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www.sfu.ca/vpacademic

**MEMORANDUM**

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<b>ATTENTION</b>	Senate	<b>DATE</b>	May 8, 2015
<b>FROM</b>	Gordon Myers, Chair Senate Committee on Undergraduate Studies	<b>PAGES</b>	1/1
<b>RE:</b>	Faculty of Applied Sciences (SCUS 15-18)		

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**For information:**

Acting under delegated authority at its meeting of May 7, 2015 SCUS approved the following curriculum revisions effective Spring 2016.

1. School of Computing Science (SCUS 15-18a)

- (i) Prerequisite change for CMPT 275, 276, 300, 305, 310, 354, 375, 383, and 384
- (ii) Requirement changes to the Software Systems Major Program

2. School of Mechatronic Systems Engineering (SCUS 15-18b)

- (i) Requirement changes to the Mechatronic Systems Engineering Major, Honour and Double Degree Programs

3. School of Engineering Science (SCUS 15-18c)

- (i) Title, description and prerequisite change to ENSC 100W
- (ii) Prerequisite change to ENSC 351, 370
- (iii) Admission requirement changes to the Computer and Electronic Design Minor program



## FACULTY OF APPLIED SCIENCES

OFFICE OF THE DEAN

8888 University Drive, Burnaby, BC

Canada V5A 1S6

TEL: 778.782.4724

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www.fas.sfu.ca

**MEMORANDUM**

<b>ATTENTION</b>	Senate Committee on Undergraduate Studies	<b>DATE</b>	March 11, 2015
<b>FROM</b>	Ed Park, Associate Dean	<b>PAGES</b>	
<b>RE:</b>	Curriculum Changes		

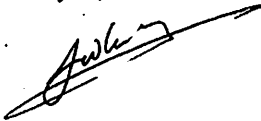
The following changes have been approved by the FAS Undergraduate Curriculum Committee and are appended here for approval by SCUS and recommendation to Senate.

- 1.) School of Computing Science
  - a. Course Pre-requisite Changes
    - CMPT 275
    - CMPT 276
    - CMPT 300
    - CMPT 305
    - CMPT 310
    - CMPT 354
    - CMPT 375
    - CMPT 383
    - CMPT 384
  - b. Calendar Changes
    - Software Systems Major – Changes to calendar language re: CMPT 321
- 2.) School of Mechatronic Systems Engineering
  - a. Calendar Changes
    - Changes to Major, Honours
      1. Removal of MSE 400 and 401W
      2. Inclusion of new course MSE 405W
      3. Replacement of MSE 411W with MSE 411
      4. Inclusion of 12 credit minimum unit requirement
    - Changes to Double Degree (BUS/MSE) program
      1. Replacement of CMPT 128 with CMPT 130
      2. Removal of MSE 401W
      3. Replacement of MSE 411W with MSE 411
      4. Removal of MSE 450 and 481

5. Inclusion of 12 credit minimum unit requirement
6. Changes to number of MSE elective courses required

- 3.) School of Engineering Science
  - a. Course Pre-requisite, Title, Description Changes
    - ENSC 100W
  - b. Course Pre-requisite Changes
    - ENSC 351
    - ENSC 370
  - c. Calendar Changes
    - Computer & Electronics Design Minor

Thank you,



Edward Park  
Associate Dean

(EP/mt)



COURSE SUBJECT  NUMBER  TITLE

**INSTRUCTIONS (OVERALL):**

1. Using Microsoft Word draft changes using the following guideline. Paste in box below.
2. Rationale must be included. If more space is needed than provided below, please use the provided text box on page 2 of this document.
3. Indicate term = Fall, Spring, Summer

**TYPE OF CHANGES RECOMMENDED**

Please type 'X' for the appropriate revision(s):

Course number	Credit	Title	Description	X	Prerequisite	Deletion
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**WORDING/DESCRIPTION EDITS**

1. Indicate deleted or changed text using strikethrough.
2. Indicate added or new text using underline.
3. Equivalent courses: preclusion statement should read:
  - a. Students with credit for x cannot take y for further credit.

Prerequisite: One W course, CMPT 225, MACM 101, MATH 151 (or MATH 150). MATH 154/157 with at least B+ may substitute for MATH 151 (or MATH 150). (MACM 101 or (ENSC 251 and ENSC 252)) and (MATH 151 or MATH 150). MATH 154 or MATH 157 with at least a B+ may be substituted for MATH 151 or MATH 150.

