2021 – 2022 Computer Engineering Course Flow Chart
Biomedical Focus Area – Model 4 Year Program

PHYS 1050 Physics 1: Mechanics (3)
MATH 1510 Applied Calculus 1 (3)
MATH 1210 Classical and Linear Algebra (3)
CHEM 1100 Introduction to University Chemistry 1 (3)
CHEM 1122 Introduction to Chemical Techniques for Engineering 1 (1.5)
COMP 1012 Computer Programming for Scientists and Engineers (3)
ENG 1440 Design in Engineering (3)

PHYS 2152 Modern Physics for Engineers (3)
MATH 3122 Engineering Mathematical Analysis 3 (3)
MATH 2132 Engineering Mathematical Analysis 2 (3)
ECE 2262 Electric Circuits (4)
ECE 2220 Digital Logic Systems (4)

STAT 2220 Statistics for Engineers (3)
MATH 3120 Applied Discrete Mathematics (3)
MATH 2130 Engineering Mathematical Analysis 1 (3)
ECE 4830 Digital Systems Design 1 (4)
ECE 3780 Microsystems Interfacing (4)

ENG 3000 Engineering Economics (3)
ECE 4150 Control Systems (4)
ECE 4160 Biomedical Instrumentation and Signal Processing (4)
PHYS 2600 Electromagnetic Field Theory (3)

If

ECE 4260 Communication Systems (4)
ECE 4830 Signal Processing 2 (4)
ANTH 2430 Ecology, Technology and Society (3)
ECE 3740 Digital Systems Design 1 (4)
ECE 3700 Telecomm. Network Engineering (4)

OR

ECE 4240 Microprocessing Interfacing (4)
ECE 3610 Microprocessor Systems (4)
ECE 3760 Data Structures and Algorithms (4)
ECE 3740 Systems Engineering Principles 1 (4)
ECE 3700 Engineering Communication (3)

Written English Course for Engineering Students

Technical Elective

Biomedical Group A or Group B Elective Course

Additional required elective courses which may be completed in any term.

1. The written English requirement is satisfied by completing three (3) credit hours from the list of approved Written English Courses for Engineering Students listed in the University Calendar (see Faculty of Engineering, Section 4.2).

2. Students must take either of:
   – ENG 2030 Engineering Communication: Strategies for the Profession
   – ENG 2040 Engineering Communication: Strategies, Practice, and Design

3. Students must take either of:
   – ECE 4150 Control Systems
   – ECE 4260 Communication Systems

4. Technical and Natural Science Electives:
   – Five (5) technical electives and two (2) Natural Science electives are required to complete the program. Five (5) of those seven (7) electives form the Biomedical Focus Area, with BIOL 1410 and PHYS 2600 satisfying the Natural Science elective requirement.
   – The two (2) remaining electives shall be selected from the list of technical electives in the Computer Engineering Standard Program.
   – At most two (2) of these electives may be selected from the list of approved Electrical Engineering courses.
   – Technical electives may be taken at anytime, subject to prerequisites.

This flow chart is intended as a guide, and only applies for the current academic year. It should not be used as a guide for subsequent years. Errors may be present in this document. Students should refer to information in the University Calendar.

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Computer Engineering Focus Areas

Students wishing to pursue more focused studies in a Computer Engineering subject/research area have the choice of doing so through a recognized Focus Area. Courses taken towards a Focus Area take the place of some of the Technical Electives required in the Computer Engineering program.

**BIOMEDICAL FOCUS AREA**

Requirements:
To complete the Biomedical Focus the three (3) prescribed courses must be taken. In addition, one (1) of the three Biomedical Group A Elective courses must be taken, and a further course from either the Biomedical Group A or Biomedical Group B Elective courses must be taken. To complete the program requirements, two (2) additional courses must be selected from the elective courses listed in the Computer Engineering Standard Program.

**Prescribed Biomedical Courses** (All are required)
- **ECE 4610** Biomedical Instrumentation and Signal Processing
- **BIOL 1410** Anatomy of the Human Body *
- **PHYS 2600** Electromagnetic Field Theory *
  * These two courses satisfy the Natural Science Elective requirement.

**Biomedical Group A Elective Courses** ** (1 required)
- **ECE 4860** Biomedical Optics
- **PHYS 3220** Medical Physics and Physiological Measurement
- **PHYS 4300** Microfluidics for Biology

**Biomedical Group B Elective Courses** **
- **BIOL 1412** Physiology of the Human Body
- **MBIO 1220** Essentials of Microbiology
- **BIOE 3320** Engineering Properties of Biological Materials
- **BIOE 4610** Design of Assistive Technology Devices

** One course must be selected from Group A, with a second course selected from either Group A or Group B.