling and analysis in the Fraser River basin, part of the World Rivers Project through Woods Hole Oceanographic Institute. He's also helping to organize an art show of student art from major river basins around the world, also part of the World Rivers Project. Several faculty have had their research published or will soon have their research, in the area of environmental studies, published in major journals or in edited works from major presses in 2012-13. Olav Lian continues his work on sedimentology; stratigraphy and geomorphology, much of it funded by NSERC and some by SSHRC. He is working on understanding the timing and nature of climatically-driven landscape change in western Canada by reading the landscape's 'solar birth certificate'; by understanding how the physical environment has responded to past changes in climate, it may be possible to predict the impact of future changes on the stability of landscape. The Agriburban Research Centre (ARC) established by Geography faculty member and CRC chair Lenore Newman is dedicated to the study of landscapes on the edge of major urban areas, with a focus on creating thriving agricultural regions within regional cities. ARC studies intensive agriculture, residential and agricultural interactions, agrarian migration experiences, fringe development, agricultural/ecological interactions, and land use regimes.

At least 4 faculty members from SCMS have specialized training and expertise in environmental sustainability.

Recent Writer in Residence, Rex Weyler, foregrounded sustainability as an issue across the disciplines.

Best practices to promote sustainability in everyday office and classroom practices include a number of departments having decided to cut down dramatically on use of paper and increasing online delivery of courses. VA is has introduced a "no water bottle" zone. FD and VA practice safety and best practices for using and disposing of hazardous products.

6. Indo-Canadian and South Asian Studies:

History continues to offer the bulk of courses for the Indo-Canadian Studies Certificate program. SCMS houses the India-Canada Studies Certificate. The India-Canada Studies Certificate is currently under revision so as to make it more practical for students to obtain. Indo-Canadian and South Asian studies is the principal area of research for two SCMS department members, two English department members and one History department member. English made a change to its English major to promote courses with Indo-Canadian and South Asian content. FD 320 – Fashion and Culture – will offer special topics in South Asian Studies. Philosophy offers a *Philosophies of India* course. MOLA reviewed its Punjabi courses this year. Theatre presented a performance and workshop on classical Indian dance form *Bharat Natyam* by Shakti Dance artistic director Anusha Fernando in October 2012.

One Geography faculty member continues to oversee a joint AUCC/ CIDA funded project in Chandigarh, India. Student interns have facilitated the participation of more than 120 families in an urban agriculture project and collected household data from 3000 households for an environmental vulnerability mapping project in Janta Colony slum. As part of GDS, he is pursuing an arrangement with two Sri Lankan universities to begin a research and student exchange project in Sri Lanka. Students and faculty researchers will be working on a collaborative project investigating conservation farming.

One VA faculty member traveled to Bangalore to negotiate an MOU with Srishti School of Art, Design and Technology to facilitate a broadening of academic, professional, and cultural perspectives of the students of both universities.

UFV's Centre for Safe Schools and Communities is working on Indo-Canadian issues in schools and the community.

Two Communications practicum students worked for the Indo-Canadian Centre over the year.

A History student recently completed a work-study term in the Indo-Canadian Studies Centre, working on an archiving project.

A Psychology faculty member and student received a student led research grant from the Centre for Indo-Canadian Studies for the project "Cognitive Biases against Visible Minorities: Social and Perceptual Mechanisms."

An English department member organised a conference in April 2013 on *Dalit Poetics and Politics*; this was very well-attended by community members, poets, writers and academics from national and international universities.

7. Mennonite Studies:

The Mennonite Studies Certificate (housed in the History department) is in the process of being redesigned so that it ladders into the proposed Peace Studies degree. Some existing courses in the certificate are being converted to an online format. ENGL 229, Mennonite Literature is included in recent English program changes as one of a list of courses that meets Global and Local Literatures requirement.

At the beginning of the academic year, a Cello/Poetry Recital entitled "Voices for Peace" was held to announce the development of a Peace Studies program. The program included a welcome by an Indigenous elder followed by a member of the English department reading poems by Dr. Richard Whitfield and a recital of Brahms & Massenet by Western Washington University faculty members on piano, violin and cello.

The Peace Studies program will focus on three streams of study: Conflict Analysis and Transformation, Peace building, and Sustainability. This decision was informed by two fact-finding and instructional visits to three universities with Peace Studies programs in Winnipeg, and to the Kroc Institute of International Peace Studies at the University of Notre Dame. Students will learn practical and professional skills in conflict analysis, conflict transformation, peace-building, sustainable development in a wide range of practicum and internship opportunities. The Program Working Group includes faculty members from eight disciplines.

The Dean and faculty members, together with the Executive Director of Advancement, held two meetings, one in Vancouver with the Dalai Lama Center President and CEO, Lynn Greene (http://dalailamacenter.org/users/lynn-green) and Victor Chan (Founding Director) and one at UFV with Lynn Greene and broadcaster, Maria LeRose (http://dalailamacenter.org/users/maria-lerose). This led to Victor Chan accepting an invitation as guest speaker at the Presidents Lecture series.

In Fall 2012, a fundraising concert and poetry reading was organised by Geography faculty in conjunction with the Canada Food Grains Board (CFGB). A speaker from the CFGB also presented at UFV, and the CFGB hosted an art event. The theme of the series of event was “Food as a Human Right”.

8. The Integration of Research and Teaching:

Commitment to the integration of research and teaching is central to the hiring process in the College of Arts. Faculty teaching continues to be informed by research. Many faculty are engaged in primary research, enlist students in research and offer the opportunity for research as part of course work. Numerous undergraduate research projects occur as a result of faculty mentoring. The promotion of undergraduate research is a core theme of a program reviews. Faculty members regularly offer Directed Studies to strong students wishing to undertake independent research. The employment of

students as research assistants jumpstarts the career of many students who go on to either professional, applied or academic careers.

Practicum and internship opportunities also facilitate student research in particular fields. Student research is mentored and student success is celebrated. The integration of research and teaching forms the content of many department and faculty council meetings.

Department initiatives follow:

- A Communications department member presented on her indigenization research at CCA at Congress and is presenting a co-authored paper at the Canadian Peace Research Association. This research has been incorporated into CMNS 345: Instructional Skills for the Workplace. This faculty member is working with a student research assistant on identifying student motivations to engage in research.
- Two Communications members presented on flipped learning at CCA at Congress and have been engaged in a research project involving their CMNS 251 and CMNS 430 classes.
- A faculty member in Communications continues her research on "Comparison of Student Achievement Across Sections of an Online and On-Campus Communications Course" presented at CASAE at Congress.
- In Criminology a substantial amount of research involving undergraduate students is conducted through the Centre for Public Safety and Criminal Justice Research and the UFV Centre for Safe Schools and Communities. Students complete agency-driven research papers, organizational manuals, best practices strategies, and literature reviews.
- In Fashion Design, a research component is included in every course.
- In Graphic and Digital Design, new pedagogical approaches, communication, technology, industry trends and media are integrated into the curriculum. This is the result of faculty currency in professional development, involvement with professional associations and local design conferences and industries.
- Undergraduate research is core to ALL Geography programs and informs several of the program learning outcomes.
- In MOLA, a French Instructor will be conducting research in her FREN 319 class in the fall of 2013 on the transfer of knowledge in the Second-Language writing process.
- In Philosophy increased course offerings are based on faculty areas of research
- In Psychology a department member led a monthly research forum open to students and faculty.
- In Sociology the development of a Research Concentration and several research oriented courses has given students many more opportunities to engage in research projects. The department plans on developing this into a certificate. Participation in UFV archaeological field courses recently led to one UFV student receiving a $17,500 Joseph-Armand Bombardier Canada Graduate Scholarship to take an MA in archaeology at SFU.
- VA presents an annual roundtable to coincide with the faculty exhibit. The roundtable offers students a vibrant forum for discussion of the integration of research and teaching.

9. Strengthening the Culture of Teaching and Learning:

Teaching
The College of Arts initiated and supported (with Teaching and Learning and the Writing Centre) two workshops on John Bean's Engaging Ideas: The Professor's Guide to Integrating Writing, Critical Thinking, and Active Learning in the Classroom. The day-long workshop was "sold out" and will be repeated in August. Bean's emphasis on using writing activities to foster critical thinking and research-oriented undergraduate experiences fits so well with UFV's ILOs that we want to continue supporting faculty in making "Bean" part of their teaching repertoire. To this end, we will collaborate with T and L and the Writing Centre to offer "brown bag" meetings on Bean-related topics such as rubrics and "low-stakes" assignments. We will also buy additional copies of Engaging Ideas to offer to faculty members.

The Associate Dean of Arts brought Katharine Patterson of UBC's Arts Studies in Research and Writing to UFV for two workshops with faculty members.

The College plans to initiate a College of Arts "Mentorship" award for a faculty member who has shown exceptional dedication in fostering student achievement.

Linda Pardy of the Communications Department won the Teaching Excellence Award this year; she regularly conducts Employee Services workshops.

Department teaching initiatives follow:

- Several Communications members are trained ISW facilitators.
- The Communications department held a full day retreat on promoting student-centred learning and how it could be better reflected in CMNS 125, 155 and 251 courses.
- The Communications department is instituting a sessional mentoring program this fall. Graphic and Digital Design is in its first year. Systems are being developed to mentor new faculty.
- Criminology held a retreat on establishing common policies on teaching and learning in each course and across our curriculum. The School is examining a variety of pedagogical methods and classroom assignments and activities to enhance teaching and learning.
- In April, the English department held a retreat that focused on learning outcomes and program coherence. Two English department faculty participated in the ILO pilot project.
- Fashion Design holds an Annual Trend Forecasting workshop for faculty members to keep faculty current and as an information sharing opportunity. This complements faculty meetings that include discussion of technology in the classroom, use of the smart board technology and how to increase on-line courses or blended courses like FD 193.
- A Geography instructor is completing her Provincial Instructor Diploma program while on sabbatical.
- Various History department members attended professional development on problem-based learning. Most took part in a workshop on active learning in the classroom. Significant discussions occurred around skill acquisition, assessment, and laddering. Several department members attended the workshops with Roger

Graves. Monthly department meetings include discussions around teaching and learning.

- The Philosophy department has established Pedagogy meetings.
- Two Visual Arts studio instructors participated in an Art History/Visual Arts faculty panel that will become a semi-annual event. The panel, moderated by an Art History instructor, focused on the artistic development and education of the 'practicing artist' that are our faculty. Students had the opportunity to hear and ask about the educational journeys of faculty and how the faculty's artistic practice contributes to the students' education.
- Theatre participated in the ILO pilot project, holding two retreats to map Theatre curriculum and examine the alignment of course LO's with program LO's and institutional LO's.

Ongoing:

The ENGL 105 course outline is being revised to make them consistent with best practices set in motion discussions of pedagogy and learning outcomes. A few Geography courses were offered for the first time this past year in a hybrid format, with varying success. FD has developed core course project collaborations; several of FD's core courses partner on course projects which provides an opportunity for collegiality, sharing teaching strategies, information and knowledge. MOLA Spanish Instructor's travel to different countries of Latin America contributed to refreshing her cultural and linguistic immersion. In SCMS many faculty members use online supplements or partial online courses to augment their classroom component, which adds an updated teaching method for digitally focused students. Visual Arts and Art History faculty were involved in Scholarly Sharing this past year, a valuable forum for both faculty and students in the educational environment.

Learning:

The new framework for the BA will move in fall of 2013 through the committee approval process. This framework, if approved, will strengthen the degree in key areas: communication, quantitative reasoning, critical and creative thinking, understanding of environmental and indigenous issues, ethical reasoning, and applied learning. The Peer Mentoring program will continue in 2013-2014. Frequent field trips and study tours encourage unique ways to teach beyond the classroom. Departments are working toward incorporating more experiential learning opportunities and skill focused learning into their programs.

10. Community Partnerships, Forums, Events, and Conferences:

See above sections on Indigenization (partnership with Nicola Valley Institute of Technology), Indo-Canadian Studies (work with AUCC, practicum placements in India, students at Panjab University) and Mennonite Studies (Mennonite Community Advisory Committee and Mennonite Faith and Learning Society).

Practicum opportunities ensure that department and students maintain strong community links with a range of community organizations. The College developed ARTS

280, which will be used in 2013 for BFA students with the Reach Gallery and Museum. The College fosters relations with the Reach Gallery Museum, Abbotsford, with the Dean serving as a member of the Board. The History and VA department have strong connections to the Reach with current students and alumni working there. One History student completed a HIST 401 practicum at the Reach during Winter 2013, working on the Abbotsford History Minutes project. Communications practicum students work with Abbotsford Community Services, the City of Abbotsford, Menno Place, Abbotsford Hospice, CIVL Radio, Abbyfest, and others. The School of Criminology and Criminal Justice has dozens of partnerships for its practicum courses. Fashion Design provides internships and practicums based on close ties with the industry, and collaborates with local companies on various assignments and projects (e.g. Armorworks Kelowna, Arc'teryx etc.) History has several students working on museums, heritage sites, and archives throughout the Lower Mainland. SCMS has developed partnerships with Latin American NGOs as hosts for GDS internships.

Some departments have active advisory committees to provide input on existing and proposed programs e.g. the Communications Department advisory consists of industry practitioners.

The CMNS department maintains a relationship with the Rise and Shine Toastmasters club, which sponsors a $600 scholarship to the top Oral Communications student each year.

Graphic and Digital Design projects integrate local community/business into the curriculum.
http://blogs.ufv.ca/graphicdesign/2013/01/31/gdd-projects-engaging-the-community-2/

GDD invited the District of Mission and local community to an open house celebrating its first anniversary.
http://blogs.ufv.ca/graphicdesign/2013/03/28/design-mission-the-future-is-here/

The College fosters relations with the city; the Dean serves as a member of the Abbotsford Arts and Heritage Advisory Committee, which supports the Parks, Recreation & Culture Commission (Commission) while many faculty members in Arts serve on municipal and regional committees and boards. Visual Arts partners with the Abbotsford Kariton Gallery and Abbotsford Arts Council. The Theatre Department is working on a partnership with Abbotsford Police Emergency Response Team to employ UFV Theatre students to perform in crisis scenarios for training purposes. A member of the English department plays a key role in organizing the Mission Writers Festival. Faculty members (e.g. in History and SCMS) give presentations to Lifetime Learning. Writer-in-Residence Rex Weyler had a significant impact across a range of departments by modeling the role of public intellectual and emphasizing the importance of the writer in promoting social justice.

The Philosophy department participates in the BC Hub for Engaged Philosophical Inquiry and has participated as a partner in a SSHRCC grant application to support a Canadian Network for Engaged Inquiry. The School of Criminology has a number of partnership research proposals being evaluated. It will continue to conduct research for a variety of government, education institutions, and community partners. It has partnerships with IBM, Sun Microsystems, and SPSS for the research lab associated to the Centre for Public Safety and Criminal Justice Research. See section 11 below for

reference to the UFV Centre for Safe Schools and Communities. SCMS department members serve as expert commentators on local, provincial and national media, researchers for community agencies like Abbotsford Community Services and the Chilliwack School Board; a documentary producer for the Centre for Education and Research on Aging (CERA); presenters at local community conferences such as "The People of the River Conference" in Chilliwack and involvement in a range of First Nations events, such as Idle No More sessions, Nuxhalk "People of the Sky" event at the Museum of Anthropology and the Musqueam Nation's forum with UBC House of Learning and Chief Robert Joseph.

College of Arts faculty and students attend and participate in many national and international conferences and local events. A member of the English department organised a conference at UFV in April 2013 on Dalit Poetics and Politics; this was well attended by community members, poets, writers and academics from national and international universities. In August 2012, MOLA faculty facilitated a workshop at UFV on "Exploring the Common European Framework of Reference for Languages – what It Means for Post-Secondary Education." FD faculty members have participated in various conferences such as BCreative Conference at SFU, contributing to a panel discussion on the apparel industry in BC. This past year, the School of Criminology and Criminal Justice hosted several events at UFV, such as the opening of the UFV Centre for Safe Schools and Communities. Geography continues its successful Discoveries Speakers series, which brings in researchers from other institutions and elsewhere. History continues to host an annual information session on graduate school. Theatre hosted Alumni Evenings of Theatre in cooperation with the UFV Alumni Association
FD department members have acted as jurors for various exhibitions or shows.

11. Interdisciplinarity and Cross-Departmental/Faculty Cooperation:

The principle of interdisciplinarity is the key organising factor of the College of Arts that comprises the Faculty of Humanities and the Faculty of Social Sciences. These two faculties conceived of the College as a means of ensuring faculty collaboration and program development.

ARTS 100: Interdisciplinary Introduction to University Study was successfully team taught in Fall 2012 and will run again in Fall 2013. Arts students completing a BA can now integrate a science major or minor into their degree Last year, the interdisciplinary Bachelor of Arts: Global Development Studies Degree was approved. It is situated in the Geography Department and it has an intake of 36 students. This degree will also accommodate trades options from the Faculty of Trades and Technology. Research has begun into cross-program cooperation between Trades and the BFA degree. The interdisciplinary Bachelor of Media Arts has been approved by APPC and is scheduled for ministry approval. This includes collaboration of six disciplines: CIS, CMNS, ENGL, MACS, THEA and VA. The interdisciplinary BGS degree now accommodates the NVIT Chemical Addictions Worker Diploma and Advanced Diploma and includes concentrations and programs from across a range of faculties. A concerted effort moving forward will be to develop various thematic options (e.g. agriculture).

Interdisciplinary degrees in development include the Indigenous Studies Degree involving members from five disciplines, the Environmental Studies Degree involving members from seven disciplines, the Peace Studies Degree involving members from eight disciplines and the MA in Migration and Citizenship involving members from nine disciplines.

Departments cross-list courses, collaborate on field trips, the development of new courses and in program working groups. Arts faculty members regularly participate on IPECS, SACs and Program Reviews for other departments. Faculty members in the College also share research projects with members from other departments. (e.g. the School of Criminology and Criminal Justice). The Dean worked with the School of Criminology and Criminal Justice to re-envisage the two BC Centres as a UFV Centre for Safe Schools and Communities to facilitate safe, healthy, and socially responsible environments to maximize the well-being of children and youth. The objective of this merger and renaming was to promote community-engaged research and interdisciplinarity across the College of Arts. The School models community-engaged research. To help facilitate the work of the Centre, the CSSC will receive strategic guidance and support from an advisory council that will consist of individuals who will bring unique knowledge, opinions, perspectives, and experiences to advance the mission, reach, and sustainability of the CSSC from across a range of disciplines, e.g. Philosophy, English, Geography, CYC, Social Work, etc.

12. Recruitment and Engagement of Faculty:

Over the past year, the college has become more deliberate in targeting and recruiting both permanent and sessional or adjunct faculty for existing and new or planned programs (e.g. Graphic and Digital Design, Indigenous Studies, Economics). Given the scarcity of resources, and the need to be flexible in replacing retirements (or not), this has been a challenging process, but in the end increased scrutiny over this process will ensure that we get the best teachers into the building over the longer term. In addition, the College of Arts has begun to cultivate a degree of faculty accountability that is based on a more consistent, proactive and supportive cycle of three year evaluations - including, with some success to date, acceptance of the need for teaching dossiers and standardized CVs. The College of Arts has also made much progress in securing faculty acceptance of both the development of program and institutional learning outcomes and in terms of increased grassroots involvement in the development of faculty and departmental criteria for teaching, service and scholarship. College of Arts administrators have been key participants in negotiations, informing the development of the rank and tenure system. College of Arts Council voted on a motion to request that Senate Governance establish a process for coordinating the development of Faculty Standards and elected a Faculty Standards committee consisting of two Social Science faculty members, two Humanities faculty members, one representative of Creative Arts, one Indigenous faculty member, and one Dean to draw up College Standards based on department submissions and best models at institutions with related mandates. Discussions over ways in which to reward committed faculty (e.g., recognition and acknowledgements, awards, etc.) are ongoing. The College is a leading participant in the research task force process, the ultimate result of which will be a streamlined and transparent process for faculty who want to conduct research and scholarship.

