

**COEN 7/8<sup>th</sup> Semester - 4<sup>th</sup> Year  
Elective Course Selection Information**

**Computer Engineering**

**Department of Electrical & Computer Engineering  
Ryerson University**

**March 2014**

# COEN 7<sup>th</sup> Semester Electives

**Core Courses: COE700, COE758 and COE768 as well as an Elective Course**

## **List A**

- **COE 718** Hardware-Software Codesign of Embedded Systems
- **ELE 734** Low Power Digital Integrated Circuits

## **List B**

- **ELE 724** CMOS Mixed Mode Circuits and Systems
- **ELE 725** Basics of Multimedia Systems
- **ELE 745** Digital Communication Systems
- **ELE 809** Digital Control System Design
- **ELE 829** System Identification
- **ELE 531** Electromagnetic

**Select at-least one course from List A.**

**Select 2 courses from A and B Lists.**

**All required third year courses are pre-requisites.**

# COEN 8<sup>th</sup> Semester Electives

## List A

- ELE 604: Electronic Sensors and Measurement
- ELE 632: Signals and Systems II
- ELE 709: Real-time Computer Control System
- ELE 815: Cellular Mobile Communications (PReq: ELE 745)
- ELE 863: VLSI Circuits for Data Comm. (PReq: ELE724)
- ELE 869: Robotics
- ELE 882: Intro to Digital Image Processing (CoReq: ELE 632)
- ELE 885: Optical Communication Systems
- ELE 888: Intelligent Systems

## List B

- COE 808: Programming Languages
- COE 818: Advanced Computer Architecture
- COE 838: System-on-Chip Design
- COE 865: Advanced Computer Networks
- CPS 883: Compilers
- CPS 888: Software Engineering

**Select a minimum of 2 from List B, and a minimum of 1 course from List A. There are pre-requisites from 3<sup>rd</sup> year and some courses from 7<sup>th</sup> semester.**

# Important Points

- ***Themes 1, 2, 3 and 4 are strongly recommended for computer engineering students.***
- ***Some 8<sup>th</sup> semester courses may have a 7<sup>th</sup> semester course as pre-requisite. Please refer to the course description section of the calendar.***
- ***Some other 8<sup>th</sup> semester courses could also be substituted in order to provide you with a breadth of specialization.***
- ***Courses that do not meet the enrolment target will be cancelled and you will be notified accordingly.***

# Theme 1: Computer – VLSI Systems

For this theme the courses are mainly focused in the core areas of Computer Engineering such as advanced computer architecture, VLSI design, VLSI circuit testing, embedded system design, software systems and advance computer networks.

## 7<sup>th</sup> Semester

*ELE734, (ELE724 or COE718)*

## 8<sup>th</sup> Semester

*COE838, ELE863 and two courses out of (COE818, COE865, CPS888)*

# Theme 2: Software Systems

In this theme the courses will be mainly in the area of software engineering, programming languages and biomedical signal and image analysis. This theme will cover compilers and translators, software engineering and biomedical signal processing concepts .

## 7<sup>th</sup> Semester

*COE718, (ELE725 or ELE745)*

## 8<sup>th</sup> Semester

*COE808, CPS888 and two courses out of (CPS883, COE865, ELE632, ELE882, ELE888)*

# Theme 3: Embedded Computer Systems

Embedded computer systems deals with system-on-chip and  $\mu$ computer systems that are embedded with industrial controllers, biomedical instruments, appliances and entertainment systems. Embedded systems are extensively employed in home, automotive, banking, military, aerospace and industrial control applications.

## 7<sup>th</sup> Semester

***COE718, (ELE734 or ELE725)***

## 8<sup>th</sup> Semester

***ELE604, COE838 and two courses out of (COE818, COE865, ELE632, ELE863, ELE882, ELE809/ELE829)***

# Theme 4: Computer Communication and Networking

Computer communication and networking deals with the transfer of digital information (voice, data, image, and/or video) between two computer systems. The transfer of information could be performed by using wired or wireless communication links over the internet or LANs.

## 7<sup>th</sup> Semester

*ELE745, COE718*

## 8<sup>th</sup> Semester

*COE865, ELE815, and two out of (COE838, ELE885, CPS888)*



# Theme 5: Multimedia Systems

Multimedia Systems deal with the Advanced Signal and Image Processing Techniques. Multimedia System's area is related to -- Digital Image Processing, Signals & Systems courses -- listed here.

## 7<sup>th</sup> Semester

***ELE725, COE718***

## 8<sup>th</sup> Semester

***ELE632, ELE882/ELE888, and two out of (COE838, COE865, CPS888)***

# Theme 6: Digital Control Systems

Digital Control Systems are widely involved in day-to-day life. Control system is an area in which electrical, mechanical, or electromechanical system could be made to behave in a prescribed way over a period of time. Control systems play an important role in robotics, automotive and other dynamical/automatic systems.

## 7<sup>th</sup> Semester

*COE718 and (ELE829 or ELE809)*

## 8<sup>th</sup> Semester

*COE 818, COE 838, ELE604, ELE709.*

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