**SAMPLE**

POL 223 ~~Canadian-American~~ Political Economy (3)  
 An introductory study of ~~America's~~ Canada's political economy, stressing the interrelated nature of Canada's economic and political life. ~~The course~~ Focuses on current economic problems and policies, taking into account the geographical, historical and political environments. Topics include the resource and industrial structures, research and development, the public sector, fiscal and monetary policy, the role of the state, trade and foreign ownership, energy, regional disparity, corporate concentration and the political economy of federalism.  
~~This course is identical to CNS 280 and students cannot take both courses for credit.~~  
Students with credit for CNS 280 cannot take POL 223 for further credit.  
 Recommended Pre-requisite: POL 100 or 101W.  
 Breadth – Social Sciences.

**RATIONALE**

If more space is needed, please use the provided text box on page 2 of this document

ENSC 251 and ENSC 252 cover the prerequisite material from MACM 101 that is relevant to the course. This allows Engineering Science students under the revised Engineering curriculum to take the course.

**EFFECTIVE TERM AND YEAR, FOR CHANGES**

Fall, Spring, Summer and year (please enter in textbox)

Spring 2016



COURSE SUBJECT  NUMBER  TITLE

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Prerequisite: One W course, CMPT 225, ~~MACM 101, MATH 151 (or MATH 150), MATH 154/157 with at least B+ may substitute for MATH 151 (or MATH 150): (MACM 101 or (ENSC 251 and ENSC 252)) and (MATH 151 or MATH 150). MATH 154 or MATH 157 with at least a B+ may be substituted for MATH 151 or MATH 150.~~

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~~An introductory study of America's, Canada's~~ political economy, stressing the interrelated nature of Canada's economic and political life. ~~The course~~ Focuses on current economic problems and policies, taking into account the geographical, historical and political environments. Topics include the resource and industrial structures, research and development, the public sector, fiscal and monetary policy, the role of the state, trade and foreign ownership, energy, regional disparity, corporate concentration and the political economy of federalism.

~~This course is identical to CNS 280 and students cannot take both courses for credit. Students with credit for CNS 280 cannot take POL 223 for further credit.~~

~~Recommended Pre-requisite: POL 100 or 101W.~~

Breadth – Social Sciences.

**RATIONALE**

If more space is needed, please use the provided text box on page 2 of this document

ENSC 251 and ENSC 252 cover the prerequisite material from MACM 101 that is relevant to the course. This allows Engineering Science students under the revised Engineering curriculum to take the course.

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3. Equivalent courses: preclusion statement should read:
  - a. Students with credit for x cannot take y for further credit.

Prerequisite: CMPT 225 and ~~MACM 101~~. (MACM 101 or ENSC 251 and ENSC 252).

**SAMPLE**

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~~An introductory study of America's, Canada's~~ political economy, stressing the interrelated nature of Canada's economic and political life. ~~The course~~ Focuses on current economic problems and policies, taking into account the geographical, historical and political environments. Topics include the resource and industrial structures, research and development, the public sector, fiscal and monetary policy, the role of the state, trade and foreign ownership, energy, regional disparity, corporate concentration and the political economy of federalism.

~~This course is identical to CNS 280 and students cannot take both courses for credit.~~  
Students with credit for CNS 280 cannot take POL 223 for further credit.

~~Recommended Pre-requisite:~~ POL 100 or 101W.

Breadth – Social Sciences.

**RATIONALE**

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ENSC 251 and ENSC 252 cover the prerequisite material from MACM 101 that is relevant to the course. This allows Engineering Science students under the revised Engineering curriculum to take the course.

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  - a. Students with credit for x cannot take y for further credit.

Prerequisite: CMPT 225, ~~MACM 101~~, ~~STAT 270~~ (MACM 101 or (ENSC 251 and ENSC 252)) and STAT 270.

**SAMPLE**

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~~An introductory study of America's~~ Canada's political economy, stressing the interrelated nature of Canada's economic and political life. ~~The course~~ Focuses on current economic problems and policies, taking into account the geographical, historical and political environments. Topics include the resource and industrial structures, research and development, the public sector, fiscal and monetary policy, the role of the state, trade and foreign ownership, energy, regional disparity, corporate concentration and the political economy of federalism.  
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Students with credit for CNS 280 cannot take POL 223 for further credit.  
~~Recommended Pre-requisite:~~ POL 100 or 101W.  
 Breadth – Social Sciences.

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ENSC 251 and ENSC 252 cover the prerequisite material from MACM 101 that is relevant to the course. This allows Engineering Science students under the revised Engineering curriculum to take the course.