Department initiatives follow:

- Communications and English Department faculty have been involved in the Scholarly Sharing Initiative, both as presenters and organizers.
- The School of Criminology and Criminal Justice has established an excellent pool of sessional instructors who are mentored and included in all aspects of the School. The School encourages those with practical work experience and excellent academic credentials to teach in the program.
- The English department has a writers group that meets regularly to discuss faculty research.
- FD encourages and supports faculty participation in exhibits, symposiums, research and internationalization projects. Faculty members' on-going work and successes are shared at department meetings and through social media.
- Local design industry and professional associations were consulted to recruit two new industry-active professionals with an interest in local industry.
- Geography continues to request a new position stemming back to 2007 but could well face issues in retention given comparable salaries elsewhere.
- History Department members are encouraged to be active university citizens, finding committees and working groups outside of the department which speak to their interests and needs. Faculty members currently sit on committees and bodies including the LAC, CACC, Senate, FSA, and the RAC. Department members support faculty research, conference participation, and engagement with their academic communities.
- In MOLA, efforts have been made to hire sessionals from different Spanish-speaking countries to expose UFV students to the cultural and linguistic diversity of Hispanic communities.
- Psychology lost a position this year with the non-replaced retirement of one of two clinicians. This poses a problem due to the department's additional specialization in health psychology. Because clinicians have many employment opportunities, it is very difficult to find a clinical psychologist willing to work sessionally. The department has a number of relatively recent faculty with research programs, but two of them have no space for conducting research, and one has minimal space. The faculty without research space are finding it difficult to conduct research activities on campus.
- SCMS faculty are engaged in national and international scholarly associations and networks that connect the department with candidates for permanent and sessional faculty positions. The department uses interdisciplinary SACs for permanent hires so as to better assess the collaborative potential of candidates. Faculty are encouraged to develop courses and programs that align with their areas of speciality, which has led to valuable initiatives such as programs in GDS and Diaspora Studies. The department plans to start PD activities on topics like engaging students in the classroom, online course design, internationalizing the curriculum, and working with diversity in the classroom.
- For the past four years, VA has run without the full complement of faculty present (not counting sabbaticals). This resulted in the stress of additional departmental work being shouldered by fewer people. The hiring of a GDD Department Head has brought credibility and clear direction to the GDD program. The VA department has assumed a mentoring role and is delighted to have her join the departmental and BFA Program Committee meetings.

13. Creative Resourcing:

The College of Arts has:

- included an assessment of the efficient use of resources in all program reviews
- trimmed operating budgets
- developed new programs with new tuition rates (GDD Diploma and Media Arts Degree)
- hired faculty members with more than one area of expertise
- obtained RBC funding for a pilot program in peer mentoring
- developed ARTS 100, an innovative interdisciplinary team taught course that is also a more economically viable model of delivering writing and reasoning requirements to direct entry students
- removed the writing requirement in some programs so that students with A's in grade 12 English do not have to take English 105
- started discussions on the need to increase some class sizes so as to enable flexible models of delivery that will protect small seminar type classes and capstone classes.

Department specific initiatives follow:

- Communications has encouraged faculty to go paperless in classrooms and has discontinued its photocopy code to promote greater use of digital resources.
- With no additional funding for advising for new programs, it has become essential to have advisors cross trained in more than one program area.
- The School of Criminology and Criminal Justice is developing certificate programs to serve community/agency needs that can generate revenue. The School is developing strategic partnerships with the private sector to increase opportunities for students and revenue.
- The English Department is exploring the possibility of cooperative arrangements with other departments to support course offerings in linguistics and rhetoric.
- FD faculty are engaged in fundraising and work with the Advancement Office to develop sponsorships programs with local companies. The department has ongoing sponsorship from community members (e.g., Sevenoaks, High Street, Willowbrook Mall, Media Sponsors and other in-kind donations). This past year, the department received donations of supplies and equipment – floor looms, knitting machine yarn, etc. FD students fundraise through the Fashion Design Student Association. Faculty have now started to track and examine the cost of course materials and are looking at better utilization of resources and supplies.
- GDD has implemented a sustainable solution for space utilization and technological adaptability. An increased tuition fee on all GDD courses facilitates required lab refresh cycles. GDD 2-year diploma cohort students purchase their own computers and software. Lab fees on all GDD courses pay for colour copier expenses. The lab will be fully utilized in 2013/14. The production lab facilitates shared resources and is used for project development, group work and critiques. Art/drawing studio doubles as a large photo studio with furniture that can be easily reconfigured.
- Geography faculty continue to bring in research funds that are in turn used to support undergraduate research projects.
- In MOLA, a formal student exchange for fourth-year French students has been signed with Laval University in Québec City. This exchange will enable students to pursue fourth-year studies and transfer those credits back to UFV, as well as obtain

a highly valuable immersion experience in a francophone environment, without further cost to the university.

- The multidisciplinary nature and history of SCMS has given the department a head start in cross listing of courses. Cross listing helps to increase seat utilization although some faculty are concerned that this may dilute the disciplinary content of programs. New interdisciplinary programs built around existing courses (e.g. GDS and MAD) increase seat utilization.
- VA is moving to a 'paperless' culture. Most instructors are moving to the use of electronic assets through BlackBoard Learn or MyUFV portals for the dissemination of course material. Staff contribute by keeping electronic versus paper records. Faculty are guiding course/student projects that are environmentally conscious. Students are encouraged to recycle and use found objects wherever possible.

14. Plans for improving your Faculty/College's progress towards achieving these goals:

- Develop SEM for Arts, including planning enrolments for proposed degrees, capping enrolment where appropriate and supporting small areas where programs are viable
- Encourage pedagogies and assessment in line with Learning Outcomes and, where appropriate, in line with industry needs
- Implement new BA breadth requirements and actively explore the idea of a foundation year in Arts
- Ensure six month and one year follow up after Program Reviews and ongoing curriculum review to ensure coherence and efficiency and to ensure students complete their credentials in the most efficient time frame possible
- Promote ongoing engagement in dynamic pedagogies and the scholarship of teaching and learning through retreats, encouraging PD, promoting and celebrating integration of teaching and research
- Continue to develop and establish inter-institutional partnerships with local and international universities and community partners (see above sections)
- Improve liaison with High School teachers, particularly in relation to access of Indigenous youth
- Improve communication of the mission and successes of the College of Arts to developing a stronger public presence and to maintain contact with alumni
- Strengthen community links by hosting more visiting speakers, attending more community forums and supporting faculty/community liaison
- Maintain and increase connections across UFV faculties and with all service areas

III Report on Programs

a. Progress on Approved New Programs

Programs approved since September 2011:

Program	Senate Approval (Date)	Ministry Approval (Date)	Implement (Yes or No)
BA: Global Development Studies	**2012**	**2012**	**Yes; in-take 2013**
BA: Econ Major	**2013**	**Summer 2013**	

b. Programs Recommended for Discontinuance or Suspension

GIS concentration in BA: Geography Major

c. Programs Recommended for Modification

Indigenous Arts Certificate
Mennonite Studies Certificate

d. Review of Programs in Development

Programs listed in the Ed Plan in development or nearing approval at Senate:

Program	Likely date at Senate
Media Arts Degree	September 2013
Indigenous Arts Degree	Winter 2014
French Major	Winter 2014
Bachelor of Professional Communications	Winter 2014
Peace Studies Degree	2015
Environmental Studies Degree	2015
MA Migration and Citizenship	2015

e. Newly Passed Concept Papers

Theatre Major; Spanish Minor and BBA: Fashion Design under consideration

f. Departmental Information

2012-13

Department	Domestic FTEs	International FTEs	Fill rates	Average Class Size
Communications	195.10	55.7	93	23
Criminology and Criminal Justice	421.14	17.14	98.4	32.1
Economics	90.07	37.73	95.7	29.8
English	482.9	23.79	90.9	24.9
Fashion Design	28.99	5.28	76.8	15.2
Geography	213.97	15.62	92.2	27.9
Graphic and Digital Design	13.6	1.7	91.1	21.9
History	227.53	2.19	78.7	24.8
MOLA	108.22	10.11	83.2	21.4
Philosophy Political Science	208.66	5.98	94.3	28
Psychology	379.94	5.10	94.1	31.3
SCMS	302.47	14.16	95.9	31.5
Theatre	52.48	.33	78.9	13.4
Visual Arts	157.62	18.9	86.9	18.9

2011-12

Department	Domestic FTEs	International FTEs	Fill rates	Average Class Size
Communications	197.71	56.53	92.2	22.7
Criminology and Criminal Justice	403.78	17.27	102.7	32.7
Economics	91.17	38.23	102	33.3
English	507.85	28.75	93.1	26.2
Fashion Design	28.2	4.67	76.5	15.4
Geography	219.44	9.91	93.6	28.3
Graphic and Digital Design	6.94	1.7	94.5	17.2
History	245.88	4.08	80	25.7
MOLA	110.48	13.59	86.6	22.3
Philosophy Political Science	222.29	5.59	98.1	29.8
Psychology	381.98	8.95	92	30.8
SCMS	305.6	14.01	95.4	31.6
Theatre	60.27	0	86.7	17.5
Visual Arts	159.13	18.97	89.4	19.3

2010-11

Department	Domestic FTEs	International FTEs	Fill rates	Average Class Size
Communications	190.89	56.41	93.4	23.3
Criminology and Criminal Justice	414.39	12.90	104.3	32.2
Economics	82.40	44.10	100.3	32.5
English	503.75	25.07	94.5	26.2
Fashion Design	36.32	5.21	85.3	16.9
Geography	234.45	5.06	94.8	28.8
Graphic and Digital Design	10.88	2.25	73.3	14.7
History	235.76	2.61	83.4	26.1
MOLA	103.3	12.4	86.6	21.7
Philosophy Political Science	212.32	5.41	101.2	30.9
Psychology	379.47	7.64	92.6	31.8
SCMS	306.2	7.71	95.8	31.9
Theatre	58.2	.22	81.4	16.9
Visual Arts	166.22	15.38	89.7	19.9

2009-10

Department	Domestic FTEs	International FTEs	Fill rates	Average Class Size
Communications	195.41	36.71	95.7	22.8
Criminology and Criminal Justice	411.51	5.97	101.1	30.7
Economics	76.73	29.70	94.8	30.1
English	487.92	21.24	91.2	25.8
Fashion Design	36.32	3.84	88.2	18
Geography	212.59	6.99	86.2	23
Graphic and Digital Design	6.15	.41	98.5	22
History	239.81	3.97	80	26
MOLA	95.49	12.3	78.7	20.2
Philosophy Political Science	207.57	5.01	89.3	27.1
Psychology	390.96	7.45	90.6	29.6
SCMS	288.8	11	91.2	30
Theatre	59.24	.20	80.1	18.5
Visual Arts	165.97	10.99	87	19

g. Programs Reviewed and Scheduled for Review

Programs	Review Date
Criminology; English	2011
English ; History	2012
Theatre	2013
SCMS	2013
MOLA	2013
Geography	2013
Psychology; Fashion Design	2014/15

h. Major institutional or Faculty/College-wide challenges/required changes resulting from program reviews:

- Department Heads need to be granted greater supervisory responsibilities to oversee grading, faculty evaluations and annual workload plans
- Curriculum streamlining is required to ensure efficient use of resources
- Better timetabling for students' needs
- Space needs to be found on Abbotsford campus to house some Theatre classes to assist in the transition of this program to Abbotsford and plans need to proceed for building of UHUB to facilitate Theatre productions as well as improved technology and training for teachers
- Spaces for student hubs in departments need to be created
- Class sizes need to be moderately increased to ensure programs are sustainable, allow for some new program growth, and preserve seminar experiences
- Better strategies and packages are required for faculty retention

i. Programs with program learning outcomes aligned with the Institutional Learning Outcomes (ILOs):

Communications; Criminology and Criminal Justice; Economics; Geography; Graphic Design; History; MOLA; Philosophy; Psychology; Theatre; Visual Arts

In process: English; Fashion Design
SCMS (planned for August); Political Science (not done)

j. Plans for improving your Faculty/College's progress towards achieving the ILOs:

1. Demonstrate information competency (written, oral, visual, and numerical):
   Implement revised BA breadth requirements and revised BGS outcomes; continue to offer writing across the curriculum workshops; introduce Major in Economics and Media Arts Degree
2. Analyze critically and imaginatively:
   Ensure ILOs are met in all program reviews, expand Arts 100; support capstone experience in majors and degrees; ensure "the need for multiple voices" by assisting

the Indigenous Studies Degree program committee with completion of the degree proposal and provide support to Peace Studies Degree and MA in Migration and Citizenship working groups

3. Use knowledge and skills proficiently:
   Increase practicum and internships; application of knowledge and skills in all programs
4. Initiate inquiries and develop solutions to problems:
   Implement new BA breadth requirements; encourage undergraduate research
5. Communicate effectively:
   Implement new BA breadth requirements; develop new 3 year Professional Communications degree; support student presentations/ conferences; plan Arts undergrad conference at UFV
6. Pursue self-motivated and self-reflective learning:
   Work with Arts Advice to ensure implementation and monitoring of early declaration
7. Engage in collaborative leadership:
   Support team based problem solving in capstone courses as in new BA breadth requirements
8. Engage in respectful and professional practices:
   Support and deliver peer mentorship programs (see above); expand Arts 100
9. Contribute regionally and globally:
   Support success of new GDS degree; encourage practicums and internships; recognize community engaged research and service

Faculty of Health Sciences

EDUCATION PLAN UPDATE 2013

Submitted by:
Dr. Joanne MacLean, Dean

Education Plan Update, 2013

I Review and Reaffirmation of Institutional Priorities identified in Five-Year Plan

13 Priorities

1. Student Recruitment, Retention, and Success
2. Enrolment Management
3. Indigenization
4. Internationalization
5. Environmental Sustainability
6. Indo-Canadian and South Asian Studies
7. Mennonite Studies
8. The Integration of Research and Teaching
9. Strengthening the Culture of Teaching and Learning
10. Community Partnerships, Forums, Events, and Conferences
11. Interdisciplinarity and Cross-Departmental/Faculty Cooperation
12. Recruitment and Retention of Faculty
13. Creative Resourcing

a. Trends and Challenges in Higher Education (list the top challenges—no more than ten):

1. Financial challenges: cutting costs while maintaining quality services; demand outpacing supply
2. University autonomy in decision-making
3. Student expectations for instantaneous feedback and digital technology
4. Fully understanding local labour markets
5. Students seeking academic credentials in various program formats - compressed, on-line, open-ended
6. Student recruitment; program, credential marketing
7. Program need for space outpacing available physical plant
8. Indicators of quality: time-to-completion, graduation rates, learning outcomes
9. Recruitment of faculty members, both full and part-time instructors
10. Community fatigue for accepting experiential learning student placements

b. New local demographic and employment data:

1. The current population of the Fraser Valley region is 289,030; this makes up 6.2% of BC's population. In 2012, the Fraser Valley's population grew by 0.6%.
2. While at present the births in the region account for more than 30% of the total net population increase, the net migration to the region is projected to account for more than 90% of population increase by 2036. In 2011, 7.3% of migrants to BC settled in the Fraser Valley; of these migrants, 60% were international and 40% were intra-provincial. BC will have to continue to depend on migrants to address short-term skill shortages and longer-term labour market growth.
3. While the population of the Fraser Valley is increasing, this increase is not spread uniformly

across age groups. For example, the number of 15-19 year olds reached a temporary peak in 2009 and, for the last three years, the population of this age group has been declining. Three years from now, in 2016, this downward trend will reverse, and the number of 15-19 year olds will begin to increase again, reaching a cumulative increase of 27% from today's value by 2036. The two other age groups, 20-24 and 25-29, that attend university at high rates, follow a similar pattern, just delayed by the number of years that separate the groups.

4. The economy and labour market in the Fraser Valley continue to show signs of recovery following the 2008 financial crisis; the unemployment rate in the Abbotsford-Mission area was 8.1% in May 2012 falling to 7.1% in early 2013. An estimated 660,000 jobs are projected to be generated in the Mainland/Southwest development region (which includes the Fraser Valley), representing 65% of the new job openings in the province. The BC Ministry of Jobs, Tourism and Skills Training and Responsible for Labour states that more than 77% of the job openings in BC over the next 10 years are expected to require some post-secondary education and training.

5. Looming retirements in the health workforce combined with the rising demand for services and increased national and international competition for health professionals impact the provinces ability to maintain an adequate supply and mix of health professionals and workers for BC's health care system. Fraser Health is challenged to fill current vacancies and expected turnover and requires a 20% increase in the total complement of registered nurses by 2012. (FHA Service Plan, 2009)

   Greatest driver of rising demand for health care is an aging population. British Columbia's aging population is the fastest growing in Canada. Between 2006/07 – 2012 the over 65 population increased by 20%. An increasing, aging population in combination with the rising burden of chronic disease results in a growing demand for health services and health care professionals. (FHA Service Plan, 2009)

   There is increasing demand for health care workers generally; Health Care Assistants' (HCA) employment in home support has expanded, opening up more opportunities for HCA in the context of community health services; further, the HCA role is expanding in scope, triggering opportunities for post grad certificates.

c. Local economic development priorities:

1. Employment opportunities for university graduates in the Fraser Valley are similar to those of the Lower Mainland and other urban areas in Canada. The greatest number of openings will be in positions including managers in services, retail, construction and transportation; finance and administration occupations; computer professionals; nurses; school teachers; and social workers. In 2011, Abbotsford moved to provide an attractive tax climate for commercial and industrial firms. This would provide Abbotsford a competitive advantage that would result in increased investment and development over current levels.
2. Cross-border business and transportation: the Highway 11 upgrade as well as an extension of the NEXUS lane are meant to improve cross-border travel with the U.S. by 2016.
3. Aerospace industry: Abbotsford is campaigning to transform the Fraser Valley into a western Canadian hub for the aerospace industry, with Abbotsford Airport (YXX) at the core. As well, Abbotsford continues work to upgrade YXX infrastructure.
4. Agriculture sector in Abbotsford: Abbotsford farms and agri-businesses generate an economic impact of some $1.8 billion for Abbotsford's economy.

d. Trends in new programming elsewhere:

1. General program consolidation as opposed to expansion.
2. Kwantlen University health programming was relocated to Langley campus this past year, and some expansion is noted.
3. Increased utilization of simulation training in Health related programming.
4. Expansion of on-line course offerings, some in large enrollment formats.

e. Resulting necessary changes or adjustments to strategic priorities:

1. Expanded use of simulation learning to enhance achievement of performance competencies and achievement of program outcomes.
2. Strategic planning strategies to secure clinical placements in a highly competitive environment; development of new and creative approach to support student clinical learning opportunities; comprehensive review of clinical learning hours required to support student success with achievement of performance outcomes.
3. Growing on-line course offerings.
4. Exploring new models for online/hybrid course delivery, including class size review and strategic management/review of quality.

