

REVISED

May 29, 2017

Subject: Important Notes and Curriculum Changes in the 2017-2018 Calendar

Dear Student,

Each May, all students enrolled in the Electrical Engineering program are mailed a letter advising them of curriculum changes that have occurred since their entry into the program. This letter and letters from previous years can be viewed at the following website:

<http://www.concordia.ca/encs/students/sas/undergrad-program-info/course-sequences/electrical.html>

Students must meet the requirements of their program in the calendar for the year in which they graduate. This letter is to advise you of changes to your program that will appear in the 2017-2018 Calendar. These changes may affect your selection of courses. Should you have any questions regarding this issue, please do not hesitate to contact Student Academic Services at (514) 848-2424, extension 3055.

You can view the program requirements and course descriptions at the following website:
<http://www.concordia.ca/academics/undergraduate/calendar/current/sec71.html>

VERY IMPORTANT:

1. **Students must have completed all 200-level courses required for their program before they can register for *any* 400-level course.**
2. **All 200-level courses within the program taken after September 1, 2012 which are prerequisites for other courses must be completed with a C- or higher. A 200-level course in which a student has obtained a D+ or lower must be repeated before attempting a course for which it is a prerequisite.**
3. **Any courses that you are required to repeat (due to conditional standing or readmission) must be completed with a grade of C- or higher prior to graduation. This requirement will not be waived.**
4. **Students are required to graduate having met the substantial equivalent of the curriculum in force in the Winter Term prior to degree conferral.**
5. **To graduate, students must (i) satisfy all program requirements, (ii) be in acceptable standing in their last annual assessment, and (iii) have a minimum final graduation GPA of 2.00. The academic standings of potential graduates who have attempted less than 12 credits since their last assessment are determined on the basis that these credits constitute an extension of the last assessment period.**
6. **You must apply for graduation. The application form can be found at: <http://registrar.concordia.ca/convo/gradapp.html>. The deadlines to apply for graduation are: Spring Convocation January 15th, and Fall Convocation July 15th**

1. Changes to the Engineering Core

There are no changes to the Engineering Core.

2. Electrical Engineering Core

There are no changes to the Electrical Engineering Core

3. Electrical Engineering Options

I. Electronics/VLSI Option Core:

There are no changes to the option core.

Electronics/VLSI Option Electives:

There are no changes to the Electronics/VLSI Option Electives.

II. Telecommunications Option Core:

- a) **ELEC 442 Digital Signal Processing** has been removed from the Telecommunications Option Core

Telecommunications Option Electives:

- a) The minimum number of Option Elective credits has changed from 17.50 to 20.50.
A minimum of 9.00 credits must be chosen from the Telecommunications Option Electives list. The remaining credits can be chosen from the Electrical Engineering Electives list.
- b) **COEN 446 Internet of Things** has been added to the Telecommunications Option Electives list.
- c) **COEN 447 Software-Defined Networking** has been added to the Telecommunications Option Electives list.
- d) **ELEC 442 Digital Signal Processing** has been added to the Telecommunications Option Electives list.

III. Power and Renewable Energy Option Core:

There are no changes to the option core.

Power and Renewable Energy Option Electives:

There are no changes to the Power and Renewable Energy Option Electives list.

IV. Avionics and Control Option:

There are no changes to the option core.

V. General Stream:

- a) Students not selecting an option must follow the General Stream and must complete:
 - i. **COEN 313 Digital Systems Design II** 3.50
 - ii. **COEN 352 Data Structures and Algorithms** 3.00
 - iii. **ELEC 463 Telecommunication Networks** 3.50
 - iv. A minimum of 17.00 elective credits chosen from the Electrical Engineering Electives list.

As a transitional measure, students can still graduate with no option and not in the General Stream if they graduate not later than November 2019.