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Prerequisite: CMPT 225 and ~~MACM 101~~. (MACM 101 or ENSC 251 and ENSC 252).

**SAMPLE**

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~~This course is identical to CNS 280 and students cannot take both courses for credit.~~  
Students with credit for CNS 280 cannot take POL 223 for further credit.

~~Recommended Pre-requisite:~~ POL 100 or 101W.

Breadth – Social Sciences.

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ENSC 251 and ENSC 252 cover the prerequisite material from MACM 101 that is relevant to the course. This allows Engineering Science students under the revised Engineering curriculum to take the course.

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3. Equivalent courses: preclusion statement should read:
  - a. Students with credit for x cannot take y for further credit.

Prerequisite: ~~CMPT 225, MACM 101, and (MACM 101 or ENSC 251 and ENSC 252)).~~

**SAMPLE**

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~~An introductory study of America's, Canada's~~ political economy, stressing the interrelated nature of Canada's economic and political life. ~~The course~~ Focuses on current economic problems and policies, taking into account the geographical, historical and political environments. Topics include the resource and industrial structures, research and development, the public sector, fiscal and monetary policy, the role of the state, trade and foreign ownership, energy, regional disparity, corporate concentration and the political economy of federalism.  
~~This course is identical to CNS 280 and students cannot take both courses for credit.~~  
Students with credit for CNS 280 cannot take POL 223 for further credit.  
 Recommended-Pre-requisite: POL 100 or 101W.  
 Breadth – Social Sciences.

**RATIONALE**

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ENSC 251 and ENSC 252 cover the prerequisite material from MACM 101 that is relevant to the course. This allows Engineering Science students under the revised Engineering curriculum to take the course.

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Fall, Spring, Summer and year (please enter in textbox)

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3. Equivalent courses: preclusion statement should read:
  - a. Students with credit for x cannot take y for further credit.

Prerequisite: ~~MACM 101, 201~~ (MACM 101 or (ENSC 251 and ENSC 252)) and MACM 201. Recommended CMPT 275 or 276.

**SAMPLE**

POL 223 ~~Canadian-American~~ Political Economy (3)

~~An introductory study of America's~~ Canada's political economy, stressing the interrelated nature of Canada's economic and political life. ~~The course~~ Focuses on current economic problems and policies, taking into account the geographical, historical and political environments. Topics include the resource and industrial structures, research and development, the public sector, fiscal and monetary policy, the role of the state, trade and foreign ownership, energy, regional disparity, corporate concentration and the political economy of federalism.

~~This course is identical to CNS 280 and students cannot take both courses for credit.~~  
Students with credit for CNS 280 cannot take POL 223 for further credit.

~~Recommended Pre-requisite:~~ POL 100 or 101W.

Breadth – Social Sciences.

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If more space is needed, please use the provided text box on page 2 of this document

ENSC 251 and ENSC 252 cover the prerequisite material from MACM 101 that is relevant to the course. This allows Engineering Science students under the revised Engineering curriculum to take the course.

**EFFECTIVE TERM AND YEAR, FOR CHANGES**

Fall, Spring, Summer and year (please enter in textbox)

Spring 2016



COURSE SUBJECT	CMPT	NUMBER	383	TITLE	Comparative Programming Languages
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Prerequisite: ~~CMPT 225, MACM 101, and (MACM 101 or ENSC 251 and ENSC 252)).~~

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~~This course is identical to CNS 280 and students cannot take both courses for credit.~~  
Students with credit for CNS 280 cannot take POL 223 for further credit.

~~Recommended Pre-requisite:~~ POL 100 or 101W.

Breadth – Social Sciences.

**RATIONALE**

If more space is needed, please use the provided text box on page 2 of this document

ENSC 251 and ENSC 252 cover the prerequisite material from MACM 101 that is relevant to the course. This allows Engineering Science students under the revised Engineering curriculum to take the course.

**EFFECTIVE TERM AND YEAR, FOR CHANGES**

Fall, Spring, Summer and year (please enter in textbox)

Spring 2016





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Prerequisite: ~~CMPT 225, MACM 101, and (MACM 101 or (ENSC 251 and ENSC 252))~~.

SAMPLE

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~~This course is identical to CNS 280 and students cannot take both courses for credit.~~  
Students with credit for CNS 280 cannot take POL 223 for further credit.

~~Recommended Pre-requisite:~~ POL 100 or 101W.

Breadth – Social Sciences.