II Report on Non-Program Initiatives identified in the Five-Year Plan

This section identifies specific progress made in achieving the non-program priorities identified in the Five-Year Ed Plan (such as indigenization and internationalization) and can also include any new specific plans for the coming year. The section concludes with an evaluation of whether and how improvements should/can be made to improve your Faculty/College's progress towards achieving these goals.

1. **Student Recruitment, Retention, and Success** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority*:
   (a) Personnel in the Faculty of Health Sciences continue to engage in close monitoring of student enrollments, and to take strategic measures for marketing programs with lower than required enrollments and/or direction of students to understand other program options.
   (b) We have formed a Student Experience Committee within Health Studies in order to understand factors of student experience and success within Nursing.
   (c) The Dean has created opportunities for student input via meetings and invited student leaders to lunch as a means of understanding student experience in the Faculty.
   (d) Nursing faculty members are engaged in a research study to compare student success and satisfaction in the regular 4 year BSN vs. the 3 year Fast Tracked BSN program. Via this study we anticipate implementation of new strategies to support student success.
   (e) KPE leadership has engaged new student orientations (May, 2013), graduating student celebration (June, 2013), and is engaging opportunities to showcase new facilities at CEP (Human Performance Centre).
   (f) The Faculty of Health Sciences web site is in revision, with the express intent to provide a student friendly and engaged site that promotes information sharing and highlights program/personnel strengths in effort to positively impact student recruitment, retention, and success.
2. **Enrolment Management** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   (a) Program by program review of sections, fill rates, and wait lists are engaged in order to understand enrolment management within the Faculty.
3. **Indigenization** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   (a) The Dean of the Faculty of Health Sciences, along with the Associate Provost, is in talks with Fraser Health and Sto:Lo First Nations regarding a MOU to ensure collaboration and potential programing for indigenous people as it relates to health education.
   (b) KPE Activity courses (Sheppard) at Seabird Island First Nations.
   (c) Nursing (BSN and HCA) placements (Bocsanu, Edwards) with Sto:Lo First Nations partners; discussion regarding an LPN to BSN bridging program with Seabird First Nations (MacDonald).
   (d) Curricular review - completed for BSN and HCA, and proposed for PN, CDA and KPE. Plans include a review of ways in which we might build awareness among non-aboriginal students, such as select KPE course delivery in the CEP Gathering Place.
   (e) Several faculty members are engaged with indigenization. For example, KPE instructor Brian Justin has delivered stress management technique workshops via the Native Indian Teacher Education Program (for teachers) and the BC Aboriginal Youth Internship program in 2012-13.
4. **Internationalization** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*

   (a) Faculty Council identified Internationalization as a Faculty priority requiring a standing committee; the committee was formed and created terms of reference in 2012-13.
   (b) An MOU with the Antigua Ministry of Education, Sport, Gender and Youth is in final development in order to formalize opportunities for health education with UFV.

(c) Successful International Study courses are ongoing: KPE (Champions for Health Promoting Schools, Antigua), KPE (Italy), Nursing (Belize). Future student exchange opportunities proposed in Nursing for Sweden and South Africa.
(d) Antigua teachers were hosted at UFV in March as part of the Antigua Educators Exchange program, participating in UFV and Chilliwack school district physical education activities.
(e) A review of program curriculum and experiential learning opportunities as related to Internationalization is proposed.

5. **Environmental Sustainability** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
(a) A review of program curriculum and experiential learning opportunities as related to Environmental Sustainability is proposed.
(b) Student Services initiated the inter-campus shuttle bus between CEP and Chilliwack effective September 2013, which will reduce car travel for students and employees, thereby reducing our collective carbon footprint.

6. **Indo-Canadian and South Asian Studies** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*

7. **Mennonite Studies** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*

8. **The Integration of Research and Teaching** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
(a) Faculty members in both KPE and Nursing have engaged students in research. For example, Strength and Balance Training in Elderly Patients (Gaetz/Canning), Strength-Based Interventions for Children with FASD (Pritchard Orr/Keiver/Bertram/Gaetz - FASD Interventions Project), Concussion Management (Gaetz, Brandenburg, Bertram, Friesen).
(b) Nursing researchers are comparing program modes of delivery (regular 4 year program vs. 3 year fast track) in order to understand the impact on learning and student satisfaction; evaluation of the impact and efficacy of nursing simulation is also underway.
(c) The Dean is developing several research funding incentive awards, of which engagement of students in research projects will be one requirement.

9. **Strengthening the Culture of Teaching and Learning** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
(a) The Faculty of Health Sciences Dean held the inaugural Faculty Retreat in May 2013. The day-long event was widely attended, and contributes to the strengthened culture of teaching and learning. The Retreat involved a collective effort to establish and reaffirm our vision and mission, and to stating the values upon which we will make future decisions.
(b) In June, 2013, the Dean and Nursing Student Satisfaction Committee lead a half-day retreat for Nursing faculty members at which a variety of discussions engaged the groups planning regarding "best place to work, best place to study".
(c) On the basis of student feedback, action has been taken to ensure that specific courses identified as being particularly challenging for students (e.g., BSN Pathophysiology) are taught by full-time B Faculty members.

(d) Efforts are underway to evaluate ways in which "Simulation" can be fully leveraged by health studies programs, and also engaged in a multi-disciplinary manner by nursing, dental, and kinesiology students and faculty members.
(e) The Dean's Office is investigating an expanded program for honouring students, including a Dean's Honour Roll for which certificates will be distributed at a yearly Health Sciences reception.
(f) The BSN simulation committee has expanded to now represent the School of Health Studies. Terms of reference drafted for a School of Health Studies Simulation Standing Committee are in development to fully support ongoing simulation learning activities across all nursing and dental programs, and as a forum to support development of interdisciplinary simulation learning experiences more broadly within the Faculty.
(g) Director of Health Studies, Hannah MacDonald, is representing UFV on the Lower Mainland Nursing Clinical Education Steering Committee. The committee's primary focus is the development of a new model/structure for the management of practice education experiences. This is a critical partnership between post-secondary health education and health authorities in addressing the demand/supply crisis in availability of clinical practice experiences for nursing students.
(h) Another important new initiative in relation to community partnerships is the role of simulation learning. The new mandate of the School of Health Studies simulation committee is to explore community partnerships in support of interdisciplinary learning opportunities. For example, we are pursuing discussion with the UBC family practice residency program in the Fraser Valley to look at how we can bring nursing and the discipline of medicine together for simulation events.

10. **Community Partnerships, Forums, Events, and Conferences** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
(a) Community partnerships initiated by the Faculty are in development with Fraser Health and Sto:Lo First Nation, and with Communitas Community Foundation.
(b) Several other community partnerships are engaged by individual and/or teams of faculty members, such as Seabird First Nation (Joanna Sheppard), Chilliwack Schools (Alison Pritchard Orr and colleagues), Pleasantview Seniors Centre (Shelley Canning/Michael Gaetz), Chilliwack Golf & Country Club (Bertram), among others.
(c) The BSN program organizes and delivers an annual Nursing Research Lecture each year, engaging faculty and the community in a professional development opportunity.
(d) Members of faculty in KPE (exercise physiologists lead by Jason Brandenburg) are planning an Open House in fall 2013 in order to communicate their work and engage the community in opportunities for research and fee-for-service activities.
(e) The Dean's Office is considering developing a Community Speakers' Series, delivering practical health promotion related topics free to the community at CEP and the new Chilliwack Five Corners facility.
(f) The Dean's Office, along with the Faculty Interdisciplinary Committee, is investigating the potential for a yearly CEP Open House event, and also a Faculty Speaker's Series open to the public.

11. **Interdisciplinarity and Cross-Departmental/Faculty Cooperation** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
a) The Faculty Council identified Interdisciplinarity as a Faculty priority requiring a standing committee; the committee was formed and created terms of reference in 2012-13.

(b) Cross - departmental research is in promotion, an example of which is ongoing between Nursing faculty member Shelley Canning and KPE faculty Michael Gaetz, involving intergenerational dance therapy at residential care homes.
(c) Champions for Health Promoting Schools program founder Joanna Sheppard engaged 10 Teacher Education Program students in the Antigua Study Tour program in May 2013.

12. **Recruitment and Engagement of Faculty** - *identify actions that your Faculty/College has adopted to further a human resources strategy to attract and engage outstanding employees, to retain, develop and foster their leadership skills, and to affirm their contribution to sustaining a vibrant and diverse scholarly community which values learning, social and personal development, embraces challenge and is committed to the respectful debate of ideas and views:*
(a) Successful hiring of full-time B faculty and/or staff members was completed in 2012-13 in PN (1), BSN (3), KPE (1), HCA (1).
(b) Review of faculty mentoring processes is ongoing. This fall, the School of Health Studies is expanding its faculty orientation and mentorship program to incorporate a series of new type B and sessional faculty teaching workshops that specifically address the needs of a new nurse educator, both with classroom/lab instruction and clinical teaching.
(c) Engagement of faculty members was identified as an area of focus at the FHS 2013 retreat.
(d) Two faculty member lunches (Nov and Mar) were hosted by the Dean in order to promote engagement of faculty members, and to reaffirm and promote knowledge of the various program areas within the Faculty.
(e) In order to promote succession planning and to develop and foster leadership skills, a governance structure has been created for the School of Health Studies that incorporates a significant increase in leadership positions [Director, Coordinators (2), Leads (7)].
(f) FHS Speaker's Series is in the planning stages with the intent to further engage faculty members in the development and debate of scholarly ideas.

13. **Creative Resourcing** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*

(a) FHS faculty members are considering use of facilities for collaborative research and/or fee-for-service contract activities in KPE (e.g., RCMP fitness testing), CDA (dental clinic facilities), and Nursing (simulation lab facilities as mentioned earlier).
(b) The FHS Interdisciplinary Committee has discussed interdisciplinary health service courses, and the "Super Course" idea as a potential means for generating resources.
(c) The Dean's Office is in the idea-generating phase of considering potential service courses for international students, coupled with a destination tourism theme.

14. **Plans for improving your Faculty/College's progress towards achieving these goals (no more than ten):**

(a) Implementation of new School of Health Studies Governance structure.
(b) Development of FHS mission, vision, values statements.
(c) Engagement of strategic planning within program areas.
(d) Web site renewal and redesign.
(e) Institution of Faculty-wide, collaborative committees to promote planning and development.
(f) Development of program-specific, student experience committees.
(g) Dean's Office program of funding to incentivize interdisciplinary, student-engaged, community based research.

(h) Review of on-line programming, planning for future on-line initiatives, and best practices sharing respecting on-line courses.
(i) Review of curriculum and future activities in order to engage and promote indigenization and internationalization.
(j) Development of a FHS Speaker's Series and Awards program developed and promoted by the Dean's office in conjunction with faculty and staff members.

III Report on Programs

a. Progress on Approved New Programs

Programs approved since September 2011:

Program	Senate Approval (Date)	Ministry Approval (Date)	Implement (Yes or No)

b. Programs Recommended for Discontinuance or Suspension

c. Programs Recommended for Modification
(a) Investigation of yearly intake of students in Practical Nursing.

d. Review of Programs in Development

Programs listed in the Ed Plan in development or nearing approval at Senate:

Program	Likely date at Senate

e. Newly Passed Concept Papers

f. Departmental Information

Note 1: Health Studies includes programming in Nursing (BSN), Practical Nursing (PN), Health Care Assistant HCA), Dental Hygiene (DH, program discontinued Fall, 2012) and Dental Assistant (CDA); each program is a cohort program, therefore, fill rates and average class size information are solely internal comparators.

Note 2: Excluded from calculations: Labs, Challenges, Tours, Co-op, Testing and Independent Study courses.

Note 3: Fill Rate calculation: cross Listed courses are combined and counted as a single section. Class sizes of 72 equal 2 sections, 108 equal 3 sections.

2012-13

Department	Domestic FTEs	International FTEs	Fill rates	Average Class Size
Kinesiology & Physical Education	292.55	4.91	82.9	29.3
School of Health Studies	385.95	0.00	85.9	28.5

2011-12

Department	Domestic FTEs	International FTEs	Fill rates	Average Class Size
Kinesiology & Physical Education	339.65	6.70	87.3	31.4
School of Health Studies	405.04	0.00	88.1	27.2

2010-11

Department	Domestic FTEs	International FTEs	Fill rates	Average Class Size
Kinesiology & Physical Education	336.46	7.04	90.1	32.5
School of Health Studies	389.99	0.0	85.9	25.3

2009-10

Department	Domestic FTEs	International FTEs	Fill rates	Average Class Size
Kinesiology & Physical Education	330.04	5.82	87.8	31.0
School of Health Studies	362.18	0.0	83.1	24.4

g. Programs Reviewed and Scheduled for Review

Programs	Review Date
CDA	Fall, 2009
BSN	Fall, 2010
KPE	Winter, 2011
HCA	Fall, 2011
PN	Fall, 2012

h. Major institutional or Faculty/College-wise challenges/required changes resulting from program reviews:

i. Programs with program learning outcomes aligned with the Institutional Learning Outcomes (ILOs):
KPE, BSN, HCA, PN, CDA

j. Plans for improving your Faculty/College's progress towards achieving the ILOs (no more than ten):

Faculty of Professional Studies

EDUCATION PLAN UPDATE 2013

Submitted by:
Rosetta Khalideen, Dean

FACULTY OF PROFESSIONAL STUDIES

EDUCATION PLAN UPDATE
September, 2013

I. Review and Reaffirmation of Institutional Priorities identified in Five-Year Plan

(a) Trends and Challenges in Higher Education

1. Dwindling sources of government funding to Post-secondary Institutions: It is challenging for universities to meet their financial requirements in a context of rising educational costs. Seeking additional sources of funding must be one of the priorities of universities.

2. A focus on more stringent accountability with more attention given to outputs rather than to inputs: There seems to be external and quantifiable government measures being used for accountability based on outcomes and achievable results. The decline of public confidence in post-secondary education is driving the need for more transparency.

3. (i) Increased enrolment: There is a growing number of university educated parents with expectations of university education for their children. Also, university education is being seen more and more as a response to labour market needs.

   (ii) There is an increased number of adults returning to post-secondary institutions driven by unmet education and training needs and the requirements of evolving and enhanced skills. These shifts are resulting in increased part-time enrolment in programs.

4. A move from liberal education to more employment driven education is evident. Education is being viewed as the key to economic success. However, this phenomenon is giving rise to tensions in terms of support for the broader intellectual purposes of education to serve the needs of society. These tensions challenge regional universities' efforts to keep the balance between the push for economic success and the broader purposes of education.

5. There is a stronger interest in university/industry collaboration.

6. Student retention and creating access: Universities are concerned about student retention based on the growing competitive nature of the higher education arena. More students are finishing their degrees at a different university from where they started. The competition is local as well as international as universities in other countries besides North America are becoming education destinations. Institutions are changing their program delivery models to facilitate access.

7. Increased diversity within the student population: There is greater student mobility among institutions. There is also a growing presence of international students on campuses and the domestic population is becoming more and more diverse with governments' focus on immigration. There is evidence that the traditional aged population which universities have drawn on previously is declining, except for the Aboriginal youth population. More high school graduates are choosing to find employment to secure their finances before enrolling in university programs, so they are starting university at a later age.

8. The increased delivery of on-line education driven by the proliferation of MOOCs is gaining traction. As was previously mentioned, an increased number of students are working while they complete their education and are looking at learning becoming more accessible and affordable. Universities will have to consider whether the "brick and mortar" classrooms will continue to be the principal spaces higher education will occupy.

9. Work space: There is an increasing focus on the need for creativity and innovation to have flexibility in the use of physical and virtual work spaces.

10. Interdisciplinarity is on the rise: Traditional academic models have been primarily discipline based but interdisciplinarity is being regarded as a solution to help students gain broader skill sets. With the shortage of resources, this approach provides the opportunity to pool knowledge and build expertise.

(b) New local demographic and employment data

1. The current population of the Fraser Valley region is 289,030; this makes up 6.2% of BC's population. In 2012, the Fraser Valley's population grew by 0.6%.

2. While at present the births in the region account for more than 30% of the total net population increase, the net migration to the region is projected to account for more than 90% of population increase by 2036. In 2011, 7.3% of migrants to BC settled in the Fraser Valley; of these migrants, 60% were international and 40% were intra-provincial. BC will have to continue to depend on migrants to address short-term skills shortages and longer term labour market growth.

3. While the population of the Fraser Valley is increasing, this increase is not spread uniformly across age groups. For example, the number of 15-19 year olds reached a temporary peak in 2009 and, for the last three years, the population of this age group has been declining.

4. The economy and labour market in the Fraser Valley continue to show signs of recovery following the 2008 financial crisis; the unemployment rate in the Abbotsford-Mission area was 8.1% in May 2012 falling to 7.1% in early 2013. An estimated 660,000 jobs are projected to be generated in the Mainland/Southwest development region (which includes the Fraser Valley), representing 65% of the new job openings in the province. The BC Ministry of Jobs, Tourism and Skills Training and Responsible for Labour states that more than 77% of the job openings in BC over the next 10 years are expected to require some post-secondary education and training.

(c) Local Economic Development Priorities

1. Employment opportunities for university graduates in the Fraser Valley are similar to those of the Lower Mainland and other urban areas in Canada. The greatest number of openings will be in positions including managers in services, retail, construction and transportation; finance and administration occupations; computer professionals; nurses; school teachers; and social workers. In 2011, Abbotsford moved to provide an attractive tax climate for commercial and industrial firms. This would provide Abbotsford a competitive advantage that would result in increased investment and development over current levels.

2. Cross-border business and transportation: The Highway 11 upgrade as well as an extension of the NEXUS lane are meant to improve cross-border travel with the U.S. by 2016.

3. Aerospace industry: Abbotsford is campaigning to transform the Fraser Valley into a western Canadian hub for the aerospace industry, with Abbotsford Airport (YXX) at the core. As well, Abbotsford continues work to upgrade YXX infrastructure.

4. Agriculture sector in Abbotsford: Abbotsford farms and agri-businesses generate an economic impact of some $1.8 billion for Abbotsford's economy.

(Information in (b) and (c) provided by the Office of Institutional Research and Planning)

(d) Trends in new programming elsewhere

Within Canada and the United States, the majority of new programs initiated by universities over the last three years are in the area of Business, both at the undergraduate and graduate levels. The Business specializations which seem to be most popular are: Business Administration, Accounting, Financial Management and Hospitality and Tourism Management. There were a few programs aimed at Development Economics. Also worthy of mention are new graduate programs in Education with a focus on Educational Leadership and Special Needs Education.

(e) Resulting necessary changes or adjustments to strategic priorities

None

II. Report on Non-Program Initiatives identified in the Five-year Plan

1. Student Recruitment, Retention and Success

Student recruitment, retention and success are tied to the Faculty's enrollment management plan. As this plan is created there is the opportunity to understand current enrollment trends and define the size and composition of our student population. There is need to look at areas of growth, keeping in mind the demographics and geographic location of our students. Our Faculty believes that student success is the responsibility of all our various units working together to realize this outcome. In our Faculty we are finding ways to address the priority of recruitment, retention, and success.

