## REQUIRED COURSES WITHIN THE ENGINEERING COLLEGE

### COURSE TITLE | NUMBER | OFF. HRS. | PREREQUISITES
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**Computer Engineering Core Courses (44 hrs)**

- **Engineering Orientation**<sup>a</sup>
  - ENGR 100
  - 0
  - Admission to the College of Engineering

- **Introduction to Thermodynamics**
  - CHE 201 or ME 205
  - 3
  - MATH 181 and PHYS 141

- **Introduction to Thermodynamics**
  - PHYS 142

- **Introduction to Computing and Programming**
  - CS 201
  - 4
  - Credit or concurrent registration in MATH 180 and PHYS 102 or CS 107

- **Circuit Analysis**
  - ECE 225
  - 4
  - MATH 220; & grade of C or better in PHYS 142 & a grade of C or better in ECE 115

- **Introduction to Logic Design**
  - ECE 265
  - 4
  - MATH 180; and grade of C or better in ECE 115

- **Computer Organization I**
  - ECE 267
  - 3
  - CS 107 and credit or concurrent registration in ECE 265

- **Discrete and Continuous Signals and Systems**
  - ECE 310
  - 3
  - MATH 220 & cr. or conc. reg. in ECE 225; or cr. or conc. reg. ECE 210

- **Electronics I**
  - ECE 340
  - 4
  - Grade of C or better in ECE 225

- **Probability & Random Processes for Engineers**
  - ECE 341
  - 3
  - Credit or concurrent registration in ECE 310

- **Computer Organization II**
  - ECE 366
  - 4
  - ECE 267 and CS 201

- **Senior Design I**
  - ENGL 161 and senior standing

- **Senior Design II**
  - Senior standing & approval of the dept.

- **Professional Development Seminar**
  - Open only to seniors; & approval of the dept.

### Computer Engineering Advanced Core Courses (14-15 hrs)

(Students must complete at least two courses from each of the following two groups of courses)

**Group A:**

- **Computer Communication Networks I**
  - ECE 333
  - 4
  - ECE 341 and CS 201

- **Microprocessor-Based Design**
  - ECE 367
  - 4
  - Grade of C or better in ECE 265; and Grade of C or better in CS 366

- **CAD-Based Digital Design**
  - ECE 368
  - 4
  - ECE 333

- **Operating Systems Concepts and Design**
  - CS 385
  - 4
  - CS 201 and ECE 366 or ECE 267

**Group B:**

- **Digital Systems Design**
  - ECE 465
  - 3
  - Gr. of C or better in PHYS 142; and Gr. of C or better in ECE 265 or Gr. of C or better in CS 366.

- **Advanced Computer Architecture**
  - ECE 466
  - 3
  - CS 366 or ECE 366

- **Introduction to VLSI Design**
  - ECE 467
  - 4
  - ECE 340

- **Computer Algorithms I**
  - ECE 401
  - 3
  - C or better in MCS 360; & STAT 381 or CS 202

**Technical Electives (14 hrs)**

(Those courses not used to meet the advanced CE core requirement can be used as technical electives. However, no more than a total of two courses below the 400 level can be used to meet the technical electives requirement. Also, no more than one course from outside the ECE Department can be used to meet the technical electives requirement.)

- **General Physics III: Modern Physics**
  - PHYS 244
  - 3
  - C or better in PHYS 142 or PHYS 107/108 with aver. gr. of B or better & cr. in MATH 181

- **Data Structures & Discrete Mathematics II**
  - CS 202
  - 3
  - C or better in CS 201

- **Communication Engineering**
  - ECE 311
  - 4
  - Grade of C or better in ECE 310

- **Digital Signal Processing I**
  - ECE 317
  - 4
  - Grade of C or better in ECE 310

- **Communication Electromagnetics**
  - ECE 322
  - 3
  - Grade of C or better in ECE 225

- **Electromagnetics**
  - ECE 342
  - 4
  - ECE 340

- **Solid-State Device Theory**
  - ECE 346
  - 4
  - MATH 220; grade of C or better in ECE 115, and a grade of C or better in PHYS 142

- **Integrated Circuit Engineering**
  - ECE 347
  - 3
  - CHEM 112 and grade of C or better in ECE 225

- **Principles of Automatic Control**
  - ECE 350
  - 3
  - Math 310 and gr. of C or better in ECE 310

- **Quasi-Static Electric and Magnetic Fields**
  - ECE 401
  - 3
  - ECE 322

- **Pattern Recognition I**
  - ECE 407
  - 3
  - MATH 220

- **Network Analysis**
  - ECE 410
  - 3
  - Math 310 and gr. of C or better in ECE 310

- **Introduction to Filter Synthesis**
  - ECE 412
  - 3
  - Grade of C or better in ECE 310

- **Image Analysis and Computer Vision I**
  - ECE 415
  - 3
  - MATH 310; or grade of C or better in ECE 310