RATIONALE

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ENSC 251 and ENSC 252 cover the prerequisite material from MACM 101 that is relevant to the course. This allows Engineering Science students under the revised Engineering curriculum to take the course.

EFFECTIVE TERM AND YEAR, FOR CHANGES

Fall, Spring, Summer and year (please enter in textbox)

## Revision to Software Systems Major Program

Faculty of Applied Sciences Curriculum Committee

John Edgar

April 2015

### Description and Rationale

We propose an amendment to the Systems Requirements of the Software Systems Major program that would make CMPT 371 (Data Communications and Networking) a required course rather than an elective course. Given the importance of the internet in modern computing systems the Software Systems faculty believe that CMPT 371 should be a required course.

## Systems Requirements

Students complete at least 15 units, including all of

CMPT 295 – Introduction to Computer Systems (3)

CMPT 300 - Operating Systems I (3)

**CMPT 371 - Data Communications and Networking (3)**

MSE 110 - Mechatronics Design I (3)

and ~~two~~ one of

CMPT 170 - Introduction to Web Application Development (3)

CMPT 354 - Database Systems I (3)

~~CMPT 371 - Data Communications and Networking (3)~~

CMPT 433 - Embedded Systems (3)

CMPT 454 - Database Systems II (3)

CMPT 470 - Web-based Information Systems (3)

CMPT 471 - Networking II (3)

**Revision to MSE Major, Honor, and Double Degree Programs**

**Faculty of Applied Sciences Curriculum Committee**

**Gary Wang**

**April 2015**

**Description and Rationale**

Our curriculum has been revised in the last year, i.e., MSE 411W was changed to MSE 411; MSE 401W and MSE 400 will not be offered beyond 2016, and a new course MSE 405W has been created (See Ref Senate S.14-118.pdf). These changes, however, were not reflected in the calendar. This calendar change is to do the housing cleaning to make sure the calendar reflects what is offered at MSE.

For the double degree program, MSE 450 and MSE 481 are no long required courses, in order to increase the flexibility of our program. Instead these courses become elective courses and as a result the total number of elective courses increases from 4 to 6. These changes have been incorporated in the major and honor program but somehow did not get to the double degree program description (See Ref Senate S.14-17.pdf).

Replacing CMPT 128 by CMPT 130 was to reflect the revision to the Systems One First Year program. Such change has been approved for MSE Major and Honor Degree (See Ref Senate S12-46.pdf) but was not incorporated for the Double Degree program.

Last the 12 units per semester requirement has been in place for a long time but somehow was not written in the calendar.

**Mechatronic Systems Engineering Major**

**Program Requirements**

**Students complete all of**

CMPT 130 - Introduction to Computer Programming I (3)

MACM 316 - Numerical Analysis I (3)

MATH 152 - Calculus II (3)

MATH 251 - Calculus III (3)

MATH 232 - Applied Linear Algebra (3)



MATH 310 - Introduction to Ordinary Differential Equations (3)  
MSE 100 - Engineering Graphics and Design (3)  
MSE 101W - Process, Form, and Convention in Professional Genres (3)  
MSE 102 - Applied Science, Technology and Society (3)  
MSE 110 - Mechatronics Design I (3)  
MSE 210 - Engineering Measurement and Data Analysis (3)  
MSE 220 - Engineering Materials (3)  
MSE 221 - Statics and Strength of Materials (4)  
MSE 222 - Kinematics and Dynamics of Rigid Bodies and Mechanisms (4)  
MSE 223 - Introduction to Fluid Mechanics (4)  
MSE 250 - Electric Circuits I (4)  
MSE 251 - Electronic Circuits (4)  
MSE 280 - Linear Systems (3)  
MSE 300 - The Business of Engineering I (3)  
MSE 310 - Introduction to Electro-Mechanical Sensors and Actuators (4)  
MSE 311 - Introduction to Microelectromechanical Systems (3)  
MSE 312 - Mechatronics Design II (4) \*  
MSE 320 - Machine Design (4)  
MSE 321 - Engineering Thermodynamics and Heat Transfer (4)  
MSE 352 - Digital Logic and Microcontrollers (4)  
MSE 353 - Power Electronics and Electric Machinery (4)  
MSE 380 - Systems Modeling and Simulation (3)  
MSE 381 - Feedback Control Systems (4) \*  
~~MSE 400 - The Business of Engineering II (3)~~  
~~MSE 401W - Project Documentation and Group Dynamics (1)~~  
MSE 402 - Engineering Ethics, Law, and Professional Practice (2)  
MSE 405 - The Business of Engineering II (4)  
MSE 410 - Capstone Design Technical Project I (3)  
~~MSE 411W - Capstone Design Technical Project II (Inactive) (Inactive) (3)~~  
MSE 411 - Capstone Design Technical Project II (3)  
PHYS 140 - Studio Physics - Mechanics and Modern Physics (4)  
PHYS 141 - Studio Physics - Optics, Electricity and Magnetism (4)