Some of the activities in which we have been involved are as follows:

- Ensuring students complete their program in a timely manner even if this means shifting resources from one program to another to offer necessary and high demand courses. Also, timetabling to ensure appropriate course sequencing.
- Providing individual tutoring for students through the Student Learning Groups (SLG).
- Hosting orientation sessions for new students in our various programs and providing them with practical information related to services, academic expectations, cultural adjustments etc.
- In addition to print information and use of websites, using webcasts to promote programs.
- Working with the Office of the Registrar to create more timely and effective admissions processes.
- Engaging students in extra-curricular activities, particularly those hosted by the various Student Associations e.g. BASA (Business), LITSA (LIBIT), SWSA (Social Work), TEPSA (Teacher Education).
- Reviewing the work of the Retention Committee (a Standing Committee of Faculty Council) to enhance strategies for student retention in all programs. This Committee will evaluate its work and re-set goals, activities, outcomes and timelines in the coming year.
- Using a re-structured Prior Learning Assessment and Recognition (PLAR) process in Adult Education so that adult learners can gain deserved academic credits for their experiential learning. PLAR is now more structured and tied to a portfolio development course.

- Paying more attention to student advising. The student advising report resulting from the institution's advising review will be considered in our advising efforts. The report provides recommendations for effective advising across programs within the university and these recommendations will be given attention in the coming academic year.

- Assisting international students with their academic and cultural transition to UFV. Activities to help students are coordinated by the International Liaison in the School of Business.

- Encouraging students to develop applied research and service learning projects as they approach completion of their degrees. [These projects are requirements in most of our capstone courses]

- Conducting course revisions and revitalizing stale course offerings.

- Providing students with relevant information on course syllabi so that they can readily access services within the institution.

2. Enrolment Management

Over the past years, our enrollment plan has been based primarily on the number of course sections offered in each program on an annual basis. We have just begun to develop at a more strategic enrollment management plan recognizing that enrollment management planning has to use a systematic and integrated approach. This need for integration became even clearer within our discussions at our June Heads and Directors retreat at an enrolment planning session led by Donna Alary, Manager of Enrollment Planning in the Office of Institutional Research & Planning. Some of our programs have been going through peaks and valleys and some have been more affected than others by the University's open access admission so we will be reviewing the necessary data on which student enrollment is premised. There is much available data both from within and outside of the University which will be used to help us re-examine our marketing strategies and identify where changes should be made. A thorough examination will also have to be done of students' applications, admissions, orientation, retention, and student success - the building of an inclusive and supportive environment and other related strategies since all of these are tied into any effective enrollment plan.

Some of the initiatives in which we have engaged are:

- Increased marketing in targeted areas of programming e.g. the ECE/CYC and Adult Education programs.

- Enabling students to easily access student services through placing the pertinent information in their course syllabi.

- Ensuring that students register in the courses they need to complete their programs in a timely manner.

- Advising the Office of Institutional Research on the collecting of relevant data (both quantitative and qualitative) to assist us with our planning.

We have been advised that the 2013/2014 budget will be based on enrollment targets. We will develop and maintain an enrollment projection model for planning and budgeting for each semester. During the course of the 2013/2014 academic year, we will be forming a Faculty Enrollment Management Committee to begin to develop a three-year SEM plan.

We would like to begin with:

- Establishing some genuine and meaningful enrollment goals.
- Examining the assumptions on which our enrollment is based [doing this program by program].
- Really understanding the internal and external environmental analysis with regard to forecasting future trends.
- Determining optimum enrollment based on available resources.

3. Indigenization

We continue to engage in the conversations on Indigenizing the Academy and to be involved in activities that would build bridges with our Indigenous communities. We have been paying most heed to the "inside-out" model of indigenization which is based on self-reflection and transformation. This approach we think would remove some of the barriers which prevent our spaces from being welcoming. Writers have alluded to the historical damage of the residential school system and the barriers which have been created for students who are desirous of pursuing higher education.

Hiring more Aboriginal faculty and staff, making the curriculum more inclusive and adding more supports for students are vital to any success in indigenization. However, these actions by themselves are insufficient to create an "indigenized" institution. Universities as predominant white, westernized institutions must address the tensions and conflicts between two competing world views and work collaboratively and respectfully with their Indigenous communities, developing genuine respect and valuing other ways of teaching and learning. The Faculty is intentionally seeking ways to transform relationships and bridge existing divides between the academy and our Aboriginal communities through creating supportive spaces for students.

Our efforts include:

- Reflecting on our biases.
- Creating more inclusive curricula.
- Encouraging representation of members of the Indigenous communities on our Advisory Committees.
- Valuing Elders and bringing their voices in a stronger way into our classrooms.
- Valuing spirituality and ceremony related to Indigenous People.

- Developing listening circles.

- Providing more visibility of the history and culture of Indigenous peoples through the use of Indigenous names for some of our spaces, our décor and artifacts.

As a start to our "inside-out" transformation, our Elder Gwen Point has been working with Heads and Directors through listening circles for us to gain a better understanding and appreciation of the realities which have affected Aboriginal peoples and hindered their ability to be successful in their educational endeavours. One concrete activity in which Heads and Directors were involved was spending an afternoon at the St. Mary's residential school in Mission and re-living the experiences of those who were forced into an educational system so damaging that many are still trying to recover from this traumatic experience. Gwen Point will continue with these activities and slowly engage the entire Faculty.

Other Indigenizing related activities in which we have been involved are:

- Using Aboriginal sites for practica e.g. the Abbotsford Education Centre for the LIBIT program; the Sto:lo Nation and Seabird Island School for the Teacher Education Program.

- Developing new courses with Aboriginal content e.g. CYC 202 – Aboriginal Issues in CYC.

- Offering the ECE Certificate through the Sto:lo and Aboriginal Skills Education and Training Association.

- Developing a module that will include Leadership from an Aboriginal Perspective in the "Leadership within a Global Context" graduate seminar to be hosted by the School of Business and the Lucerne University of Applied Arts and Sciences.

- Contributing courses and expertise to the development of the new Sto:lo Studies Certificate in Welding offered through a collaborative arrangement with UFV and the Sto:lo Nation.

- Exploring the use of culturally responsive curriculum – one such project completed by the students in the Teacher Education Program.

- Working with former NITEP bound students to support their entry into our Teacher Education Program.

- Involving the Ch'nook Scholars from the School of Business to facilitate information sessions on our business programs for Aboriginal high school students.

- We have completed our inventory on all indigenization activities in the Faculty over the last five years. This information has been given to the Vice-Provost and Associate VP Academic to assist him with the development of UFV's continued indigenization plans.

4. Internationalization

The faculty has been reviewing the drivers and purpose of internationalization with the intent of gaining a clearer understanding of what these are and what they should be. From our discussions, it is clear that internationalization should allow us to improve students' preparedness to become better national and international citizens. This broad goal can be achieved through fostering curricula which reflects enhanced international content; having diversity within faculty/staff to mirror our diverse student population; promoting program and student mobility; building international partnerships and networks with other post-secondary institutions and other agencies rooted in mutually beneficial relationships.

We see as important the creation of a climate that values and supports international students and supports intercultural perspectives and initiatives. We think it is important for faculty members to incorporate an international perspective into their teaching, scholarship and service. We would like to move away from internationalization being a set of isolated activities towards it becoming an integrated process.

Some of the internationalization activities we have completed over the past year include:

- The Teacher Education Program hosted a group of international faculty from China's Sichuan Normal University for a two week teacher training program. The program was focused on the use of appropriate pedagogical practices for teachers and participants were able to spend some time at an Elementary and Middle school in Abbotsford. This program was a huge success and negotiations are underway to offer a similar program in 2013/2014 with participants from another university in China.

- In addition to the above initiative, TEP also provided its student teachers the opportunity to participate in the Student Teachers in Antigua Mentorship Program (STAMP) which was a three week field experience in Antigua. Student teachers were involved in mentoring elementary school teachers in Antigua and also learning about the system of education and teacher training in Antigua from their Antiguan counterparts. The field experience was organized in collaboration with students from the Kinesiology and Physical Education (KPE) program.

- The School of Social Work and Human Services offered an MSW student her field placement in Jalandhar, Punjab India where she worked in an orphanage. BSW field placements for four fourth year students were done in the United Kingdom at the HIV/AIDS Hospital in London.

- The School of Business offered a two-week graduate seminar on "Leadership in the Context of Globalization" in partnership with Lucerne University of Applied Arts and Sciences. Nineteen participants from Lucerne University attended this seminar in Vancouver. Due to the success of the seminar, it will be offered again in 2013/2014 and hopefully on an annual basis.

- The Tradewinds study abroad exchange program which focused on student mobility was completed earlier this year with nine students from the School of Business attending the Waterford Institute of Technology (Ireland), Glamorgan University (Wales), and ESC Bretagne Brest (France). There were also eight students from these universities who came for an exchange visit to the School of Business.

- The Faculty hosted a "Celebrating Internationalization" event during International Education Week. Both international students and local students who did some of their studies abroad shared their experiences of learning and living in a different culture. Student presentations were interspersed with cultural performances.

- In addition to the internationalization activities contained in the 2011/2015 Education Plan, some Departments/Schools have identified other specific activities which they would like to initiate:

    - LIBIT would like to diversify its student body and through its program review will explore how the program can recruit and retain a more diverse student population.

    - The ECE/CYC Department will be identifying the possibility of Child Life sites in New Zealand for students to do their practicum placements. The Department is also developing a new course: CYC 496 – on "Diverse Populations." This course will be offered in the coming academic year. The Department has been invited to develop a partnership with a child-serving agency in Tanzania for international internships opportunities.

    - The School of Business will have one of its Post Degree Certificates in Marketing include courses in Fair Trade and Workplace Ecology.

    - We continue to offer our BBA program in Chandigarh, India. Twenty-five third year students from Chandigarh will be transferring to the School of Business in September 2013.

5. Environmental Sustainability

6. Indo-Canadian and South Asian Studies

7. Mennonite Studies

8. The Integration of Research and Teaching

The Faculty sees teaching and research as closely intertwined as both are important to the education process. If we are to achieve our strategic goal to have the best undergraduate education in Canada, then involving students in research experiences is essential. Our faculty members have been exposing students to research through courses designed to teach them research methods and techniques and by directly involving them in their research projects. Faculty are aware that research helps them to remain current in the field and enhances the quality of the learning experience for students. Faculty members involved in research use various methods of inquiry to bring a problem based approach to their teaching. This way of teaching is helpful to achieving one of our learning outcomes related to problem solving and critical thinking. Within the Faculty, research is broadly defined and there is a wide range of scholarship pursuits that faculty undertake. We strongly believe that research has the potential to make significant contributions to the quality of our undergraduate and graduate programs.

Some of our accomplishments with regard to the integration of research and teaching are:

- Two faculty members in the Teacher Education Program are actively engaged in a study exploring admissions processes and implications for success. The findings of this study will be incorporated into the admissions process of the program. Students in the Teacher education program also conduct small action research projects in the final semester of the program and their explorations and recommendations are used to directly change their practices. Students also engage in reflective practice at the end of their practicum by responding to questions analytically about their teaching experiences.

- Faculty members in the School of Social Work and Human Services continue to work on a number of research projects in which students have been involved. Examples of these projects are: analyzing textbooks to interrogate the discourse of school violence; media representations of poverty; exploring the stigma of women with concurrent disorders. Faculty members are also delivering graduate courses on research methodology and supervising student research projects for the MSW program.

- The School of Business has created a “Research Team” comprised of five faculty members with the goal of the team being to engage in, and promote applied research within the School. The Team has facilitated a number of information sharing sessions where they have disseminated information about their own research work, making the linkages to classroom practice. These sessions have been open to the entire university and have been well attended.

- Faculty members in the School of Business have been involving their students in research projects with community business partners as a part of their program completion. Students have been able to investigate real life problems and come up with recommendations for solutions. Some of the partners who have worked with the School are the Seven Oaks Mall in Abbotsford, the Willowbrook Mall in Langley, the Abbotsford Foodbank and Big Brothers. Students have the opportunity of sharing their findings and recommendations at a student research forum organized by the School.

- Some faculty members have been using their research to build case studies to be used in their courses. These cases provide the opportunity for students to critically questions and analyze problems and issues.

- Several TEP faculty members are in the process of developing a research project focused on critical thinking and its applications to teacher practice.

- The ECE/CYC Program has been asked to partner with a program at Abbotsford Community Services to do a research project on program effectiveness.

9. Strengthening the culture of Teaching and Learning

A culture of teaching and learning is important for the success of students. Within the Faculty, we are building an environment that is supportive of students, faculty and staff. Faculty members are encouraged to maximize opportunities for learning both for themselves and for students and to keep abreast with new trends and developments in the field. Some activities in which we have been engaged are:

- Faculty mentoring other faculty members, particularly new faculty.

- Student and faculty collaboration on research initiatives which investigate current issues.

- Faculty attendance at conferences and other educational forums.

- The sharing of best practices by faculty on teaching and learning at our annual Fall Spark! Forum.

- Participation of faculty in the Teaching and Learning Centre's workshops.

- Faculty from the ECE/CYC Department partnering with the Writing Centre to facilitate the "Use Your Bean" workshops at UFV.

- Brief presentations on new teaching ideas at Faculty Council meetings through arrangements made by the Learning Exchange Committee which is a Standing Committee of Faculty Council.

- Professional networking e.g. attending the Teacher Education roundtables and meetings of the Congress of Social Sciences Education (CSSE).

- The use of multiple pedagogical strategies and diverse learning contexts e.g. actively involving students in their learning through group and project work; experiential learning in the community through field placements and community based research; international student exchanges; building a stronger on-line learning environment.

- Student engagement in events and activities outside of the classroom e.g. attendance at the President Lecture series and the Celebrating Internationalization event; membership in the various Student Associations; presentations at the micro-lecture series; involvement in the Faculty's research forums.

- Celebration of faculty and student teaching and learning achievements through appreciation events and publicity e.g. in the Faculty's newsletter. We are planning to host a Faculty teaching/learning summer institute in 2014

10. Community Partnerships

The faculty has established strong partnerships within the region as we together work with our communities, for mutually beneficial outcomes. Our communities serve as a living laboratory where our students have the opportunity to connect theory with practice. Our community partners contribute to our program growth and development since they are on the frontline of issues and can help re-shape and re-vitalize our programs. We have ongoing activities with some of our partners which include collaborative research projects and field placements for students. Besides continued community involvement through our Program Advisory Committees, some of our partnership accomplishments over the last year have been:

- We hosted a public forum on "Public Lives: What Eroding Privacy means for Democracy" facilitated by Michael Vonn, Policy Director of the BC Civil Liberties Association.

- LITSA (The Library and Information Technology Student Association) assisted in the coordination of a fundraising quiz night with Library and Literacy BC and with the "Reading Link Challenge."

- The ECE/CYC program participated in the Ministry of Child and Family Development's provincial focus group on the development of a shared research agenda to support children, youth and families in BC. Faculty in the Department also participated in the proposal for a multi-year, multi-million dollar Federal Drug Strategy Initiative RFP, with the hope of an annual youth conference to be hosted at UFV. This project is called the Valley Youth Partnership for Engagement and Respect.

- A Mental Health Forum was held in May 2012, in partnership with the ECE/CYC Department and the Families Organized for Recognition and Care Equality (FORCE) Society for Kid's Mental Health and featured researchers/speakers from Australia.

- The School of Social Work and Human Services is working on a research project with the Fraser Valley Women's Resource Society to investigate how trauma impacts housing for marginalized women. The School also supported the fundraising activities for the "Warm Zone" which is housed within the Women's Resource Society.

- The Teacher Education Program extended its partnership to the Langley School District where some of the students in the 2012/2013 cohort were placed for their teaching practicum.

- Faculty from the Teacher Education Program facilitated two professional development workshops for the Abbotsford and Chilliwack School Districts.

- Members of several "ethnic" communities in Abbotsford participated in the Faculty's "Celebrating Internationalization" event.

- The Aviation program in the School of Business in collaboration with Coastal Pacific Aviation initiated an Aviation Program Advisory Committee comprised of membership from the School of Business, Coastal Pacific Aviation, Air Canada, Air Canada Jazz and Orca Airlines.

- The School of Business is partnering with the Chilliwack Business Improvement Association to conduct a survey on business needs related to education and training. The results of the survey will assist UFV to plan for program offerings in its newly acquired Bank of Montreal space in Chilliwack.

11. Interdisciplinarity and Cross-Departmental/Faculty Cooperation

Although various disciplines exist within our Faculty, we recognize that it is not in the best interest of our faculty and students to operate in silos. In universities, work has historically been separated into disciplines and both the physical and social structures have supported operating in this way. Within such a climate, trying to promote interdisciplinary programming and research activities is challenging. Many faculty still perceive that specialized disciplines encapsulate their values, beliefs and practices and provide them with an identity. Nevertheless, we recognize that to

maximize learning we need to work together to build a shared intellectual environment.

Working across disciplines, programs departments and Faculties will open the avenues for new knowledge production, and new ways of teaching and learning. For interdisciplinary activities to be successful there must be a willingness to work together, to share information and resources and to trust each other and be willing to overcome barriers. One good interdisciplinary strategy as suggested by the experts is to change the structure of programs through mergers into collaborative units. The School of Community Education and Lifelong Learning soon to be created within the Faculty will bring together programs from different disciplines to build linkages and allow for the fostering of collaboration on teaching, scholarship and service.

Interdisciplinary and cross Department/Faculty initiatives in which we have been involved over the past year are listed below:

- The School of Business has been working with the Fashion Design program in the College of Arts on the feasibility of leasing a retail space so that clothing designed by the Arts program could be sold. This will be both an educational and entrepreneurial venture. Also, there is the exploration of creating a Fashion Design stream in the BBA program or offering a Certificate in Business and Fashion Design using current courses in both programs. In addition, the School of Business and the Economics Department have been discussing the possibility of creating a Post-Degree Certificate related to the management of NGOs/Social Economy Organizations.

- Faculty members in the School of Social Work and Human Services have been working with colleagues in the College of Arts on the development of an Indigenous Studies Degree program.

- The Social Work program is also involved in the new Indigenous Sto:lo Studies Certificate that will be offered in July 2013 in partnership with the College of Arts, the Faculty of Trades and Technology and the Sto:lo Nation.

- The School of Social Work and the School of Criminology and Criminal Justice are collaborating on a research project that investigates the impact on children of incarcerated parents.

- The ECE/CYC Department is collaborating on the content for a Risk Assessment course with the Centre for Safe Schools and the Continuing Studies Unit.

- An ECE/CYC Faculty attended and spoke at a workshop on Fetal Alcohol Spectrum Disorder (FASD) and Children's Mental Health hosted by the Teacher Education Program.

- Faculty members are sometimes asked to be guest speakers in classes from various programs depending on their expertise. For example, a faculty from ECE/CYC was asked to speak in the EDUC 454 class on counseling support for youth.

- TEP is working on plans to host an interdisciplinary panel presentation in spring 2014 on the integration of theory and practice through field placements.

- The Field Placement Committee which is a standing Committee of Faculty Council has opened up its membership to other Faculties. Two members were appointed from the College of Arts and one member from the Faculty of Health Sciences. This committee's mandate is to determine best practices with regard to experiential learning.

12. Recruitment and Engagement of Faculty

We continue to recruit faculty for positions that are vacant within different programs. In some instances, our challenges of attracting qualified faculty are tied to our salary scale and the lack of a rank and tenure system within the institution. We are cognizant that our faculty should represent the diversity of our communities. Over the past year, we have hired one faculty member (female) in the School of Business and another faculty member (international) from the United Kingdom in the School of Social Work and Human Services. We work closely with the Office of Human Resources, particularly the Manager of Recruitment Services on the best ways to attract and hire new faculty members. We have been exploring new ways of advertising and targeting the Aboriginal community.