- **Digital Signal Processing II**
  - ECE 417
  - 4
  - ECE 317

- **Statistical Digital Signal Processing**
  - ECE 418
  - 3
  - ECE 317 and ECE 341

- **Introduction to Antennas and Wireless Propagation**
  - ECE 421
  - 4
  - ECE 225 and ECE 322

- **Electromagnetic Compatibility**
  - ECE 423
  - 3
  - Math 310 and ECE 322

- **RF and Microwave Guided Propagation**
  - ECE 424
  - 4
  - ECE 225 and ECE 322

- **Modern Linear Optics**
  - ECE 427
  - 3
  - ECE 310 and ECE 322

- **Analog Communication Circuits**
  - ECE 431
  - 4
  - ECE 311 and ECE 340

- **Digital Communications**
  - ECE 432
  - 4
  - Math 310, ECE 311 and ECE 341

- **Multimedia Systems**
  - ECE 434
  - 3
  - ECE 310

- **Computer Communication Networks II**
  - ECE 436
  - 3
  - ECE 333

- **Wireless Communications**
  - ECE 437
  - 3
  - ECE 311 and ECE 341

- **Power Semiconductor Devices & Integ. Circuits**
  - ECE 442
  - 4
  - ECE 342 and ECE 346

- **Analysis & Design of Power Electronic Circuits**
  - ECE 445
  - 4
  - ECE 342; and grade of C or better in ECE 310

- **Transistors**
  - ECE 448
  - 3
  - ECE 346

- **Microdevices and Micromachining Technology**
  - ECE 449
  - 4
  - ECE 347; or consent of the instructor
Control Engineering
ECE 451 F 3 ECE 350
Robotics: Algorithms and Control
ECE 452 Sp 3 CS 201; & gr. of C or bett. in ECE 210 or gr. of C or bett. in ECE 225
Electromechanical Energy Conversion
ECE 458 F 3 Grade of C or better in ECE 225
Analog and Mixed-Signal VLSI Design
ECE 468 Sp 4 ECE 467
Computer Systems Design
ECE 469 Sp 3 CS 366; or ECE 366 and ECE 368
Compiler Design
CS 473 3 Gr. of C or bett. in CS 301 or in MCS 441; &Gr. of C or bett. in CS 202 or in MCS 360;
&Gr. of C or bett. in CS 266.
Networked Operating Systems Programming
CS 485 4 CS 385
Coding and Cryptography
MCS 425 3 Gr. of C or bett. in MATH 215; &Gr. of C or bett. in MATH 310
or Gr. of C or bett. in MATH 320; or consent of the instructor

NONENGINEERING AND GENERAL EDUCATION REQUIREMENTS(50 hrs)

COURSE TITLE NUMBER HRS. PREREQUISITES

General College Chemistry I*b
Chem 112 5 C or better in CHEM 101 or adequate performance on the
UIC chemistry placement exam
Academic Writing I:WAPC
ENGL 160 3 Performance on Dept. Placement Test
Academic Writing II:WIR
ENGL 161 3 ENGL 160 or the equivalent
Exploring World Cultures course*a
3
Understanding the Creative Arts course*a
3
Understanding the Past course*a
3
Understanding the Individual and Society course*a
3
Understanding US Society course*a
3
Calculus I*b
MATH 180 5 C or better in MATH 121 or app. perf. on the dept. pl. test
Calculus II*b
MATH 181 5 C or better in MATH 180
Calculus III*b
MATH 210 3 C or better in MATH 181
Introduction to Differential Equations I
MATH 220 3 C or better in MATH 210
General Physics I (Mechanics)*b
PHYS 141 4 Grade of C or bett. in MATH 180
General Physics II (Electricity and Magnetism)*b
PHYS 142 4 Gr. of C or bett. in MATH 181&Gr. of C or bett. in PHYS 141 or consent of the instructor
*a-Consult General Education section of the catalog for approved courses in this category ;
*b-Course approved for the Analyzing the Natural
World General Education category

Additional Mathematics Course
(Students must complete at least one of the following courses.)

Applied Linear Algebra
MATH 310 3 C or better in MATH 210
Advanced Calculus I
MATH 410 3 C or better in MATH 210
Complex Analysis with Applications
MATH 417 3 C or better in MATH 210
Applied Partial Differential Equations
MATH 481 3 C or better in MATH 220
Numerical Analysis
MCS 471 3 Gr. of C or bett. in MCS 260 or Gr of C or bett. in CS 102 or Gr. of C or bett. in CS 108
or consent of instructor.

FREE ELECTIVES(3 hrs)
Students must select* courses from outside the ECE Department.
(*Students preparing for the Fundamentals of Engineering Examination, which leads to becoming a Licensed Professional Engineer, are advised
to use these hours to take the course CME 201, Statics; and one course from the following courses: CME 203, Strength
of Materials; CME 260, Properties of Materials; ME 211, Fluid Mechanics I.)