**and one of**

MATH 150 - Calculus I with Review (4)

MATH 151 - Calculus I (3)

**and one of**

CHEM 120 - General Chemistry I (3)

CHEM 121 - General Chemistry and Laboratory I (4)

\* strongly recommended to be completed concurrently

Prior approval by the director of the school is required if the student plans a term with fewer than 12 course units.

## Program Requirements

### Students complete all of

- CMPT 130 - Introduction to Computer Programming I (3)
- MACM 316 - Numerical Analysis I (3)
- MATH 152 - Calculus II (3)
- MATH 251 - Calculus III (3)
- MATH 232 - Applied Linear Algebra (3)
- MATH 310 - Introduction to Ordinary Differential Equations (3)
- MSE 100 - Engineering Graphics and Design (3)
- MSE 101W - Process, Form, and Convention in Professional Genres (3)
- MSE 102 - Applied Science, Technology and Society (3)
- MSE 110 - Mechatronics Design I (3)
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- MSE 381 - Feedback Control Systems (4) \*
- ~~MSE 400 - The Business of Engineering II (3)~~
- ~~MSE 401W - Project Documentation and Group Dynamics (1)~~



MSE 402 - Engineering Ethics, Law, and Professional Practice (2)

MSE 405 - The Business of Engineering II (4)

MSE 410 - Capstone Design Technical Project I (3)

~~MSE 411W - Capstone Design Technical Project II (Inactive) (Inactive) (3)~~

MSE 411 - Capstone Design Technical Project II (3)

MSE 498 - Mechatronic Systems Engineering Thesis Proposal (3)

MSE 499 - Mechatronic Systems Engineering Undergraduate Thesis (9)

PHYS 140 - Studio Physics - Mechanics and Modern Physics (4)

PHYS 141 - Studio Physics - Optics, Electricity and Magnetism (4)

**and one of**

MATH 150 - Calculus I with Review (4)

MATH 151 - Calculus I (3)

**and one of**

CHEM 120 - General Chemistry I (3)

CHEM 121 - General Chemistry and Laboratory I (4)

\* strongly recommended to be completed concurrently

Prior approval by the director of the school is required if the student plans a term with fewer than 12 course units.

# Mechatronic Systems Engineering and Business Double Degree Program Major

## Program Requirements

**Students complete a total of 197-201 units including all of**

- BUS 251 - Financial Accounting I (3)
- BUS 254 - Managerial Accounting I (3) \*\*
- BUS 272 - Behavior in Organizations (3)
- BUS 312 - Introduction to Finance (4)
- BUS 336 - Data and Decisions II (4)
- BUS 343 - Introduction to Marketing (3)
- BUS 360W - Business Communication (4) †
- BUS 381 - Introduction to Human Resource Management (3)
- BUS 393 - Commercial Law (3)
- BUS 478 - Strategy (3) \*\*
- BUEC 232 - Data and Decisions I (4)
- CHEM 120 - General Chemistry I (3)
- ~~CMPT 128 - Introduction to Computing Science and Programming for Engineers (3)~~
- CMPT 130 - Introduction to Computer Programming I (3)
- ECON 103 - Principles of Microeconomics (4)
- ECON 105 - Principles of Macroeconomics (4)
- MACM 316 - Numerical Analysis I (3)
- MATH 151 - Calculus I (3)
- MATH 152 - Calculus II (3)
- MATH 232 - Applied Linear Algebra (3)
- MATH 251 - Calculus III (3)
- MATH 310 - Introduction to Ordinary Differential Equations (3)
- MSE 100 - Engineering Graphics and Design (3)
- MSE 101W - Process, Form, and Convention in Professional Genres (3)
- MSE 102 - Applied Science, Technology and Society (3)
- MSE 110 - Mechatronics Design I (3)
- MSE 210 - Engineering Measurement and Data Analysis (3)
- MSE 220 - Engineering Materials (3)
- MSE 221 - Statics and Strength of Materials (4)