We continue to use faculty mentors to help our new faculty to adjust and become acclimatized to their new environment. As Dean, I also meet with new faculty members on a regular basis to gain a better understanding of their academic needs and to provide them with support as time and resources permit. Those who feel the need to enhance their pedagogical skills are strongly encouraged to participate in the workshops organized by the Teaching and Learning Centre. We do not have a solidified faculty retention plan at this time but our Heads and Directors have been in discussion around developing one.

13. Creative Resourcing

- The School of Social Work and Human Services continues to build up its scholarship endowment fund for students in the MSW program. Through efforts of the Director, the School has received an Endowment called the Marilyn Fane Master of Social Work program Endowment worth $23,000 to be used for student bursaries. The fund will add to the Patsy and Crissy George Scholarship Fund.

- The School of Business is creating a number of Post-Degree Certificates which will be revenue generating. The first Certificate has received both internal and external approvals and will be offered in Winter, 2014 with an expected revenue generation of $ 40,000. The Lucerne/School of Business graduate seminar will become an annual initiative that will be used as a source of revenue generation. This year's seminar is expected to net about $8,000.

- The ECE/CYC Department is still offering its revenue generating Childcare Certificate to 14 Aboriginal participants through the Sto:lo and Aboriginal Skills Education and Training Association. This program will generate an estimated amount of $18,000.

- The Adult Education Department is working on marketing the Adult Education and Training Certificate to organizations desirous of having their employees better equipped to work with adult learners in a variety of settings. If successfully offered the revenue from this program could be about $25,000.

- The Faculty plans to initiate an annual fundraising event. The possible format for this event is dinner together with a presentation from a popular and "high caliber" speaker. We would like to link up with community agencies for sponsorships.

III. Report on Programs

(a) Progress on Approved New Programs

Programs approved since September 2011:

Programs	Senate Approval (Date)	Ministry Approval (Date)	Implement (Yes or No)
Revised BA in Adult Education	April 2012	N/A	September 2013
Adult Education Workplace Training Certificate	October 2011	N/A	January 2012
Management Post Degree Certificate	April 2013		January 2014
Teacher Education Secondary Program	June 2013		June 2014

(b) Programs Recommended for Discontinuance or Suspension

None

(c) Programs Recommended for Modification

None

(d) Review of Programs in Development

Programs listed in the Ed Plan in development or nearing approval at Senate:

Program	Likely Date at Senate
Bachelor of Education	2014
Master of Professional Accountancy & Corporate Financial Management Degree	2015
Post Degree Certificate in Applied Management, International NGO Social Economy Organizations, and Airport Aviation Management	2014-2016

(e) Newly Passed Concept Papers

(f) Department Information

2012/2013

Department	Domestic FTE's	International FTE's	Fill Rate	Average Class Size
Adult Education	26.53	3.59	90.9	21.5
ECE/CYC	121.03	3.83	74.5	19.1
LIBIT	73.49	2.24	94.4	33.3
School of Business	533.80	207.76	90.8	27.2
Aviation	14.38	1.91	32.3	11.3
School of Social Work & Human Services	209.47	1.58	87.1	2.16
Teacher Education Program	93.53	.00	97.6	33.2

2011/2012

Department	Domestic FTE's	International FTE's	Fill Rate	Average Class Size
Adult Education	24.26	7.87	99.1	24.8
ECE/CYC	129.39	3.81	78.3	22.0
LIBIT	67.65	1.58	89.9	30.5
School of Business	538.14	188.10	93.1	27.9
Aviation	17.78	2.05	34.4	11.9
School of Social Work & Human Services	221.37	2.33	89.6	20.9
Teacher Education Program	94.54	.34	95.6	33.6

2010/2011

Department	Domestic FTE's	International FTE's	Fill Rate	Average Class Size
Adult Education	23.53	4.84	90.2	21.9
ECE/CYC	131.72	2.09	81.2	22.9
LIBIT	57.46	.19	89.1	29.3
School of Business	498.97	149.96	96.5	28.4
Aviation	17.44	2.11	35.2	11.9
School of Social Work & Human Services	232.87	1.65	90.2	22.6
Teacher Education Program	84.84	.20	98.7	33.7

2009/2010

Department	Domestic FTE's	International FTE's	Fill Rate	Average Class Size
Adult Education	20.10	5.63	94.5	23.6
ECE/CYC	137.87	2.48	84.5	20.0
LIBIT	49.99	.29	77.1	25.2
School of Business	469.28	126.37	93.3	27.2
Aviation	22.45	1.61	45.4	14.9
School of Social Work & Human Services	209.21	2.14	82.6	20.3
Teacher Education Program	122.80	.20	89.9	28.3

(g) Program Reviewed and Scheduled for Review

Programs	Review Date
School of Business (Completed)	2012/2013
Library Information Technology	2013/2014
Teacher Education Program	2013/2014
Adult Education Program	2015/2016
Early Childhood Education/Child & Youth Care	2016/2017
Social Work & Human Services	2017/2018

(h) Major Institutional or Faculty/College-wide challenges/required changes resulting from program reviews:

Our program reviews help us and the University to use our resources wisely to enhance the quality and effectiveness of our programs. The School of Business was reviewed during the 2012 – 2013 academic year with the objective of assessing the strengths and weaknesses of programs offered through this Unit and gaining a better insight into setting future strategic directions for the School. A number of recommendations were provided by the External Review Team, some of the significant ones being (a) the need for a larger complement of full-time faculty with terminal

degrees (b) the importance of building stronger relationships between the School and the external business community (c) the urgency to address the problems of long student waitlists for courses [which underscores the importance of an enrollment management plan for the School] and (d) an administrative structure that gives more "authority" to the Director of the School.

The above recommendations, particularly (a) and (d) will have implications for additional resources. With regard to (a), at present, almost fifty percent of the courses in the School of Business are taught by sessional instructors. This arrangement does not support our goal of offering the best undergraduate education and our focus on student success. It also has the potential to impede the School's plan to seek external accreditation.

(i) Programs with program learning outcomes aligned with the Institutional Learning Outcomes (ILO's):

- Adult Education – completed and presented to UFV's Institutional Outcomes Forum.

- Early Childhood Education/Child & Youth Care - completed and presented to UFV's Institutional Outcomes Forum.

- Library Information Technology- beginning a program review in 2013/2014 with the anticipated results in the clear identification of the relationships between UFV's ILO's and the program outcomes.
- Teachers Education Program - completed and presented to UFV's Institutional Outcomes Forum.

- School of Business – completed.

- School of Social Work & Human Services – in progress.

(j) Plans for improving your Faculty/College's progress towards achieving the ILO's (no more than ten):

Programs in the faculty have been aligning their learning outcomes to the ILO's and almost all programs have completed this exercise. As a result of funding received from the Office of the Director of Teaching and Learning, three programs were selected to showcase the process they used for their outcomes alignment at an institutional learning outcomes forum. The next step will be for programs to align individual course outcomes with program outcomes. These outcomes will inform students about course expectations and the value of the course to their program of studies. They will also allow attention to be focused on outcomes and the students' experience rather than on the coverage of topics within the curriculum.

A missing piece of the conversation on Learning Outcomes is assessment and the alignment between curriculum and outcomes. Questions such as: What counts as meaningful evidence of student accomplishments that can be evaluated? How will criteria for assessment be determined? Are grades the best indicator of the accomplishments of a certain level of learning outcomes? Is multiple-choice testing still a feasible option of assessment? Should multiple measures for assessing outcomes be used in courses? Are their opportunities for students to do their own assessment of learning outcomes? We intend to initiate the conversation on assessment and would like to work with the Teaching and Learning Centre on furthering the discussions on this vital aspect of implementing our learning outcomes.

(k) Challenges

The Faculty continues to be challenged by the lack of an adequate number of offices for faculty, particularly in the growing School of Business. Arrangements have been made for some shared faculty offices for the 2013/2014 academic year. Also, the completion of minor renovations of the space in Adult Education will allow for a larger shared faculty office. Nevertheless, adequate offices for faculty will continue to be a challenge.

Faculty of Science

EDUCATION PLAN UPDATE 2013

Submitted by:
Lucy Lee, Dean

Education Plan Update Template, 2013

I Review and Reaffirmation of Institutional Priorities identified in Five-Year Plan

13 Priorities

1. Student Recruitment, Retention, and Success
2. Enrolment Management
3. Indigenization
4. Internationalization
5. Environmental Sustainability
6. Indo-Canadian and South Asian Studies
7. Mennonite Studies
8. The Integration of Research and Teaching
9. Strengthening the Culture of Teaching and Learning
10. Community Partnerships, Forums, Events, and Conferences
11. Interdisciplinarity and Cross-Departmental/Faculty Cooperation
12. Recruitment and Retention of Faculty
13. Creative Resourcing

a. Trends and Challenges in Higher Education (list the top challenges—no more than ten):

1. Operating funding decreases
2. Space/infrastructure constraints
3. Keeping class sizes small
4. Keeping labs funded in order to give students real life experiences
5. Short attention span of students
6. Quality assurance regulations
7. Keeping up w technological changes
8. Increasing international student mobility
9. Obtaining federal funding for research
10. Increasing service demand additional to teaching and scholarly activities

b. New local demographic and employment data:

1. The current population of the Fraser Valley region is 289,030; this makes up 6.2% of BC's population. In 2012, the Fraser Valley's population grew by 0.6%.
2. While at present the births in the region account for more than a 30% of the total net population increase, the net migration to the region is projected to account for more than 90% of population increase by 2036. In 2011, 7.3% of migrants to BC settled in the Fraser Valley; of these migrants, 60% were international and 40% were intra-provincial. BC will have to continue to depend on migrants to address short-term skill shortages and longer-term labour market growth.
3. While the population of the Fraser Valley is increasing, this increase is not spread uniformly across age groups. For example, the number of 15-19 year olds reached a temporary peak in 2009 and, for the last three years, the population of this age group has been declining.

Three years from now, in 2016, this downward trend will reverse, and the number of 15-19 year olds will begin to increase again, reaching a cumulative increase of 27% from today's value by 2036. The two other age groups, 20-24 and 25-29, that attend university at high rates, follow a similar pattern, just delayed by the number of years that separate the groups

4. The economy and labour market in the Fraser Valley continue to show signs of recovery following the 2008 financial crisis; the unemployment rate in the Abbotsford-Mission area was 8.1% in May 2012 falling to 7.1% in early 2013. An estimated 660,000 jobs are projected to be generated in the Mainland/Southwest development region (which includes the Fraser Valley), representing 65% of the new job openings in the province. The BC Ministry of Jobs, Tourism and Skills Training and Responsible for Labour states that more than 77% of the job openings in BC over the next 10 years are expected to require some post-secondary education and training.

c. Local economic development priorities:

1. Employment opportunities for university graduates in the Fraser Valley are similar to those of the Lower Mainland and other urban areas in Canada. The greatest number of openings will be in positions including managers in services, retail, construction and transportation; finance and administration occupations; computer professionals; nurses; school teachers; and social workers. In 2011, Abbostford moved to provide an attractive tax climate for commercial and industrial firms. This would provide Abbotsford a competitive advantage that would result in increased investment and development over current levels.
2. Cross-border business and transportation: The Highway 11 upgrade as well as an extension of the NEXUS lane are meant to improve cross-border travel with the U.S. by 2016.
3. Aerospace industry: Abbotsford is campaigning to transform the Fraser Valley into a western Canadian hub for the aerospace industry, with Abbotsford Airport (YXX) at the core. As well, Abbostford continues work to upgrade YXX infrastructure.
4. Agriculture sector in Abbotsford: Abbotsford farms and agri-businesses generate an economic impact of some $1.8 billion for Abbotsford's economy.

d. Trends in new programming elsewhere:

1. SCIENCE GRADUATE DEGREE
2. INFORMATION TECHNOLOGY
3. ROBOTICS
4. AGRICULTURE

e. Resulting necessary changes or adjustments to strategic priorities:

1. Need to implement a Masters in Integrated Sciences & Technology (MIST)
2. Need to find/build dedicated teaching and research space for the Faculty of Science: a Science and Technology building that is energy efficient with LEEDS Gold or Platinum standards, will need to be planned to alleviate the space crunch and support the interests of the faculty as well as to complement/add to the research needs for a future Centre of Excellence in Agriculture
3. High priority for development of Bachelor in Agriculture and a Bachelor of Environmental

Studies

4. Program prioritization ranking change for Engineering Physics-Mechatronics over Medical Physics

II Report on Non-Program Initiatives identified in the Five-Year Plan

This section identifies specific progress made in achieving the non-program priorities identified in the Five-Year Ed Plan (such as indigenization and internationalization) and can also include any new specific plans for the coming year. The section concludes with an evaluation of whether and how improvements should/can be made to improve your Faculty/College's progress towards achieving these goals.

1. **Student Recruitment, Retention, and Success** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority*:
   The Facuty of Science (FoS) has been fortunate to have had a high student demand thus recruitment has not been an issue. We do however, still place importance in recruitment events and the Science Advice Centre does hold information sessions for prospective students and their parents several times per year. As of June 15, 2013, for the incoming year 13-14, we had a total of 991 applicants for the various Science programs and have accepted roughly 250 students.
   The head count for the BSc students (including Geography) has grown from 333 in 2007/08 to 690 in 2011/12, a growth of 207%. The BCIS enrolments increased from 138 in 2007/08 to 249 in 2011/12, a growth of 180% (UFV Fact Book 2011-12).
   In terms of retention, the Science Advice Centre has made efforts to flag students that may be in jeopardy and has made efforts to assist them. One big issue we still need to address is the lack of upper year course offerings, particularly in Biology, which results in large waitlists for certain courses. Our graduation rates have been steady in this past convocation, we had close to 100 science graduands in the various programs we offer, with over 60 graduating with a Bachelor of Science.
   We have achieved this by several means. For the 2013 recruitment effort, we have done the following:
   We submit information to the high school e-newsletter with any updates/changes on our programs, etc.
   We make contact with all Fall 2013 applicants to the Faculty of Science programs and hosted several orientation sessions prior to Fall registration. We provide new students with information about our advising services, resources, and links to our website. We also specifically target those who are coming from high school with 1st Year information. Early Applicants to the BSc (applied in Grade 11 - 2012) were contacted several times this year. Using an email newsletter, we informed students about what to expect at UFV including registration timelines and resources on campus.
   Additionally, we hold throughout the year several events including a Science Social to ensure retention and success of students.
   In the Fall we hosted our Annual Science Social event where we introduced new and returning science students to the various science programs, staff and faculty, campus services, student clubs, student associations, etc., available at UFV.
   We also encourage student led initiatives and support various student associations: BCSA (Biology and Chemistry), PSA (Physics), CISSA (Computer Information Systems). A recent

succesful event was "The Big Bang", a social gathering that includes faculty, staff and students and that has now been held in two consecutive years.

2. **Enrolment Management** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   We rely heavily on the Science Advice Centre for managing enrolment issues. Departmental assistants and department heads are also higly involved and have been instrumental in handling enrolment management issues.Some of the ways we achieve this includes:
   - Working closely with the Institutional Research to monitor students' progress, suggest reports for tracking, etc.
   - Working closely with OReg to review and provide input to new & existing policies and practices and how they affect students, (ie: order of registration policy, continuance policy).
   - Contacting students at key points in their academic studies (declaration, etc.).
   - Working closely with students who are academically at-risk.

3. **Indigenization** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   Although not all science courses are amenable to have indigenization components, we offer courses that include indigenous knowledge. For example, Bio370, Introduction to mycology, includes traditional aboriginal uses of fungi. Plans are also underway for a Biochemistry program, in which chemistry of natural products, naturopathic medicine and indigenous uses could be explored.
   Additionally, we do participate in Aboriginal Student engagement initiative. We have made a concerted effort to work closely with the Aboriginal Resource Centre to support the Aboriginal student population.
   Furthermore, our outreach activities like Math Mania and Super Science Club have been held at schools with high native student enrollments like Deroche, Dewdney and Coquihala Elementary. As well, 2 out of the 6 weeks of Science Rocks camps are geared to native students and provided free of charge to the students. We thus make a concerted effort to draw their interest into the Sciences.

4. **Internationalization** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   The FoS and its various departments hold events that attract international faculty and students to UFV and conversely, we send our faculty and students to various international events/locations. We currently are hosting Dr. Angela Huo from University of Shanghai Science and Technology (USST) in the CIS department and Dr. Chan Kyung Kim from Inha University, Korea, who is a visiting scientist in the Dept. of Chemistry and is also bringing his graduate students from Korea. Additionally, Dr. Roberto Bini from University of Florence, Italy, will be visiting UFV mid July collaborating with Dr Noham Weinberg in Chemistry, and Dr. Jing Li from Jilian University, China, will be a visiting professor in the Dept. of Physics this fall term. It is worth noting that as a result of the collaboration with Dr Huo, we have had many students from USST coming to UFV in Chemistry, Math and CIS and this year we will also have students from USST coming to Physics. The department of Biology holds international field trips on an annual basis, and last summer a group of about 24 students travelled to Ecuador to study the flora and fauna of the coastal and mountainous regions of Ecuador. This spring in conjunction with Geography, science students went for a study tour to Arizona, and this summer, another group of 24 students will be heading to Hawaii.

We have not actively sought international students but our programs in CIS and in Mathematics & Statistics, atract many international students. Our new Data Analysis Certificate (DAC) also has a large international component. A gathering for the incoming DAC students is being planned in September. These students are mainly from overseas and will stay at the program for only a year. So this gathering will provide them with the opportunity to get acquainted with their fellow classmates and the instructors in the program, and to quickly adjust to the new learning environment here at UFV. Additionally, this past year, 31 Brazilian students from the Science Without Borders program, enrolled in various courses at UFV. Our Science Advisors worked closely with International Education and the Brazil students to place them in Science courses as needed for their programs/interests. We place great emphasis on student's experience and our top students compete to attend the annual London International Youth Science Forum, and last year, we sent Timothy Richards from Physics to represent UFV and Canada to this meeting while this year, we will be sending Andrew Alexander from Biology to represent us in this prestigious Science Forum.

5. **Environmental Sustainability** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   Faculty from the departments of Biology and Chemistry (and Geography) actively participate in teaching and research in Environmental Sustainability issues. Additionally, the FoS has a Centre for Environmental Sustainability spearheaded by Pat Harrison from Biology, and this past year, we offered seven seminars on a wide range of topics, from community sustainability issues, student led initiatives, genetically modified organisms, to pipelines and oil sands and even monitoring space junk. Continuous funding for this Centre is a crucial component for long term success and university wide coordination of environmental sustainability issues.
   Progress is alo being made in advancing our interdisciplinary proposal for a Bachelor in Environmental Studies that would provide awareness to our students on environmental issues, including sustainability.
   On a purely voluntary basis, several of our faculty give talks related to sustainability issues to our community. For example, Dr. Tim Cooper from Physics continues to give 25+ talks per year in the Fraser Valley on the science and dangers of climate change, and Dr. Sharon Gillies provides information to various community groups on invasive plant species. She also does active research along with faculty from Geography and scientists from Woods Hole Oceanographic Institute on water quality in the Fraser River.
6. **Indo-Canadian and South Asian Studies** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   -
7. **Mennonite Studies** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   -
8. **The Integration of Research and Teaching** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   Hands-on experiential learning at all levels in the physical sciences is crucial. The departments of Biology, Chemistry, Physics (and Geography) offer labs associated with many of their courses, and although this is an expensive venue, students praise their ability to learn beyond what is given in classroom settings and their learning reflects well with the Institutional learning outcomes. For example, in the first year of Biology, students do a six week experiment that requires a major scientific write-up and presentation. This sows the seeds for inquiry that

culminates in their capstone courses with research projets. Frequently, Biology, Chemistry, Physics instructors and other science instructors take on students in the fourth year to provide research and presentation experience at Science Day in March. We also plan to adopt community relevant research experience, where senior students could perform applied research to solve industry driven needs.

