

# BASc in Computer Engineering

## Electives

### Computer Engineering Breadth Electives (at least 8 credits from the following list)

Course	Credits	Course Title
ELEC 202/EECE253	4	Circuit Analysis II
ELEC 301/EECE356	4	Electronic Circuits
ELEC 315/EECE352	4	Electronic Materials & Devices
CPEN 321/EECE310	4	Software Engineering
ELEC 331/EECE358	4	Computer Communications
EECE 359	4	Signals & Communications
ELEC 341/EECE360	4	Systems & Control
ELEC321/STAT321	4	Stochastic Signals and Systems (cannot have MATH 318 in program)

### Computer Engineering Advanced Electives (at least 11 credits, with at least 8 credits from ELEC/CPEN courses)

Course	Credits	Course Title
ELEC 402/EECE479	4	Introduction to VLSI Systems
CPEN 400A	4	Building Modern Web Applications
CPEN 411/EECE476	4	Computer Architecture
CPEN 412/EECE465	4	Microcomputer Systems Design
CPEN 421/EECE 443	4	Software Project Management
CPEN 422/EECE416	4	Software Testing and Analysis
CPEN 423/EECE417	4	Software Architecture
CPEN 431/EECE411	4	Design of Distributed Software Applications
CPEN 432/EECE494	4	Real-Time Systems Design
CPEN 441/EECE418	4	Human Computer Interfaces in Engineering Design
CPEN 442/EECE412	4	Introduction to Computer Security
BMEG 310	3	Introduction to Bioinformatics (4 credits of biology may be used to satisfy the BMEG 245 pre-req)
Any 400-level CPSC course, with the exception of CPSC 430.		

### Technical Electives (at least 6 credits)

Any 300-level or 400-level ELEC or CPEN (EECE) course.		
Any 300-level or 400-level CPSC course, with the exception of CPSC 430.		
Course	Credits	Course Title
CPEN 499	3/6	Undergraduate Thesis
APSC 440	3	Management Fundamentals for Technology-Based Product Marketing and Development
APSC 461	3	Global Engineering Leadership
BMEG 310	3	Introduction to Bioinformatics (4 credits of biology may be used to satisfy the BMEG 245 pre-req)
MATH 303	3	Introduction to Stochastic Processes
MATH 305	3	Applied Complex Analysis
MATH 307	3	Applied Linear Algebra
MATH 340	3	Introduction to Linear Programming
MATH 361	3	Introduction to Mathematical Biology
MATH 415	3	Introduction to Mathematical Logic
MATH 418	3	Probability
MATH 441	3	Modeling of Discrete Optimization Problems
MATH 443	3	Graph Theory
MATH 445	3	Mathematical Modeling: Applications in the Natural & Social Science1

**Science Electives (at least 3 credits)**

Courses may be selected from the following list (please contact the ECE Associate Head of Undergraduate Academics to request approval of other courses).

***The allowed science electives were chosen in such a way as to provide an introduction to the practice of the scientific method for science majors. If you plan to ask for a permission to replace one of the allowed science electives with another course, you need to prepare a one-page (500 word) explanation detailing why the course you propose will serve as an adequate introduction to scientific method for future scientists. Please also provide a detailed definition of what a scientific method entails.***

Course	Credits	Course Title
ASTR 102	3	Introduction to Stars and Galaxies
ASTR 200	3	Frontiers of Astrophysics
BIOL 111	3	Introduction to Modern Biology
BIOL 112	3	Biology of the Cell
BIOL 121	3	Genetics, Evolution and Ecology
BIOL 230	3	Fundamentals of Ecology
BIOL 345	3	Human Ecology
CHEM 201	3	Introduction to Physical Chemistry
CHEM 251	3	Physical Chemistry for Engineers
CHEM 260	3	Organic Chemistry for Engineers
EOSC 110	3	The Solid Earth
EOSC 112	3	The Fluid Earth
EOSC114	3	The Catastrophic Earth
EOSC 210	3	Earth Science for Engineers
FNH 200	3	Exploring our Food
GEOB 102	3	Our Changing Environment: Climate and Ecosystems
GEOB 103	3	Our Changing Environment: Water and Landscapes
PHYS 200	4	Relativity and Quanta
PHYS 250	3	Introduction to Modern Physics
PHYS 330	3	Twentieth Century Physics
PHYS 333	3	Energy and Climate
PHYS 404	3	Introduction to Medical Physics

\*Any University Level Biology course will be accepted as a Science elective.

**Free Electives (at least 6 credits)**

**Exclusions:** Credit cannot be obtained for both EECE 478 and CPSC 314 (Computer Graphics), credit cannot be obtained for both EECE 418 and CPSC 344 (Human Computer Interaction), and credit cannot be claimed for both ELEC 331 /EECE 358 (Computer Communications) and CPSC 317 (Internet Computing).