MSE 222 - Kinematics and Dynamics of Rigid Bodies and Mechanisms (4)  
MSE 223 - Introduction to Fluid Mechanics (4)  
MSE 250 - Electric Circuits I (4)  
MSE 251 - Electronic Circuits (4)  
MSE 280 - Linear Systems (3)  
MSE 310 - Introduction to Electro-Mechanical Sensors and Actuators (4)  
MSE 311 - Introduction to Microelectromechanical Systems (3)  
MSE 312 - Mechatronics Design II (4) \*  
MSE 320 - Machine Design (4)  
MSE 321 - Engineering Thermodynamics and Heat Transfer (4)  
MSE 352 - Digital Logic and Microcontrollers (4)  
MSE 353 - Power Electronics and Electric Machinery (4)  
MSE 380 - Systems Modeling and Simulation (3)  
MSE 381 - Feedback Control Systems (4) \*  
~~MSE 401W - Project Documentation and Group Dynamics (1)~~  
MSE 402 - Engineering Ethics, Law, and Professional Practice (2)  
MSE 410 - Capstone Design Technical Project I (3)  
~~MSE 411W - Capstone Design Technical Project II (Inactive) (Inactive) (3)~~  
MSE 411 - Capstone Design Technical Project II (3)  
~~MSE 450 - Real-Time and Embedded Control Systems (3)~~  
~~MSE 481 - Industrial Control Systems (3)~~  
PHYS 140 - Studio Physics - Mechanics and Modern Physics (4)  
PHYS 141 - Studio Physics - Optics, Electricity and Magnetism (4)

and one of

BUS 207 - Managerial Economics (3)  
ECON 201 - Microeconomic Theory I: Competitive Behavior (4)  
ECON 301 - Microeconomic Theory I: Competitive Behavior (4)

\* strongly recommended, to be completed concurrently

\*\* to be completed at Simon Fraser University

† to be completed before the student's 75th unit and at Simon Fraser University in accordance with the WQB requirements



Prior approval by the director of the school is required if the student plans a term with fewer than 12 course units.

## Mechatronic Systems Engineering Elective Courses

Students also complete ~~four~~ six mechatronic systems engineering elective courses selected from a pre-approved MSE electives list that is available at

<http://www.sfu.ca/mechatronics/undergraduate-students/CurrentStudents/general-requirements/pre-approved-technical-studies-electives.html>.

With undergraduate curriculum committee chair permission, students may replace one MSE elective with either a directed study or a special project laboratory course. Special topics courses that have been approved by the undergraduate curriculum committee chair and the director may be counted here.

From: Maureen Fizzell [<mailto:fizzell@sfu.ca>]

Sent: Monday, April 27, 2015 11:27 AM

To: Gary Wang Cc: Andrew Gemino; Edward Park; Stephen Spector; Marissa Funaro

Subject: Re: Calendar change of the Mechatronics and Business Double Degree Program

Hi Gary,

Thank you for informing us about the changes that you have made to the Mechatronics part of the double degree program. The Beedie Undergraduate Program is okay with the changes you have made. You are welcome to take the changes on to SCUS.

Maureen

Maureen Fizzell,

Senior Lecturer

Academic Director

Beedie School of Business

Simon Fraser University

778-782-8899

COURSE SUBJECT	ENSC	NUMBER	100W	TITLE	Engineering Technology and Society
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**INSTRUCTIONS (OVERALL):**

1. Using Microsoft Word draft changes using the following guideline. Paste in box below.
2. Rationale must be included. If more space is needed than provided below, please use the provided text box on page 2 of this document.
3. Indicate term = Fall, Spring, Summer

**TYPE OF CHANGES RECOMMENDED**

Please type 'X' for the appropriate revision(s):

Course number	Credit	<input checked="" type="checkbox"/> Title	<input checked="" type="checkbox"/> Description	<input checked="" type="checkbox"/> Prerequisite	Deletion
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**WORDING/DESCRIPTION EDITS**

1. Indicate deleted or changed text using striketthrough.
2. Indicate added or new text using underline.
3. Equivalent courses: preclusion statement should read:
  - a. Students with credit for x cannot take y for further credit.

~~Engineering Technology and Society, Science, and Society~~  
 This course is designed to provide an introduction to the practice of engineering, surveying its history and its current state. The social and political aspects of engineering decisions will be illustrated by a number of case studies. Students with credit for ENSC 100 CMPT 106, and ENSC 106 may not take this course for further credit. Corequisite: ENSC 105W. Writing/Breadth-Hum/Science.