4 Electrical Engineering Electives

A. Communications and Signal Processing

- i. COEN 446 Internet of Things 3.00
- ii. COEN 447 Software-Defined Networking 3.00
- iii. ELEC 441 Modern Analog Filter Design 3.50
- iv. ELEC 442 Digital Signal Processing 3.50
- v. ELEC 463 Telecommunication Networks 3.50
- vi. ELEC 464 Wireless Communications 3.00
- vii. ELEC 465 Networks Security and Management 3.50
- viii. ELEC 466 Introduction to Optical Communication Systems 3.50
- ix. ELEC 472 Advanced Telecommunication Networks 3.50

B. Electronics/VLSI

- i. COEN 315 Digital Electronics 3.50
- ii. COEN 413 Hardware Functional Verification 3.00
- iii. COEN 451 VLSI Circuit Design 4.00
- iv. ELEC 421 Solid State Devices 3.50
- v. ELEC 422 Design of Integrated Circuit Components 3.50
- vi. ELEC 423 Introduction to Analog VLSI 4.00
- vii. ELEC 424 VLSI Process Technology 3.50
- viii. ELEC 425 Optical Devices for High-Speed Communications 3.50

C. Power

- i. ELEC 430 Electrical Power Equipment* 3.50
- ii. ELEC 431 Electrical Power Systems 3.50
- iii. ELEC 432 Control of Electrical Power Conversion Systems* 3.50
- iv. ELEC 433 Power Electronics 3.50
- v. ELEC 434 Behaviour of Power Systems* 3.50
- vi. ELEC 435 Electromechanical Energy Conversion Systems 3.50
- vii. ELEC 436 Protection of Power Systems* 3.50
- viii. ELEC 437 Renewable Energy Systems 3.00
- ix. ELEC 438 Industrial Electrical Systems* 3.50
- x. ELEC 439 Hybrid Electric Vehicle Power System Design and Control 3.00
- xi. ELEC 440 Controlled Electric Drives 3.50

*Note: ELEC 430, 432, 434, 436, and 438 are usually offered in the French language.

D. Control Systems and Avionics

- i. AERO 417 Standards, Regulations, and Certification 3.00
- ii. AERO 480 Flight Control Systems 3.50
- iii. AERO 482 Avionic Navigation Systems 3.00
- iv. AERO 483 Integration of Avionics Systems 3.00
- v. ELEC 481 Linear Systems 3.50
- vi. ELEC 482 System Optimization 3.50
- vii. ELEC 483 Real-Time Computer Control Systems 3.50
- viii. ENGR 472 Robot Manipulators 3.50

E. Waves and Electromagnetics

- i. ELEC 453 Microwave Engineering 3.50
- ii. ELEC 455 Acoustics 3.00
- iii. ELEC 456 Antennas 3.50
- iv. ELEC 457 Design of Wireless RF Systems 3.00
- v. ELEC 458 Techniques in Electromagnetic Compatibility 3.00

F. Computer Systems

- i. COEN 313 Digital Systems Design II 3.50
- ii. COEN 316 Computer Architecture and Design 3.50
- iii. COEN 317 Microprocessor Systems 3.50
- iv. COEN 320 Introduction to Real-Time Systems 3.00
- v. COEN 345 Software Testing and Validation 3.50
- vi. COEN 346 Operating Systems 3.50
- vii. COEN 352 Data Structures and Algorithms 3.00

- viii. COEN 421 Embedded Systems Design 4.00
- ix. COEN 422 Cyber-Physical Systems 3.00
- x. COEN 424 Programming on the Cloud 3.00
- xi. SOEN 341 Software Process 3.00
- xii. SOEN 342 Software Requirements and Specifications 3.00
- xiii. SOEN 343 Software Architecture and Design I 3.00

G. Biological and Biomedical Engineering

- i. COEN 432 Applied Evolutionary and Learning Algorithms 3.00
- ii. COEN 433 Biological Computing and Synthetic Biology 3.00
- iii. COEN 434 Microfluidic Devices for Synthetic Biology 3.00
- iv. ELEC 444 Medical Image Processing 3.00

H. Other

- i. ELEC 498 Topics in Electrical Engineering 3.00
- ii. ENGR 411 Special Technical Report 1.00

With adequate academic justification and with permission of the Department, students may take one technical elective course from the Computer Engineering Electives list.