9. **Strengthening the Culture of Teaching and Learning** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
Our faculty are actively involved in pedagogical research and make presentations in various Teaching and Learning meetings. For example Dr Joss Ives from Physics was an invited pleanary speaker at the Foundations and Frontiers of Physics Education Research in 2012. Drs Nigel Dance and Lesley Spier participate in Science education specializing in Chemistry pedagogy, while Susan Milner has been actively "teaching the teachers" in various Math events including major meetings organized by the Pacific Institute for the Mathematical Sciences (PIMS).
Our students have won major federal scholarships like the Alexander Graham Bell Canada Graduate Scholarships from the Natural Sciences and Engineering Research Council of Canada. In the various competitions, we had several winners including Jenna Peters (Biology) in 2012 and Kelly McLeod (Physics) and Brandon Yanciw (Chemistry) in 2013.

10. **Community Partnerships, Forums, Events, and Conferences** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
Our faculty, either as part of their service component or on a totally voluntary capacity has been leading or assisting in many community events:
- In conjuction with the local School districts, we have hosted the Regional Science Fair for elementary and high school students, providing financial as well as logistical help as well as many students and faculty to volunteer and judge particpants.
- In partnership with Science World we provide assistance running Super Science Club events at various schools. Christine Dalton from Biology and Joss Ives from Physics have been instrumental in coordinating, managing and recruiting science student facilitators
- With support from the Pacific Instutute for the Mathematical Sciences (PIMS) and UFV, we have hosted annual Math competitions for high school students and this year we had a record attendance with close to 150 student participants from 26 different schools.
- Spearheaded by Susan Milner from the department of Mathematics and Statistics, with partial support from PIMS and with assistance from UFV students and faculty from other science and non-science departments, we have offered Math Mania, an outreach event that provides mathematical activities and thinking skills to children from various schools, approximately 4 times per year for the last 4 years.
- The Physics department has partnered with the BC Cancer Agency in Abbotsford and three of their staff members will become Adjunct faculty in this department and assist in the development and training of our students in Radiation and Medical Physics.
- As a summer event, we provide Science Rocks to children in our community in weekly camps that offer different modules introducing sciences to students in grades 4 to 7. This employs our students as facilitators, and involves faculty members managing and coordinating events.
- The study tours organized by our science faculty to Tofino, Arizona, Ecuador, Hawaii included many community partnerships.

11. **Interdisciplinarity and Cross-Departmental/Faculty Cooperation** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
Biology-Agriculture, we carry out research that impact directly on agricultural interests and our faculty, eg Ron Wilen actively collaborates with Tom Baumann in the Agriculture department.
Biology-Chemistry, this is a commonly recurring collaboration and there are several faculty involved in interdisciplinary courses and research activities between these two departments.
Biology-Geography, both in research and in teaching. We cross list some of our courses and collaborate on study tours like the recent Arizona trip.
Chemistry-Physics, partnership in place to develop the Molecular Modelling program. Also currently, we have students that carry out joint projects with the two departments. eg. Jason Ho who did a project under Noham Weinberg from Chemistry and Derek Harnett of Physics.
Chemistry-CIS, Noham Weinberg also collaborates with CIS to develop algorythms and programs for molecular dynamics simulations
CIS-Physics, the proposed Engineering Physics-Mechatronics program would require close connection with CIS and Computing courses.
Physics-Biology, the proposed Medical Physics program would require close collaboration in Biology. Indeed, Physics has recently appointed several biophysicists from the BC Cancentre as adjunct faculty to further develop this collaboration.
Physics-Math, there are already ongoing collaborations between the two departments
Math-CIS, this is a natural area of ongoing collaboration and the Data Analysis Certificate program is one that has been quite successful.
Math-CIS-Biology-Chemistry-Physics, several faculty as well as our students have interests in cross-disciplinary fields. We have various faculty in Math with interests in biostatistics and bioinformatics who have ongoing collaborations with faculty in various other departments and across many disciplines. They train our students and provide cross-disciplinary opportunities such as for our first batch of DAC students; one student Lovedeep Gondara was recently offered an internship with the BC Cancer Agency and this students credits his success with the assistance provide by Dr. David Chu who taught several courses for the DAC program.

12. **Recruitment and Engagement of Faculty** - *identify actions that your Faculty/College has adopted to further a human resources strategy to attract and engage outstanding employees, to retain, develop and foster their leadership skills, and to affirm their contribution to sustaining a vibrant and diverse scholarly community which values learning, social and personal development, embraces challenge and is committed to the respectful debate of ideas and views:*
Our faculty are actively involved in community events and participate in many ways to promote the University in the various communities within and outside the Fraser Valley, although no active recruitment or engagement of faculty is expected. For example, in recent past, our faculty have been involved in the promotion of UFV's Agriculture program at the Surrey Agriculture Food Safety Advisory Committee and at the Flavours of Surrey event. We have done outreach activities in Mission, Langley, Harrison as well as within Abbotsford, Chilliwack and other nearby communities.
This year, the Faculty of Science has established Awesome Achievemnet Awards (AAA) to recognize the work of our faculty, and this inaugural year, we recognized the following:
AA- Awesome Achievement – Dr. Ben Vanderlei (Math) for excellence in Teaching (great teaching evaluations in all courses), Research (several presentations and publications, including one in the prestigious Proceedings of the National Academy of Sciences) and Service (participating in many committees and outreach activities, including Math Mania and Math Contest).

TT- Terrific Teaching. - Dr. Joss Ives (Physics), students and colleagues provided excellent feedback for his teaching and pedagogical research.
RR -Remarkable Research - Dr. Derek Harnett (Physics) who has had a great year of research with many presentations, student project winners, and a renewal of his NSERC discovery award.
SS - Superb Service - Dr. Ron Wilen (Biology) & Karen Cooper (Sci. Adv.) for instructional and non-instructional staff, respectively, providing many services to the advancement of the faculty of science and the university at large, including representation in many institutional committees and community service like Regional Science Fair (Ron), organization of many science events (Karen)
OO- Outstanding Outreach-Susan Milner (Math & Stats), for her work with Math Mania, which has been incredibly well received throughout the Fraser Valley, and contribution in Math Contest

13. **Creative Resourcing** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*

    We are actively seeking partnerships to improve/enhance our offerings. For example, we are collaborating with Mission Heritage Association for the development of an astronomical observatory at the Fraser River Heritage Park in Mission. We actively seek federal, provincial and community grants to fund some of our outreach activities. We are also seeking industrial support. Our collaboration with MacDonald-Dettwiler and Associates (MDA) on the Sapphire project came to fruition this February 25th with the successful launch of the satellite and active commissioning of the Sapphire Ground Antenna which is located in our Abbotsford campus.

14. **Plans for improving your Faculty/College's progress towards achieving these goals (no more than ten):**

    We have developed a set of strategic plans and goals to achieve academic excellence as well as making an impact in our community. These include:
    - providing accessible & challenging learning experiences that instill a passion for learning & develop the lifelong capacity to learn
    - providing the knowledge & fostering development of critical-thinking, leadership, & practical skills that students require for employment, entrepreneurship, further education, & responsible citizenship— locally and globally
    - using the best pedagogical practices, informed by a commitment to current research & scholarship
    - engaging students actively in their education through a high level of interaction with faculty members & opportunities for practical experience, research, problem-solving, and creative work

    Additionally, we are committing to the following:
    -Continued hands-on experience for the students in the lab and in the field.
    -Enhanced commitment to provide community education on environmental sustainability.
    -All departments to have a community advisory body (this is already in place for the CIS dept) from local industry representatives to keep our programs up to date and relevant to the community
    -Continue and expand community outreach activities including experiential science and technology.

III Report on Programs

a. Progress on Approved New Programs

Programs approved since September 2011:

Program	Senate Approval (Date)	Ministry Approval (Date)	Implement (Yes or No)
Data Analysis Certificate (DAC)	**Dec 2011**	**2013**	**yes**

b. Programs Recommended for Discontinuance or Suspension

-

c. Programs Recommended for Modification

-

d. Review of Programs in Development

Programs listed in the Ed Plan in development or nearing approval at Senate:

Program	Likely date at Senate
Bachelor of Agriculture	Fall 2013
Engineering Physics- Mechatronics	Fall 2013
Minor in Applied Statistics	Fall 2014
Biochemistry	Fall 2014
Bachelor of Environmental Studies	Fall 2014
Molecular Modelling	Fall 2014
Bachelor of Science in Computer	Fall 2015
Medical Physics	Fall 2016

**A Masters in Integrated Science and Technology is being developed (Draft concept paper is attached). A working group has been established that includes: Noham Weinberg (Chemistry), Tom Baumann (Agriculture), Greg Schmaltz (Biology), Gabriel Murray (CIS), Cindy Loten (Math), Olav Lian (Geography) and Derek Harnett (Physics).

e. Newly Passed Concept Papers

f. Departmental Information

2012-13

Department	Domestic FTEs	International FTEs	Fill rates	Average Class Size
Biology	261.27	7.53	96.7	30.4
Chemistry	172.97	7.35	91.4	29.2
Computer Information Systems	223.57	106.5	90.8	30.7
Mathematics & Statistics	327.13	64.67	86.5	30.5
Physics	119.46	8.28	88.8	27.1

2011-12

Department	Domestic FTEs	International FTEs	Fill rates	Average Class Size
Biology	259.30	7.87	100.9	34.5
Chemistry	161.87	7.80	87.9	27.4
Computer Information Systems	212.67	95.78	92.2	31.9
Mathematics & Statistics	321.37	64.98	89.5	31.7
Physics	114.79	9.58	84.7	27.8

2010-11

Department	Domestic FTEs	International FTEs	Fill rates	Average Class Size
Biology	252.55	8.91	98.6	33.2
Chemistry	160.71	11.24	88.9	27.3
Computer Information Systems	222.50	87.37	88.2	29.9
Mathematics & Statistics	319.82	66.15	89.7	30.7
Physics	111.01	11.92	87.7	28.4

2009-10

Department	Domestic FTEs	International FTEs	Fill rates	Average Class Size
Biology	256.37	7.24	94.9	31.1
Chemistry	155.44	7.66	82.5	25.6
Computer Information Systems	212.05	67.85	87.8	29.3
Mathematics & Statistics	293.64	52.54	83.0	29.2
Physics	100.05	11.67	82.5	24.4

g. Programs Reviewed and Scheduled for Review

Programs	Review Date
Physics	2009-10
Mathematics & Statistics	2010-11
Biology	2011-12
Chemistry	2012-13
Computer Information Systems	2013-14

h. Major institutional or Faculty/College-wise challenges/required changes resulting from program reviews:

Space is the single biggest constraint, followed by budget restrictions that do not permit mounting more courses to alleviate student demand.

i. Programs with program learning outcomes aligned with the Institutional Learning Outcomes (ILOs):

All of the FoS departments have begun or completed this process.
Math & Stats are currently completing the process, while Biology was one of the inaugural group of departments that participated in the alignment exercise. Biology came up with their own set of learning outcomes that matched the ILOs as follows (numbers 1 to 9 are those listed in the ILOs):
A) Access and use biological knowledge in order to interpret and engage in discussions on contemporary biological and social issues on a regional and global scale - 1, 4, 9
B) Foster critical thinking to analyze, interpret, integrate, and critique the existing and emerging body of biological knowledge in both independent and collaborative settings. - 2, 6, 7
C) Learn and apply multiple methods and techniques to answer biological questions in a professional and ethical context. - 3, 4, 8
D) Access, integrate, and communicate scientific information to general and academic audiences and be leaders in the community. - 5, 7
E) Initiate inquiries and develop solutions to biological questions and be aware of the limits of knowledge. - 2, 4, 9

j. Plans for improving your Faculty/College's progress towards achieving the ILOs (no more than ten):

-Maintain close contact between students and faculty: Set-up faculty mentors for new students and follow through over 4 years
-Institute annual information meetings of students with advisors and faculty
-Closely coordinate with Student Life in their "Six weeks to Success" campaign to bring this to reality.
-We have a Science Social scheduled within the beginning of term for new and returning students to meet and socialize with faculty and staff and fellow students.
-We participate in UFV Connect and have many science student mentors mentoring 5 new students each.
-As mentioned previously, our BSc orientation sessions have been very successful and informative for prospective students and their parents/families. This year, we held four events this May and June and had about 120 students participating and about 200 total participants

with their families. We send power point presentations of these events to all prospective students, roughly 600 or so by email.
-We will be hosting the first Advising Day (in conjunction w the Advising Centre) to alert students of the services and the help that they can get. This will be part of the "Six weeks to success" campaign.
-Many of our faculty and staff are actively involved in many committees and task forces to better achieve the ILOs.

DRAFT CONCEPT PAPER for creation of new graduate program in the Faculty of Science at UFV

Overview

This document is an appraisal brief for a graduate program that is being proposed by the Faculty of Science (FoS) at the University of the Fraser Valley (UFV) in Abbotsford, BC, Canada. UFV is a new university established in 2008 from what was then University College of the Fraser Valley (UCFV) and prior to that as Fraser Valley College (FVC). UFV has grown from its humble community college beginnings to a well established, nationally recognized institution and is bound for further growth. The FoS at UFV consists of 5 departments: Biology, Chemistry, Physics, Mathematics and Computer Information Systems (CIS). Additionally, the Faculty has close ties with Geography, Agriculture and Health Sciences, and have grown to a critical mass that we can now offer a graduate program that would fill the needs and beneficially impact our local, national and international communities.

The proposed program aims to converge Science and Technology into applied fields to meet the needs of business and industry (e.g. High-Tech, Pharmaceuticals, Agriculture) in our region and of society at large. A Masters in Integrated Science and Technology program will encourage students to think outside the box, drawing from our various scientific disciplines to examine an issue from many angles (eg. biological concepts integrated with mathematical calculations, computer guided information, optical physics, odour chemistry, geographical information systems, etc) while developing critical thinking skills, time management, observational skills as well as communication and presentation skills. The program aims to prepare independent thinkers with disciplined and inventive minds, from several areas of science, to provide solutions that are technologically sound, interdisciplinary, and based on the scientific approach. Our program will, therefore, promote applied scientific literacy, lab and field skills, leadership and common sense, which will be applied to many problems. We anticipate that the students who will graduate from this program will be resourceful and will be able to use their critical eye in many fields.

a. **Name of program:** Masters of Integrated Science & Technology

b. **Credential to be awarded:** MSc in Integrated Science & Technology (MIST)

c. **Program Length or number of credits.** Ideally 2 years full time with a combination of hands on project development, some graduate courses and the production of a thesis.

d. **Audience and benefits:** BSc or BA graduates from a recognized institution, or anyone who can establish an equivalency to either of the 2 Bachelors degrees. Depending on specific topic of project, student would be required to take appropriate graduate level courses that are cross-disciplinary. Benefits to this audience: The evolving education scenario and workplace demands have made it

obvious that a bachelor's degree is currently not sufficient for students to receive a career placement immediately after undergraduate degrees, and there is great demand for people with post-graduate degrees and a Masters is now becoming the new minimum requirement.
See http://www.theglobeandmail.com/news/national/time-to-lead/when-a-university-degree-just-isnt-enough/article2014732/ http://www.nytimes.com/2011/07/24/education/edlife/edl-24masters-t.html?ref=education . Additionally, there is usually a significant salary jump from a Bachelors to a Masters in the life and physical sciences to justify the extra
degree, http://roomfordebate.blogs.nytimes.com/2009/06/30/what-is-a-masters-degree-worth/ . A Masters is also the bridge for many terminal degrees and our university aiming to strive for best undergraduate education should have role models with available graduate students. Masters students could also facilitate the learning environment of our undergraduates serving as teaching assistants in laboratories.

e. **Relationship to local communities and their needs.** Abbotsford and the Fraser Valley has been growing both economically and demographically and is in need of postgraduate programs to fill the needs of its advancing technological demands. The BC Ministry of Regional Economic and Skills Development has stated that more than 77% of the jobs opening in BC over the next 10 years will require university degree or higher, and many of these will require "advanced skills, including science and technology skills" (http://www.workbc.ca/Documents/Docs/Skills_for_Growth_Strategy.pdf). Three occupational groups are expected to grow faster and these include health, trades, and natural & applied sciences. The proposed program aims to converge Science and Technology into applied fields to meet the needs of business and industry in our region (eg. agribusiness, natural resources, digital technologies) and of society at large (green technologies, rural entrepreneurship, organic trends). We aim to educate technological problem solvers who can integrate effectively the knowledge gathered from several disciplines into solving a wide spectrum of issues that face local industries and businesses be it technological issues, communication issues, manufacturing or management issues.

f. **Relationship to UFV Strategic Plan, including possibilities for Indigenous and international content**. The university's strategic plan aims to *provide the best undergraduate education in Canada.* To do this, we need teachers able to engage the students. On-going scientific research has always sparked students interest and this is seen in the popularity of lab exercises. Instructors with research experience can make lectures and labs more relevant for the students and the presence of graduate students as peer mentors could further enhance the student learning experience at UFV. The graduate program would allow instructors to carry on research though not only the graduate students, but also with honours thesis undergraduate students as well as with many other undergraduate students in part time positions or full time during summer months. Our strategic plan also aims to *be a leader of social, cultural, economic and environmentally-responsible development in the Fraser Valley.*

Our researchers have many connections in the area and have already been carrying out research that benefit the Fraser Valley, especially in the agricultural and technological sector. The graduate program would provide much needed training for students to fill the needs of these growing sectors. The third identified strategic planning goal is to *be innovative, entrepreneurial, and accountable in achieving our goals.* Our researchers have already been quite innovative and entrepreneurial, and producing graduate and undergraduate students with relevant research experience through the proposed Masters program, would add to the accountability to the community at large. Additionally, MIST aims to bring together indigenous ways of knowing with modern scientific knowledge in a broadened and culturally inclusive way encompassing local and international developments. This would be an innovative program emphasizing the interconnectness of nature, technology and various scientific disciplines.

g. **Relationship to existing programs at UFV**. MIST would be the capstone program to all of UFV's Faculty of Science programs as well as some from Geography, Agriculture and the Health Sciences. It would be a unique program in BC and Canada as no such graduate program is currently offered within any of the institutions of higher learning that we are aware of.
Similar offerings at the undergraduate level exist within BC, at UNBC (http://www.unbc.ca/integrated_science/index.html), and UBC (http://www.intsci.ubc.ca/wiki/doku.php), while in the rest of Canada there are also a few offerings, again only at the undergraduate level. These include: Dalhousie (http://www.dal.ca/academics/programs/undergraduate/disp.html), McMaster (http://registrar.mcmaster.ca/CALENDAR/current/pg1474.html) and Cape Breton University (http://www.integrativescience.ca/Program/) but this latter one appear to have been active only from 1999-2007.
There are no programs at the graduate level for a Masters in Integrated Sciences in Canada that we are aware of, however, there are a few related programs in the USA such as those at John Carroll U in Ohio (http://sites.jcu.edu/graduatestudies/pages/graduate-programs/masters-programs/integrated-science/) , at James Madison U in Virginia (http://msisat.jmu.edu/description.html), at the University of Colorado Denver (http://www.ucdenver.edu/academics/colleges/CLAS/Programs/MastersofIntegratedSciences/Pages/ProgramOverview.aspx), and at Southeastern Louisiana University (https://www.selu.edu/future_students/degree_prog/degrees/coll_science_tech/ms_isat.html).

h. **Anticipated links to further study and to employment.** The program aims to graduate professionals who are confident in their abilities as scientists, prepared for a lifetime of learning and influence as global citizens, who have the skills to make significant contributions to theoretical or applied fields, to compete successfully in the job market, and who are highly qualified for careers in research and development, yet sensitive to traditional ways and equipped for long term success as professionals in their fields. Thus, at the end of their degree, students should be prepared for a variety of different careers paths: further research (PhD programs); health and environmental sciences; industry; agriculture; government; law; international policy; etc.

i. **Delivery methods.** The objective of the MIST program is to provide students with a research paradigm that requires them to explore the answers to scientific and/or technological questions across a variety of disciplines and levels of explanation, from chemical or molecular to mathematical or physical, to organism or environment. For example, integrating mathematical models, environmental and social approaches to understanding sustainable waste management. The program is envisioned to have both a research component and a minimum of two course requirements. A strong core of interdisciplinary, experiential courses forms a foundation in math, science and technology. A variety of electives then allow students to focus on areas of interest. Envisioned concentrations could focus in 4 areas: 1)Bioinformatics, Biotechnology and agriculture; 2)Molecular modeling, biochemistry, biophysics and biogeography; 3)Computers, data analysis and information technologies; 4)Natural resources, Environmental assessment and sustainability

j. **Possible resource needs**. Whether the specific area of concentration requires a theoretical or research background, space is a resource issue that has been identified as of high priority need. Current facilities should be able to support an initial intake of a few students per research active faculty as soon as the program becomes implemented. However, for the long term sustainability of the program which because of its uniqueness and applied aspects, may become popular for our own undergraduates wanting to consider post graduate programs or from other nearby institutions as well as from international students, there is a need of a new building. Thus a FoS building to house the entire FoS and affiliated scientists from Agriculture, Geography and Health Sciences is being proposed parallel to this proposal. Nevertheless, MIST can begin to be mounted without a new physical building as fundraising, planning and construction may take several years.

k. **Suggested Program Working Group members and the reasons for their selection. Include brief biographies and credentials**.