We study the history of engineering, its changing relationship to the sciences, and its effects upon society. We cover the ethical and environmental implications of engineering choices. We briefly explore the fundamental concepts in artificial intelligence, information theory, and thermodynamics. Students in the course will work together in small teams to complete a practical engineering design project. Students with credit for ENSC 100 CMPT 106, ENSC 106, or MSE 102 may not take this course for further credit. Corequisite: ENSC 105W. Writing/Breadth-Hum/Science.

**SAMPLE**POL 223 ~~Canadian-American~~ Political Economy (3)

~~An introductory study of America's Canada's~~ political economy, stressing the interrelated nature of Canada's economic and political life. ~~The course~~ Focuses on current economic problems and policies, taking into account the geographical, historical and political environments. Topics include the resource and industrial structures, research and development, the public sector, fiscal and monetary policy, the role of the state, trade and foreign ownership, energy, regional disparity, corporate concentration and the political economy of federalism.

~~This course is identical to CNS 280 and students cannot take both courses for credit.~~

Students with credit for CNS 280 cannot take POL 223 for further credit.

Recommended-Pre-requisite: POL 100 or 101W.

Breadth – Social Sciences.

**RATIONALE**

If more space is needed, please use the provided text box on page 2 of this document

The change in title and course description reflects what is actually taught in the course. Change in equivalent courses is needed to maintain consistency with changes in other courses being offered.

**EFFECTIVE TERM AND YEAR, FOR CHANGES**

SPRING 2016



COURSE SUBJECT	ENSC	NUMBER	351	TITLE	Embedded and Real Time System Software
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**INSTRUCTIONS (OVERALL):**

1. Using Microsoft Word draft changes using the following guideline. Paste in box below.
2. Rationale must be included. If more space is needed than provided below, please use the provided text box on page 2 of this document.
3. Indicate term = Fall, Spring, Summer

**TYPE OF CHANGES RECOMMENDED**

Please type 'X' for the appropriate revision(s):

Course number	Credit	Title	Description	<input checked="" type="checkbox"/> Prerequisite	Deletion
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**WORDING/DESCRIPTION EDITS**

1. Indicate deleted or changed text using strikethrough.
2. Indicate added or new text using underline.
3. Equivalent courses: preclusion statement should read:
  - a. Students with credit for x cannot take y for further credit.

Pre-requisite: (CMPT 128 and ENSC 215 and ENSC 250) or ENSC 254 or (CMPT 225 and (CMPT 250 or CMPT 295)) and a minimum of 60 credit hours/units. ENSC 351 is a required course for all Engineering Science Major and Honours students (no course substitutions are permitted).

**SAMPLE**

POL 223 ~~Canadian-American~~ Political Economy (3)

~~An introductory study of America's~~ Canada's political economy, stressing the interrelated nature of Canada's economic and political life. ~~The course~~ Focuses on current economic problems and policies, taking into account the geographical, historical and political environments. Topics include the resource and industrial structures, research and development, the public sector, fiscal and monetary policy, the role of the state, trade and foreign ownership, energy, regional disparity, corporate concentration and the political economy of federalism.

~~This course is identical to CNS 280 and students cannot take both courses for credit.~~  
Students with credit for CNS 280 cannot take POL 223 for further credit.

~~Recommended Pre-requisite:~~ POL 100 or 101W.  
 Breadth – Social Sciences.

**RATIONALE**

If more space is needed, please use the provided text box on page 2 of this document

CMPT is removing 250 from their curriculum and replacing it with CMPT 295. This change is required to ensure that future CMPT students can take this course.

**EFFECTIVE TERM AND YEAR, FOR CHANGES**

SPRING 2016

COURSE SUBJECT  NUMBER  TITLE

**INSTRUCTIONS (OVERALL):**

1. Using Microsoft Word draft changes using the following guideline. Paste in box below.
2. Rationale must be included. If more space is needed than provided below, please use the provided text box on page 2 of this document.
3. Indicate term = Fall, Spring, Summer

**TYPE OF CHANGES RECOMMENDED**

Please type 'X' for the appropriate revision(s):

Course number	Credit	Title	Description	X	Prerequisite	Deletion
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**WORDING/DESCRIPTION EDITS**

1. Indicate deleted or changed text using strikethrough.
2. Indicate added or new text using underline.
3. Equivalent courses: preclusion statement should read:
  - a. Students with credit for x cannot take y for further credit.

