

ELECTRICAL AND COMPUTER ENGINEERING DEPARTMENT

Computer Engineering Major  
(128 Semester Hours)

3/19/2020 ER

COURSE TITLE NUMBER OFF. HRS. PREREQUISITES

REQUIRED COURSES WITHIN THE ENGINEERING COLLEGE (75 hrs)

CE+EE Core Courses (34 hrs)

Engineering Orientation*a	ENGR 100		1	***Admission to the College of Engineering
Introduction to Computing and Programming	CS 107		4	Credit or concurrent registration in MATH 180
Introduction to Electrical and Computer Engineering	ECE 115	F,Sp	4	Credit or concurrent registration in MATH 180
Circuit Analysis	ECE 225	F,Sp	4	credit or concurrent reg. in MATH 220; and C or better in ECE 115 and PHYS 142
Introduction to Logic Design	ECE 265	F,Sp	4	MATH 180; and C or better in ECE 115
Introduction to Embedded Systems	ECE 266	F,Sp	4	CS 107; and credit or concurrent registration in ECE 265
Discrete and Continuous Signals and Systems	ECE 310	F,Sp	3	MATH 220; and credit or conc.reg. in ECE 225 (ECE 210*b for non-ECE students)
Electronics I	ECE 340	F,Sp	4	Grade of C or better in ECE 225
Probability & Random Processes for Engineers	ECE 341	F,Sp	3	Grade of C or better in MATH 210
Senior Design I	ECE 396	F	2	ENGL 161; and senior standing
Senior Design II	ECE 397	Sp	2	ECE 396
Professional Development Seminar	ECE 499	F,Sp	0	Open only to seniors; and approval of the dept. Must be taken in the student's last semester of study.

CE-only Core Courses (24 hrs)

Mathematical Foundations of Computing	CS 151	F,Sp	3	MATH 180; and Grade of C or better in CS 111
Data Structures	CS 251	F,Sp	4	CS 151 or CS 201; and credit or concurrent registration in CS 211
Computer Communication Networks I	ECE 333	F,Sp	4	CS 107; and ECE 341
Computer Organization	ECE 366	F,Sp	3	ECE 266
Digital Systems Design	ECE 465	F,Sp	3	Grade C or better in PHYS 142; and ECE 366 or CS 366.
Advanced Computer Architecture	ECE 466	F,Sp	3	ECE 366 or CS 261
Introduction to VLSI Design	ECE 467	F,Sp	4	ECE 340

CE Technical Electives (17 hrs)

No more than a total of two courses below the 400 level can be used to meet the technical electives requirement.

Also, at most one course from outside the Electrical and Engineering Department and the Computer Science Department may be used to meet the technical elective requirement.

Communication Engineering	ECE 311	F,Sp	4	Grade of C or better in ECE 310; and grade of C or better in ECE 341
Digital Signal Processing I	ECE 317	F,Sp	4	Grade of C or better in ECE 310
Introduction to Electromagnetics and Applications	ECE 322	F,Sp	4	ECE 225
Electronics II	ECE 342	F,Sp	4	ECE 340
Solid-State Device Theory	ECE 346	F,Sp	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	F	3	CHEM 112; and Grade of C or better in ECE 225.
Principles of Automatic Control	ECE 350	F,Sp	4	MATH 310 and gr. of C or better in ECE 310
Pattern Recognition I	ECE 407	Sp	3	ECE 341 or BIOE 339 or IE 342 or STAT 381
Network Analysis	ECE 410	F	3	MATH 310 and gr. of C or better in ECE 310
Introduction to Filter Synthesis	ECE 412	Sp	3	Grade of C or better in ECE 310
Image Analysis and Computer Vision I	ECE 415	F	3	MATH 310; or grade of C or better in ECE 310
Digital Signal Processing II	ECE 417	F	4	ECE 317
Statistical Digital Signal Processing	ECE 418	Sp	3	ECE 317 and ECE 341
Introduction to Antennas and Wireless Propagation	ECE 421	F	3	ECE 225 and ECE 322
Electromagnetic Compatibility	ECE 423	Sp	4	Math 310 and ECE 322
RF and Microwave Guided Propagation	ECE 424	F	4	ECE 225 and ECE 322
Modern Linear Optics	ECE 427	F	3	ECE 310 and ECE 322
Digital Communications	ECE 432	F	3	MATH 310, ECE 311 and ECE 341
Multimedia Systems	ECE 434	F	3	ECE 310