- Agriculture - Tom Baumann
- Biology - Greg Schmaltz
- Chemistry - Noham Weinberg
- CIS - Gabriel Murray
- Math - Cindy Loten
- Physical Geography - Olav Lian
- Physics - Derek Harnett

The above individuals are teaching and research active individuals who could spearhead this proposal and bring to fruition. They each have a very good record of participation in the creation of new programs and are knowledgeable of curriculum issues.

Faculty of Trades and Technology

EDUCATION PLAN UPDATE 2013

Submitted by:
John English, Dean

Education Plan Update Template, 2013

I Review and Reaffirmation of Institutional Priorities identified in Five-Year Plan

13 Priorities

1. Student Recruitment, Retention, and Success
2. Enrolment Management
3. Indigenization
4. Internationalization
5. Environmental Sustainability
6. Indo-Canadian and South Asian Studies
7. Mennonite Studies
8. The Integration of Research and Teaching
9. Strengthening the Culture of Teaching and Learning
10. Community Partnerships, Forums, Events, and Conferences
11. Interdisciplinarity and Cross-Departmental/Faculty Cooperation
12. Recruitment and Retention of Faculty
13. Creative Resourcing

a. Trends and Challenges in Higher Education (list the top challenges—no more than ten):

1. Changes in Trades programming are initiated externally by the Industry Training Authority (ITA).
2. Foundation (ELTT) programs remain a challenge. No funding is available through the ITA for any new programming. This model does not allow for those interested in choosing a career to have the option of finding training without first finding employment.
3. Trades training is underfunded.
4. Funding agency does not have any strategic planning for future trades shortages/requirements.
5. Trades training programs are constantly under scrutiny to find the least cost factor.
6. Program durations are shortened by the ITA in spite increased knowledge required in many trades.
7. Industry requests and advice tend to be ignored with cost cutting clearly the objective directing change.

b. New local demographic and employment data:

c. Local economic development priorities:

1. There is clearly rising interest in Agriculture programming (education and research) in the region. This is being expressed by industry through their respective organizations as they begin to recognize the need for future labour, science and technology, business practices and research to keep the agriculture economy competitive and thriving.

d. Trends in new programming elsewhere:

1. Trades programming content and methods continues to be driven externally through the ITA. Common level exams and pressure for shorter program lengths continue to be issues. The system as a whole is addressing these.

e. Resulting necessary changes or adjustments to strategic priorities:

1. None.

II Report on Non-Program Initiatives identified in the Five-Year Plan

This section identifies specific progress made in achieving the non-program priorities identified in the Five-Year Ed Plan (such as indigenization and internationalization) and can also include any new specific plans for the coming year. The section concludes with an evaluation of whether and how improvements should/can be made to improve your Faculty/College's progress towards achieving these goals.

1. Student Recruitment, Retention, and Success - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority*:
Continue to support and participate in regional and national programs such as Skills BC and Skills Canada.

Conducted a large open house at the Trades and Technology Centre in conjunction with the Skills BC competition (and our School District partners). Excellent turnout. Some form of this event will be ongoing annually.

Continue to support dual credit programs as a means of engaging high school students' interests in trades apprenticeships.

Address specific enrolment challenges through advertising and targeted activities. This will include an increase in social media activities targeting appropriate groups of potential students.

Prominent staff and faculty will collaborate with Marcom and Recruitment in visiting schools, hosting tours of the TTC facility, and participating in open house activities.

Continued participation in career fairs and trade shows to brand and expose our program mix.

2. Enrolment Management - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
This is identified as one of the ten key goals the Faculty has set for itself as expressed in the Ed Plan/Strategic Plan. Enrolment management has been an increasing role for the staff in the Faculty of Trades and Technology as the roles and responsibilities of employers has changed to accommodate less work for the ITA. More and more programs are changing to apprenticeship models which have an increased level of reporting.

3. **Indigenization** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   Work with Indiginous Affairs Office and the Vice Provost to launch the Building Service Worker Program as part of a larger program designed with Sto:lo to serve a specific learner cohort. This is a key opportunity for the Faculty to learn and adjust to the needs of Aboriginal learners and be able to incorporate lessons learned in other program areas.
4. **Internationalization** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   Developed an international focused post-degree diploma program in Hospitality and Event Management. We expect to receive the first cohort in January of 2014.

   Worked with Canada Wood to conduct wood frame construction training for Chinese students and professionals. Work includes a summer camp in Chilliwack and the development of two advanced levels of curriculum to be offered by up to 20 Chinese post secondary organizations. This work directly supports the Province's emerging markets strategy for commodity lumber.
5. **Environmental Sustainability** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   Work between the cafeteria operations, the Culinary program and Agriculture is contemplating a composting program when the new Agriculture facilities are completed.

   All programs consider and manage waste, appropriate materials, and trends in modern practice found in respective industries.

   Faculty and staff are very active in terms of addressing the environmental safety of their work environment including such matters as air quality (dust), implementing appropriate work practices (waste, asbestos)
6. **Indo-Canadian and South Asian Studies** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   To date this has not been addressed. It is a specific aspect of the Faculty's Ed Plan/ Strategic Plan to consider during the 2013-14 year.
7. **Mennonite Studies** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   To date this has not been addressed. It is a specific aspect of the Faculty's Ed Plan/Strategic Plan to consider during the 2013-14 year.
8. **The Integration of Research and Teaching** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   Research has not been a part of the Faculty except in Agriculture. Agriculture research continues largely focused on berry production through the Pacific Berry Resource Centre. Within Trades, there is an emerging recognition of what research means in trades professions. An early example is being pursued around electric vehicle conversations with emphasis on documenting best practices, codes and regulations, and developing techniques.
9. **Strengthening the Culture of Teaching and Learning** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
   Traditionally Trades programs have worked only under the auspices of the ITA . Faculty continue to be engaged with their larger communities of interests (articulations, curriculum

committees, etc.). A variety of information-type sessions have been conducted or are planned to inform and enlighten faculty and staff around issues such as counselling services, students with disabilities, etc.

10. **Community Partnerships, Forums, Events, and Conferences** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
The Faculty of Trades and Technology works closely with the Industry Training Authority.

    Trades programs hold regular Program Advisory Committee meetings with all trades areas.

    Agriculture faculty are involved with the professional associations and research arms of the particular specialties. Have also hosted conferences/forums in conjunction with foreign (European) universities.

    Further partnerships include various school programs as well as district level partnerships. UFV has partnered with Fraser-Cascade school district in an Automotive ACE-IT agreement.

11. **Interdisciplinarity and Cross-Departmental/Faculty Cooperation** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*
Trades is often considered such a different set of programming as to largely stand independant of other UFV programming. The Faculty has begun a program of expressing its programs and courses according to recognized and familiar ways usual to universities. Specifically, breaking programs in to a series of courses, seeking credit values for courses. This will allow for trades courses to be used for standing in other programs and allow for learning completed in non-trades programs to be considered for recognition towards trades credentials.

    As a step in the direction of deploying trades learning experiences outside of the confines of the ITA's interests, the Faculty has sought to have advanced standing or other recognition of learning applied to non-trades programs. For example, the Global Development Studies degree will accept completion of certain trades programs as credit for two upper and two lower level electives.

12. **Recruitment and Engagement of Faculty** - *identify actions that your Faculty/College has adopted to further a human resources strategy to attract and engage outstanding employees, to retain, develop and foster their leadership skills, and to affirm their contribution to sustaining a vibrant and diverse scholarly community which values learning, social and personal development, embraces challenge and is committed to the respectful debate of ideas and views:*
Maintaining a group of instructors--often working professionals--to be available for part time assignments and/or relief instruction. Trades and Technology has been in discussion with employee services to find ways to reduce barriers for these working professionals to be employed on a training day based system. Block release programs create a unique set of challenges for finding sessional and part time faculty.

    Continue to present a series of developmental workshops and events. The Faculty is working through a workplace communications and constructive conflict plan. Completed this year was a Myers Briggs inventory for all faculty and staff emphasising the need to understand the variety of personalities found in the workplace and learn methods for interacting.

13. **Creative Resourcing** - *list the most important ways your Faculty/College has achieved, modified or made progress towards achieving this priority:*

    Detailed spending tracking and reconciliation to ensure that funds are allocated appropriately. Emphasis has been on transparency and defensible rationale for allocations and appropriations.

    Emphasis on core business. For example, maintenance of the Aerospace Campus at the Abbotsford Airport has been handed over to Facilities from Trades and Technology.

    Continue to develop continuing studies and contract services as a revenue source.

14. **Plans for improving your Faculty/College's progress towards achieving these goals (no more than ten):**

    The development of a full Education Plan and Strategic Plan as a means to focus efforts, provide a clear context for decision making and planning, and expressing priorities and aspirations.

III Report on Programs

a. Progress on Approved New Programs

Programs approved since September 2011:

Program	Senate Approval (Date)	Ministry Approval (Date)	Implement (Yes or No)
Hospitality Event Management Post-Degree			**Yes**

b. Programs Recommended for Discontinuance or Suspension

No programs are being considered for discontinuance. There have been two reductions in program capacity that are responses to demand: one section of Drafting and one section of Automotive Foundations.

c. Programs Recommended for Modification

Welding and Heavy Duty Mechanics foundations are to be modified (driven by initiatives of the Industry Training Authority). Such changes are provincial in scope and timing is driven externally.

d. Review of Programs in Development

Programs listed in the Ed Plan in development or nearing approval at Senate:

Program	Likely date at Senate
Automation Electronics	2014

e. Newly Passed Concept Papers

None

f. Departmental Information

2012-13

Department	Domestic FTEs	International FTEs	Fill rates	Average Class Size
Agriculture	48.27	2.44	85.00	21.20
Trades	585.96	1.00	24.30	10.20

2011-12

Department	Domestic FTEs	International FTEs	Fill rates	Average Class Size
Agriculture	53.04	1.03	89.90	22.60
Trades	654.44	2.64	21.80	11.30

2010-11

Department	Domestic FTEs	International FTEs	Fill rates	Average Class Size
Agriculture	44.98	1.26	77.90	19.40
Trades	622.68	3.16	16.90	10.30

2009-10

Department	Domestic FTEs	International FTEs	Fill rates	Average Class Size
Agriculture	30.92	0.56	54.50	13.60
Trades	650.01	3.62	17.90	11.40

g. Programs Reviewed and Scheduled for Review

Programs	Review Date
Architectural Drafting	2013-14

h. Major institutional or Faculty/College-wise challenges/required changes resulting from program reviews:
not applicable

i. Programs with program learning outcomes aligned with the Institutional Learning Outcomes (ILOs):
Carpentry
Joinery
Electrical
Plumbing
Aircraft Structures
Welding
Automotive
Heavy Duty Mechanics/Commercial Transport
Autobody Collision

Culinary Arts
Electronics
Agriculture
Architectural Drafting

j. Plans for improving your Faculty/College's progress towards achieving the ILOs (no more than ten):

To date, all programs have completed alignment of program learning outcomes to institutional learning outcomes.

The Faculty of Trades and Technology has specific objectives to break down programs into a series of courses and seek credit recognition. Preparing course outcomes to align with program outcomes will be part of this exercise. This is a very significant effort and one that should expand overall opportunities for students and support the grand objective of integration of trades and technology programming into the larger university.

University of the Fraser Valley
2012/13 RECONCILIATION SUMMARY

Prog Type	ITA Program Name	Level	Adj. Financial Contribution	Add/Cancel Funding	Financial Contribution	Adj. Funded Cap	Add/Cancel Class	Recon. Capacity	Reconciled Enrols	% Util
APP										
	Aircraft Structural Technician (CAT:S)	4	$403,200	$0	$403,200	32	0	32	25	78.1%
Aircraft Structural Technician (CAT:S) Total			**$403,200**	**$0**	**$403,200**	**32**	**0**	**32**	**25**	**78.1%**
	Automotive Service Technician	1	$23,800	$0	$23,800	16	0	16	5	31.3%
		2	$20,400	$0	$20,400	16	0	16	15	93.8%
		3	$47,600	$0	$47,600	32	0	32	26	81.3%
		4	$0	$0	$0	0	0	0	0	-
Automotive Service Technician Total			**$91,800**	**$0**	**$91,800**	**64**	**0**	**64**	**46**	**71.9%**
	Carpenter	1	$18,000	$0	$18,000	16	0	16	17	106.3%
		2	$36,000	$0	$36,000	32	0	32	32	100.0%
		3	$0	$18,000	$18,000	0	16	16	16	100.0%
		4	$36,000	($18,000)	$18,000	32	-16	16	16	100.0%
Carpenter Total			**$90,000**	**$0**	**$90,000**	**80**	**0**	**80**	**81**	**101.3%**
	Cook (Institution Entry)	1	$112,000	$0	$112,000	16	0	16	17	106.3%
		2	$56,000	$0	$56,000	16	0	16	17	106.3%
Cook (Institution Entry) Total			**$168,000**	**$0**	**$168,000**	**32**	**0**	**32**	**34**	**106.3%**
	Electrician	1	$30,000	$0	$30,000	16	0	16	16	100.0%
		2	$60,000	$0	$60,000	32	0	32	30	93.8%
		3	$90,000	$0	$90,000	48	0	48	42	87.5%
		4	$60,000	$0	$60,000	32	0	32	32	100.0%
Electrician Total			**$240,000**	**$0**	**$240,000**	**128**	**0**	**128**	**120**	**93.8%**
	Welder	B	$20,000	$0	$20,000	5	0	5	5	100.0%
		C	$336,000	($28,000)	$308,000	42	2	44	44	100.0%
Welder Total			**$356,000**	**($28,000)**	**$328,000**	**47**	**2**	**49**	**49**	**100.0%**
APP Total			**$1,349,000**	**($28,000)**	**$1,321,000**	**383**	**2**	**385**	**355**	**92.2%**
FDTN										
	Automotive Service Technician	1	$102,600	$0	$102,600	18	0	18	18	100.0%
Automotive Service Technician Total			**$102,600**	**$0**	**$102,600**	**18**	**0**	**18**	**18**	**100.0%**
	Electrician	1	$73,440	$0	$73,440	18	0	18	18	100.0%
Electrician Total			**$73,440**	**$0**	**$73,440**	**18**	**0**	**18**	**18**	**100.0%**

University of the Fraser Valley
2012/13 RECONCILIATION SUMMARY

Prog Type	ITA Program Name	Level	Adj. Financial Contribution	Add/Cancel Funding	Financial Contribution	Adj. Funded Cap	Add/Cancel Class	Recon. Capacity	Reconciled Enrols	% Util
	Heavy Duty Equipment Mechanic / Commercial Transport Vehicle Mechanic	1 / 1	$123,120	$0	$123,120	18	0	18	20	111.1%
Heavy Duty Equipment Mechanic / Commercial Transport Vehicle Mechanic Total			**$123,120**	**$0**	**$123,120**	**18**	**0**	**18**	**20**	**111.1%**
FDTN Total			**$299,160**	**$0**	**$299,160**	**54**	**0**	**54**	**56**	**103.7%**
RTND										
	Retained Funds		$0	$8,400	$8,400	0	0	0	0	-
Retained Funds Total			**$0**	**$8,400**	**$8,400**	**0**	**0**	**0**	**0**	**-**
RTND Total			**$0**	**$8,400**	**$8,400**	**0**	**0**	**0**	**0**	**-**
Grand Total			**$1,648,160**	**($19,600)**	**$1,628,560**	**437**	**2**	**439**	**411**	**93.6%**

Graduate Studies Update

EDUCATION PLAN UPDATE 2013

Submitted by:
Adrienne Chan
Associate Vice-President,
Research, Engagement, and
Graduate Studies

Graduate Studies Update September, 2013

UFV currently delivers two Master's Degrees:

- **Master of Arts in Criminal Justice**
- **Master of Social Work**

The MA in Criminal Justice has an intake every year. As of 2013, there were 24 students in January, and 20 students were continuing in May. As of September, there were 9 continuing students and 9 new students registered in the current intake.
The MSW has an intake every two years. The first cohort started in Winter 2011, and the second cohort started in Fall 2012. The first cohort of the MSW graduated in Summer 2012 and convocated in June 2013. As of 2013, there were 21 students in the MSW program. Of those students, 15 are "full time". We expect these 15 students to graduate in 2014. Both of these programs as "cost-recovery"; however they each have a different budget model, which has raised some concerns about equity.

There are three Graduate Certificate programs.

- Program Evaluation
- Teacher Leadership and Mentorship
- Research and Teaching History

None of these have been delivered and all of them are on hold. The School of Graduate Studies still receives requests for the **Certificate in Program Evaluation** every month and they have been given University of Victoria program information. These programs will be reviewed in the coming year to decide whether there is an interest in attempting to offer them again.