Prerequisite: Completion of at least 25 units of engineering science (ENSC) courses ~~and BPK 208. BPK 208 can be taken concurrently.~~

**SAMPLE**

POL 223 ~~Canadian-American~~ Political Economy (3)

~~An introductory study of America's Canada's political economy, stressing the interrelated nature of Canada's economic and political life. The course focuses on current economic problems and policies, taking into account the geographical, historical and political environments. Topics include the resource and industrial structures, research and development, the public sector, fiscal and monetary policy, the role of the state, trade and foreign ownership, energy, regional disparity, corporate concentration and the political economy of federalism.~~

~~This course is identical to CNS 280 and students cannot take both courses for credit.~~

Students with credit for CNS 280 cannot take POL 223 for further credit.

Recommended Pre-requisite: POL 100 or 101W.

Breadth – Social Sciences.

**RATIONALE**

If more space is needed, please use the provided text box on page 2 of this document

BPK 208 is an introduction to physiology. The topics covered in BPK 208 are not required as pre-requisite materials for ENSC 370 - Biomedical Engineering Directions, which is a survey course with general overview of biomedical engineering as a discipline, including its purpose and scope.

**EFFECTIVE TERM AND YEAR, FOR CHANGES**



Fall, Spring, Summer and year (please enter in textbox)

Fall 2015

RATIONALE



## Rationale for changes:

Admission Requirements:

We are changing admissions to reflect that GPA is competitive (not specifying 2.4 as our space is limited and this CPGA may be too low).

Admission Requirements:

The course removals are due to the fact that these courses no longer exist and the course additions reflect a more reasonable evaluation baseline for potential students pursuing a minor.

Program Requirements:

The course removals are due to the fact that these courses have been removed from our program and no longer exist and the course additions reflect the courses that have replaced them.

## Computer and Electronics Design Minor

### Minimum Grade Requirements

A minimum of C- is required to meet the prerequisite requirements in all courses.

## Admission Requirements

Entrance is open to all non-engineering science majors. Students [apply](#) after successfully completing the following five courses, with a minimum grade of C-. ~~Apply for admission by letter to the school's admissions chair after completing a minimum of 15 units, including one the following two courses with a cumulative grade point average (CGPA) of at least 2.4.~~ Enrolment is limited.

- ~~• CMPT 150-3 Introduction to Computer Design~~
- ~~• ENSC 150-3 Introduction to Computer Design~~
- MATH 232-3
- ENSC 100W-3 Engineering, Science, and Society
- ENSC 105W-3 Process, Form, and Convention in Professional Genres
- PHYS 120-3
- CMPT 120, CMPT 130, or CMPT 128

## Program Requirements

Students must meet all pre-requisite requirements and complete all of

~~ENSC 150 – Introduction to Computer Design (3)~~

~~ENSC 215 – Microcontroller Interfacing and Assembly Language Programming (3)~~

ENSC 220 - Electric Circuits I (3)

~~ENSC 250 – Introduction to Computer Architecture (3)~~

ENSC 251 – Software Design and Analysis for Engineers

ENSC 252 – Fundamentals in Digital Logic and Design

ENSC 305 - Project Documentation and Team Dynamics (1)

ENSC 320 - Electric Circuits II (4)

ENSC 380 - Linear Systems (3)

ENSC 440 - Capstone Engineering Science Project (4)

and at least one of

ENSC 225 - Microelectronics I (4)

ENSC 351 - Embedded and Real Time System Software (4)

and at least three, and no more than five (students cannot count the same course twice) of

ENSC 225 - Microelectronics I (4)

ENSC 325 - Microelectronics II (4)

ENSC 327 - Communication Systems (4)

ENSC 350 - Digital Systems Design (4)

ENSC 351 - Embedded and Real Time System Software (4)

ENSC 424 - Multimedia Communications Engineering (4)

ENSC 425 - Electronic System Design (4)

ENSC 427 - Communication Networks (4)

ENSC 429 - Digital Signal Processing (4)

ENSC 450 - VLSI Systems Design (4)

ENSC 489 - Computer Aided Design and Manufacturing (4)

ENSC 495 - Introduction to Microelectronic Fabrication (4)

### **Grade Point Average Requirement**

The engineering science graduation grade point average (GPA) in the above courses must be 2.4 or better. If it drops below 2.4, the student may be required to withdraw.

### **Residency Requirements and Transfer Credit**

The University's residency requirement stipulates that, in most cases, total transfer and course challenge credit may not exceed 60 units, and may not include more than 15 as upper division work.