**Technical Electives Continued**

Computer Communication Networks II	ECE 436	Sp	3	ECE 333
Wireless Communications	ECE 437	Sp	3	ECE 311 and ECE 341
Nanoelectronics	ECE 440	F	3	ECE 346; or consent of the instructor
Power Semiconductor Devices & Integ. Circuits	ECE 442	Sp	4	ECE 346
Analysis & Design of Power Electronic Circuits	ECE 445	F	4	ECE 342
Transistors	ECE 448	Sp	3	ECE 346
Microdevices and Micromachining Technology	ECE 449	Sp	4	ECE 347; or consent of the instructor
Control Engineering	ECE 451	F	3	ECE 350; and Grade of C or better in MATH 310.
Robotics: Algorithms and Control	ECE 452	Sp	3	Grade of C or better in ECE 310; and MATH 310
Mechatronics Embedded Systems Design	ECE 454	Sp	4	****ECE 266 and ECE 310 and ECE 340; or consent of the instructor
Electromechanical Energy Conversion	ECE 458	F	3	Grade of C or better in ECE 225
Testing and Reliability of Digital Systems	ECE 464	F	3	CS 251; and ECE 366. **May be approved as a Technical Elective with a Request for Modification of Major form.
Digital Systems Design	ECE 465	FS	3	Grade C or better in PHYS 142; and ECE 366 or CS 366.
Advanced Computer Architecture	ECE 466	FS	3	ECE 366 or CS 261
Introduction to VLSI Design	ECE 467	FS	4	ECE 340
Analog and Mixed-Signal Integrated Circuits	ECE 468	Sp	4	ECE 467
Hardware Description Language Based Digital and Computer System Design	ECE 469	Sp	4	CS 366; or CS 362
Seminar	ECE 491	F,Sp	4	Consent of the Instructor ****Requires Request for Modification of Major form to count as a technical elective
Systems Programming	CS 361		3	CS 251 and CS 261
Computer Algorithms I	CS 401		3	Grade of C or better in MCS 360; or Grade of C or better in CS 251.
Fundamentals of Modern Quantum Theory	PHYS 240		3	Grade of C or better in MATH 181; and Grade of C or better in PHYS 142; or Grade of B or better in PHYS 107 or Grade of B or better in PHYS 132
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 instr.
Numerical Analysis	MCS 471		3	Gr. of C or bett. in MCS 275 or Gr of C or bett. in CS 102 or Gr. of C or bett. in CS 108 or consent of instructor.
Linear and Non-Linear Programming	STAT 471		3	Grade of C or better in MATH 310

**NONENGINEERING AND GENERAL EDUCATION REQUIREMENTS (53 hrs)**

Gen Chem I: Matter and Energy/ Lecture*c	CHEM 122		4	Grade of C or better in CHEM 101 or adequate performance on the UIC Chemistry placement examination; and concurrent registration or Grade of C or better in CHEM 123
General Chemistry I Laboratory*b,*c	CHEM 123		1	Gr. of C or better in CHEM 101; & concurrent registration or Gr. of C or better in CHEM 122
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		4	C or better in MATH 121 or app. perf. on the dept. pl. test
Calculus II*b	MATH 181		4	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
Applied Linear Algebra	MATH 310		3	C or better in MATH 181
General Physics I (Mechanics)*b	PHYS 141		4	C or better or concurrent registration in MATH 180; or approval of the dept; and C or better in PHYS 100 or adequate performance on the departmental placement test.
General Physics II (Electricity and Magnetism)*b	PHYS 142		4	Grade of C or better in PHYS 141; and grade of C or better or concurrent registration in MATH 181
Introduction to Thermal Physics	PHYS 260		2	Grade of C or better in PHYS 141 and Grade of C or better in MATH 181

\*a-Students should 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, \*c-General Education credit is given for successful completion of both CHEM 122 and CHEM 123.

\*\*May be approved as a Technical Elective with a Request for Modification of Major form

\*\*\*ENGR100 is a one-semester-hour course, but does not count toward the total hours required for graduation

\*\*\*\*Requires Request for Modification of Major form to count as a technical elective