There are three Master's programs under development:
Master of Professional Accountancy and Corporate Financial Management: Since beginning their work in 2012, this program working group has developed a draft concept paper, which is quite comprehensive. The program working group have completed a labour market survey and are ready to begin a consultation process regarding their concept paper, as per Policy 209. The draft concept paper has been reviewed by the Dean of Professional Studies and by the AVP Research, Engagement, and Graduate Studies.
Master of Migration and Citizenship: The program working group has been meeting for over two years. There is a draft concept paper outline. Discussions were held regarding conducting a labour market survey in the summer of 2013. We expect to receive an update regarding the status of the survey this fall.
Master of Science in Integrated Science: This program is in its conceptual stage. A program working group has been formed. The program will be interdisciplinary requiring students to develop expertise in at least two related science fields.

Policies and Guidelines:

- The Graduate Program Course and Approval Process (Policy 209) underwent revisions in 2011 and in 2012. The revised policy was approved by Senate in February 2013.
- General Regulations for Graduate Studies were revised in 2012 and approved in February 2013. This includes language regarding appeals.
- Supervisory Status Request Forms and Supervisory Appointment Forms were revised in 2013.
- We are currently working to find a way for the Banner system to record important data on graduate students such as their supervisor's name, titles of their research projects, and other data that is currently only stored in a spreadsheet in the AVP's office.
- Students will soon be able to have their final research papers (Major Paper) kept in the Library.

Strategic Research Plan Update

EDUCATION PLAN UPDATE 2013

Submitted by:
Adrienne Chan
Associate Vice-President,
Research, Engagement, and
Graduate Studies

Strategic Research Plan (2010-2015), Update Summary 2013

In 2012 – 2013, a consultation was conducted to update the Research Plan which will expire in 2015. Previously the plan included five priority areas:

- Citizenship, Culture, Governance, and Human Rights
- Crime Prevention and Criminal Justice
- Environment and Sustainable Development
- Human Development, Health, and Well Being
- Scholarship of Teaching and Learning

These are listed alphabetically and not in priority order.

In the update, the Dean of Sciences, and the Faculty of Sciences lobbied strongly for the inclusion of **Molecular Sciences** as a priority. Within the context of this update, Molecular Sciences has been added as a sixth priority area. However, this – and the other five areas – will be revisited in 2014, when we prepare the plan for 2015-2020.

Within three of the priority areas, some wording changes were made as well as some additional clauses.
Crime Prevention and Criminal Justice: This area recognizes that the BC Centre for Social Responsibility is now the UFV Centre for Safe Schools and Communities. The Centre for Public Safety and Criminal Justice replaced the Centre for Criminal Justice Research Sun Center of Excellence.
Environment and Sustainable Development: The following paragraph was added:
Studies of environmental degradation which impacts our lives and health as well as all wildlife and natural systems: Its understanding requires a multidisciplinary and interdisciplinary approach from disciplines such as biology, chemistry, ecology, earth sciences, agriculture, geography, mathematics and statistics, computing science, and physics. UFV supports fundamental and applied research to address diverse and critical local and global challenges including but not limited to: surface and subsurface water pollution, toxicology, air and soil pollution, climate change, depletion of resources, and extinction of species due to different factors such as habitat loss and occurrence of invasive species.
Human Development, Health, and Well Being: Reference to interdisciplinary work added disciplines that were not previously referenced (e.g., Nursing rather than Health Sciences, Early Childhood Education, Child and Youth Care, Social Work and Human Services).
Molecular Sciences: This priority was added with the following description:
Molecular sciences is a multidisciplinary and interdisciplinary field where physics, chemistry, biology, mathematics and statistics and computer science merge in a cooperative effort to better understand properties of subatomic, atomic, molecular, and supramolecular systems and their technological potential. It is a growing area of experimental and theoretical research at UFV, with collaboration at the regional, national, and international levels.
Research in this area will be conducted in:

a. Molecular biology and genetics.
b. Chemistry and biochemistry.
c. Molecular modeling and bioinformatics.
d. Atomic, molecular, and optical physics
e. Subatomic physics

No changes were made to the priority areas: Citizenship, Culture, Governance, and Human Rights; and Scholarship of Teaching and Learning.

The update to the plan was approved at the Senate Research Committee and was subsequently sent to Senate and the Board of Governors for approval.

Library

EDUCATION PLAN UPDATE 2013

Submitted by:
Patti Wilson, Interim University Librarian

UFV Library Submission
Education Plan Update 2013

I Review and Reaffirmation of Institutional Priorities identified in Five-Year Plan

(a) **Trends and Challenges in Libraries in Higher Education** (list the top challenges—no more than ten):

1. Preservation and dissemination of institutional resources – Institutional Repositories, Data curation services
2. Open Access Movement – Journals, Textbooks, Scholarly Publishing, MOOC's, Predatory Journals
3. Support for online/off campus learning – Increasing acquisition of digital content, increased online delivery of services (reference, instruction, circulation)
4. Declining library budgets. Maintaining collections and services in a strategic, evidence-based way.
5. Mobile friendly platforms for all content
6. Copyright – New legal environment we now operate within
7. Digitization projects
8. Re-envisioning the library as place – collaborative group spaces, etc.

(e) Resulting necessary changes or adjustments to strategic priorities:

1. Preservation and dissemination of institutional resources
    a. Discussions are underway with key players in the institution to inform, promote and plan a future Institutional Repository (IR) for UFV
2. Open Access Movement
    a. IR will enhance UFV's ability to make student, faculty and institutional publications and research available as open access.
3. Support for Online/Off Campus Learning
    a. Will investigate and trial the addition of text reference services and web conferencing for one-on-one appointments
4. Declining Library budgets. Maintaining collections and services in a strategic, evidence-based way.
    a. Due to budget cuts, the Mission campus library was closed and services centralized to Abbotsford.
    b. Reduction was made to acquisitions budget, including reference collection, print serials, departmental allocations.
    c. Implementation of Reference Analytics. Software will enable detailed tracking of reference services, by location, day of week, time of day, type of question, etc.
    d. LibQual survey conducted in 2013 will convey student and faculty opinions on our services, facilities and collections

e. Patron Driven Acquisition trial will allow student and faculty demand to guide purchase of e-books.

5. Mobile Friendly
    a. New content management system makes planning a mobile friendly library website possible. Should be a priority in the coming year.
6. Copyright
    a. In partnership with print services, the bookstore, finance and risk management, the library is guiding the institution in the new copyright environment
    b. Education campaign underway for faculty and staff, with a number of presentations and workshops taken place. New Libguide on Copyright created.
    c. New copyright officer/librarian to be hired.
    d. Investigating shared services with BC consortia.
7. Digitization
    a. Working with faculty consultants and the MSA Museum, the library is planning a project to digitize an early local newspaper.
8. Re-envisioning the library as place
    a. We will plan how to merge the reference and circulation service points in Abbotsford, which should result in improved customer service, staffing efficiencies, and ability to repurpose the space created.

II Report on Non-Program Initiatives identified in the Five-Year Plan

This section identifies progress made in achieving the non-program priorities identified in the Five-Year Ed Plan (such as indigenization and internationalization). The section concludes with an evaluation of whether and how improvements should/can be made to improve your Faculty/College's progress towards achieving these goals

1. Student Recruitment, Retention, and Success (list the most important ways your Faculty/College has achieved or made progress towards achieving this priority):
    - New library and learning commons at CEP campus opened summer 2012. This facility, which provides Library collections and services, ETS, Math Centre, Writing Centre, computer labs, individual and group study spaces combined in a new and welcoming facility are great benefit to students on the Chilliwack campus. Library use has doubled.
    - Library committee is currently reviewing our Library's services, facilities, publications and collections in view of support for students with disabilities and universal design.
    - Developed Customer Service Philosophy principles to guide UFV Library employees.
    - Participated in LibQual survey in 2013. Survey results will enable us to improve services, facilities and collections based on student and faculty feedback.
    - We completed the articulation of study zones (quiet/silent) in a new Noise Policy.
    - We are increasing group study spaces in the Abbotsford campus library.

2. Enrolment Management (list the most important ways your Faculty/College has achieved or made progress towards achieving this priority):

3. Indigenization (list the most important ways your Faculty/College has achieved or made progress towards achieving this priority):
    - Libguides created on First Nations, First Nations Literature, Indigenizing the Academy, Indigenous Studies, Residential Schools, Tomson Highway.
    - UFV Library Chilliwack Opening - The opening ceremony recognized aboriginal history, and began with a song and blessing by Shirley Hardman, senior advisor on Indigenous Affairs. As well, the UFV Library's inaugural display (Michap Kwetxwi:lem) incorporates acknowledges and celebrates the Stó:lō traditional territories.
    - We instruct and support the NVIT student cohort.
    - UFV Librarians attended the Indigenizing the Academy workshop in August 2012.

4. Internationalization (list the most important ways your Faculty/College has achieved or made progress towards achieving this priority):
    - Forming a UFV Library committee to study the Library's services for International students.
    - Library provides instruction sessions via Skype for business students in Chandigarh.

5. Environmental Sustainability (list the most important ways your Faculty/College has achieved or made progress towards achieving this priority):
    - New subscription to Access Science, a multi-media reference database containing authoritative content on animal and plant ecology, conservation and ecosystems.
    - Libguide on Environmental Studies created.
    - As members of the UFV Green Team, we have automated the shutdown of lab computers and educated library staff on green practices.

6. Indo-Canadian and South Asian Studies (list the most important ways your Faculty/College has achieved or made progress towards achieving this priority):
    - UFV Librarian acts as an advisor and consultant to the CICS on research and digitization projects.
    - Library presentation at Shastri Indo-Canadian Institute symposium, Feb. 2013. As a member of the India Studies Library program, the library has selected, ordered and added over 1780 titles in support of India and Indo-Canadian studies.
    - We work in partnership with CICS to subscribe to Bibliography of Asian Studies database.

7. Mennonite Studies (list the most important ways your Faculty/College has achieved or made progress towards achieving this priority):

    - In collaboration with the Development office and UFV faculty, the library has received targeted funding to support Mennonite and Peace studies. 61 titles have been added to the collection.
    - Libguide on Peace Studies created.

8. The Integration of Research and Teaching (list the most important ways your Faculty/College has achieved or made progress towards achieving this priority):

- We have mapped our library goals, objectives and information competency standards to the Institutional Learning Outcomes. Through our instruction classes, reference services and collections the library plays a fundamental role in developing students who meet our ILO's.
- Research Data Services have been enhanced with the addition of Open Data, Data BC, base mapping and orthophotos from ICIS. (Integrated Cadastral Information Society)

9. Strengthening the Culture of Teaching and Learning (list the most important ways your Faculty/College has achieved or made progress towards achieving this priority):
    - Librarians provided a number of workshops in support of teaching and learning, including plagiarism, copyright, and instructional skills.

10. Community Partnerships, Forums, Events, and Conferences (list the most important ways your Faculty/College has achieved or made progress towards achieving this priority):

    - UFV Library has participated with other libraries to fund the SCOAP3 project, to convert key journals in high energy physics to open access.
    - BC Library Association conference presentation by UFV Librarian and UFV faculty member on Information Literacy and Institutional Learning Outcomes.
    - The CEP Library opening event was a partnership with library staff, Shirley Hardman, Bob Searle, and Dr. David Schaepe, co-manager of the Stó:lō Research and Resource Management Centre, who worked with the library to create the opening display.
    - UFV Librarian is member of provincial ELN Institutional Repositories Committee investigating shared IR services.
    - UFV Librarian is a board member for the Abbotsford Sikh Gurdwara
    - Working in partnership with ITS to provide alumni access to databases (where allowed by license)

11. Interdisciplinarity and Cross-Departmental/Faculty Cooperation (list the most important ways your Faculty/College has achieved or made progress towards achieving this priority):
    - Have identified cross-disciplinary courses without a home department and allocated acquisitions funds to support these courses.
    - In partnership with other faculties, the library presented a number of displays of student and faculty work, including UFV nursing and kinesiology Health Strategies student projects, UFV Faculty publications, and the "Altered Books" projects of Brenda Fredrick's Visual Arts students.
    - Partnering with bookstore, print services, finance, risk management to usher in new Copyright environment.

12. Recruitment and Retention of Faculty (list the most important ways your Faculty/College has achieved or made progress towards achieving this priority):
    - Allocated $50,000 of acquisitions funds to be offered to new faculty as a recruitment incentive. Funds have been used to purchase materials in subject areas of interest for new faculty.
    - Will develop a welcome package for new faculty to orient them to library services and collections.

- Support faculty needs through the following recent initiatives:
  - Improving licensing terms of use information for journals and databases.
  - Adding details to all e-book catalogue records on type of license and number of simultaneous users.
  - Providing electronic course reading lists service for faculty.
  - Creating course specific libguides, in partnership with faculty.
  - Offering Course Outline copyright clinics and individual faculty support on copyright.
  - Preparing new informative Libguide for faculty and students on open access monographs, textbooks, journals, predatory journals, etc.
  - Planning to develop further resources and workshops on predatory journals
- Licensing of high quality, scholarly journals from publishers such as Elsevier, Wiley, Oxford, Sage, Taylor & Francis and Cambridge help provide the research and teaching resources our faculty need and expect at a post-secondary institution.

13. Creative Resourcing (list the most important ways your Faculty/College has achieved or made progress towards achieving this priority):
    - Library is working with consortia partners to investigate and implement shared support for copyright services, institutional repositories, digitization initiatives, open access projects, virtual reference.
    - By redirecting DVD acquisition funds, was able to add subscription to Films on Demand Master Academic Collection (8200 streaming video titles).
    - Received a private donation of $10,000 and matching donation of $10,000 to fund a digitization project.

List the most important ideas you have for improving your Faculty/College's progress towards achieving these goals (no more than ten):

The following ideas will benefit student and faculty recruitment, retention and success, increase community partnerships, provide potential projects in the areas of indigenization, Indo-Canadian and Mennonite studies, support research, teaching and learning, support Internationalization, use creative resourcing, and involve interdisciplinary co-operation.

1. Implement an Institutional Repository (IR) at UFV – Many of our priorities will be enhanced by the implementation of an Institutional Repository at UFV. An IR will enable us to gather, showcase and preserve our student and faculty research and publications, our institutional publications, University-community collaborations, archival and special collections, images and multi-media content, open-access journals and more.
2. Promote, curate, educate students and faculty on open access resources, with informational guides, services, and workshops on topics such open access journals, books, textbooks, creative commons licenses, predatory journals. We will continue to support consortial projects on open access.
3. Provide an integrated, supportive service for Copyright compliance at UFV, including copyright education, adjudication, copyright clearance, and guidance for all UFV faculty and

staff. Participate in a pilot project for shared copyright services with other B.C. post-secondary libraries.

4. Study and improve our services, facilities, collections, publications for students with disabilities, and international students.
5. Digitize a local, historical newspaper.
6. Implement alumni access to databases (where license permit.)
7. Undertake a Patron Driven Acquisition project, which will allow student and faculty demand to guide purchase of e-books.
8. Plan the merger of reference and circulation service points in Abbotsford, which should result in improved customer service, staffing efficiencies, and ability to repurpose the space created.

Academic Planning Principles

University of the Fraser Valley – Excerpt from 2012 Education Plan Update

Assumptions

The following assumptions underlie the academic planning process at UFV and are reflected in our planning practice. The planning process is:

1. guided by our commitment to student success and an integrated student experience;
2. responsive to and consistent with UFV's mandate and strategic directions;
3. collegial and consultative, grounded in UFV's collegial governance processes;
4. integrated and attentive to UFV's foundation plans;
5. evidence based;
6. linked with quality assurance; and
7. informed by the principle of program sustainability.

Principles

The following principles are organized around two key themes: *Strategic Directions* and *Students and Program Considerations*.

Strategic directions

The following principles relate to UFV's strategic directions and priorities as outlined in *Changing Lives, Building Community* (April 2010); *Students and Community: Educational Planning at UFV, 2011-15;* and the *Strategic Research Plan*.

Academic planning will:

1. respond to and anticipate 21st-century challenges;
2. respond to the local and regional needs of the Fraser Valley;
3. enhance indigenization of the academy and respond to the needs of Aboriginal students;
4. enhance internationalization and respond to the educational needs of international students and immigrants;
5. foster the integration of research and teaching and the development of inquiry-based learning; and,
6. foster collaboration that is multi- and inter-disciplinary and multi-institutional.

Student and program considerations

The following principles relate to educational programs and learning experiences at UFV.

Academic planning will:

7. reflect our primarily undergraduate teaching focus and the comprehensive nature of UFV programming;
8. meet our commitment to access and transition programs;
9. ensure institutional and program learning outcomes are attained;
10. foster multiple, efficient pathways to completion that enhance flexibility; and,
11. integrate new and emerging technologies into teaching and learning.

University of the Fraser Valley

Institutional Learning Outcomes

The University of the Fraser Valley (UFV), located on traditional Sto:lo territory, recognizes and respects Indigenous ways of knowing. UFV is committed to providing our communities with a variety of high quality, student-centered programs that honour diversity and foster a passion for learning. Each UFV graduate possesses the following abilities and, therefore, can demonstrate the following interconnected institutional learning outcomes. Graduates...

1. **Demonstrate information competency**
   Graduates gather, organize, and critically examine written, oral, visual, and numerical information. They efficiently use technology as a tool to gather and evaluate information. Graduates utilize relevant and credible sources, recognizing the need to gather information from a variety of perspectives. Graduates use information ethically, respecting the legal restrictions that exist when using published, confidential, and/or proprietary information.

2. **Analyze critically and imaginatively**
   Graduates engage in the examination of ideas, issues, and problems, drawing on established bodies of knowledge and means of analysis. Graduates organize information logically and consider alternate strategies. They recognize the need for multiple voices and seek opportunities for those voices to be heard. Graduates are creative and generative. They use divergent or lateral thinking to expand on ideas and create new ways of looking at a situation.

3. **Use knowledge and skills proficiently**
   Graduates demonstrate competence in the knowledge and skills specific to their area of study. They productively apply their knowledge and skills to a variety of situations.

4. **Initiate inquiries and develop solutions to problems**
   Graduates demonstrate a curiosity that results in inquiry. They propose questions that encourage deliberation and the formulation of solutions to problems, in theoretical or applied fields. They evaluate the benefits and challenges of different solutions when proposing specific courses of action.

UNIVERSITY OF THE FRASER VALLEY

5. **Communicate effectively**

   Graduates communicate respectfully. They listen attentively, seek clarification, and work to understand the points of view of others. Graduates effectively present information using a variety of modes and media. They adapt their method of presentation to suit specific audiences. Graduates accurately convey their intended message using a variety of oral, written, and visual strategies.

6. **Pursue self-motivated and self-reflective learning**

   Graduates are confident and initiate action. They work independently and productively. They set personal and professional goals and establish a plan of action to attain those goals. Graduates continually reflect on their growth and development and utilize reliable and practical strategies to learn from that reflection.

7. **Engage in collaborative leadership**

   Graduates work cooperatively, in that they are aware of and appreciate diversity, work with diverse peoples, and demonstrate strong interpersonal skills. Graduates motivate, include, and support others, demonstrating leadership skills. They seek opportunities to collaborate.

8. **Engage in respectful and professional practices**

   Graduates behave ethically and equitably, in that they act with integrity and take responsibility for their actions. Graduates engage in professional dialogue and participate in learning communities.

9. **Contribute regionally and globally**

   Graduates are socially just, in that they are prepared to participate in their regional and global communities. They demonstrate knowledge of their region and the world. Graduates initiate change. Graduates demonstrate that they can use what they have learned at UFV to impact their community positively.