Computer Engineering Technical Electives – Fall 2026

Group 1*

Course #	Course Name	Cr	Pre- and Co-requisites
ECE 30300	Engineering Software Design	3	P: ECE 20100, ECE 27000
ECE 42800	Modern Communication Systems	3	P: ECE 30100, ECE 30200
ECE 43600	Digital Signal Processing	3	P: ECE 30100
ECE 44901	Machine Learning	3	P: ECE 30200, Programming skills in Matlab or Python
ECE 47800	Robotics and Automation	3	P: ECE 36200, PHYS 15200, MA 36300
ECE 50600	Biomedical Instrumentation Design	3	Recommended P: Circuits &Electronics, Analog and Digital Signal Processing; Programming in C
ECE 51800	Digital Image Processing	3	P: ECE 22900, ECE 30100
ECE 54700	Intro to Computer Communication Networks	3	P: ECE 30200
ECE 56700	FPGA Designs for Signal Processing Applications	3	P: ECE 35800, ECE 30100
ECE 66100	Computer Vision	3	P: MA 35100
CS 32100	Computer Graphics	3	P: CS 26000 ^
CS 36000	Software Engineering	3	P: CS 26000 and ENGL 23401 ^
CS 36400	Intro to Database Systems	3	P: CS 26000 ^
CS 38400** **or** PHYS 32500**	Numerical Analysis Scientific Computing	3 3	P: CS 16000 and MA 16600 ^ P: PHYS 25100 or ECE 30300
MA 59800	Cryptography***	3	P: MA 35100

* ECE 39595, ECE 49500, or other ECE 50000-level and above courses in computer engineering area can be included in Group 1 technical electives with the approval of Computer Engineering Curriculum Committee. Once a course is approved, a student can take it as a regular technical elective with the approval of the advisor.

** Either CS 38400 or PHYS 32500, but not both, can be used as a Group 1 technical elective.

*** Other MA 59800 courses require the approval of the Computer Engineering Curriculum Committee to be included as Group 1 technical electives.

^ Computer science department approves ECE students to enroll in these courses with ECE 36800 as an equivalent pre-requisite.

Group 2*

Course #	Course Name	Cr	Pre- and Co-requisites
ECE 29101+	ECE Internship Experience	3	Instructor Permission
ECE 31100 OR PHYS 31200	Electric and Magnetic Fields Intermediate Electricity and Magnetism	3 3	P: MA 36300, PHYS 25100 P: MA 36300, PHYS 25100
ECE 31300	Energy Conversion Lab	1	C: ECE 32400
ECE 32400	Introduction to Energy Systems	3	P: PHYS 25100, ECE 25500 C: ECE 20800
ECE 33300	Automatic Control Systems	3	P: ECE 30100
ECE 31000	Motor Engine Control	3	P: ECE 20100, PHYS 25100
ECE 48300	Digital Control Systems – Analysis and Design	3	P: ECE 30100
ECE 49600	Computer Engineering Projects**	3(max)	Department approval
ECE 49700	Research in Computer Engineering I**	3	P: honors classification
ECE 49800	Research in Computer Engineering II**	3	P: ECE 49700 and honors classification
ECE 53800	Digital Signal Processing I	3	P: ECE 43600, ECE 30200
SE 52000	Engineering Economics	3	senior or graduate standing
SE 53000	Engineering Management	3	senior or graduate standing
SE 54000	Systems Architecture	3	senior or graduate standing
SE 55000	Advanced Manufacturing Systems and Processes	3	senior or graduate standing
STAT 51200	Applied Regression Analysis	3	P: STAT 51100 or STAT 51700 or STAT 52800 with a grade of C or higher ^
MA 57500	Graph Theory	3	P: MA 30500 or MA 35100

ME 25300	An Introduction to Mechanics	2	P: MA 26100, PHYS 15200
PHYS 32200	Optics	3	P: PHYS 25100
PHYS 34200	Modern Physics	3	P: PHYS 25100
PHYS 34500	Optics Laboratory I	1	C: PHYS 32200

* ECE 39595, ECE 49500, or other 50000-level and above courses offered by ECE, math, computer science, or physics departments may be taken by the student as Group 2 technical electives with the approval of the advisor.

** ECE 49600/49700/49800 requires approval of the Computer Engineering curriculum committee.

*** ECE66100 can be counted as either group 1 or group 2.

\+ Please read the Internship/Co-op guideline posted on ECE website and follow the instructions.

^ Math department approves ECE students to enroll in STAT 51200 with ECE 30200 as an equivalent pre-requisite.

Notes:

1. Some 3xx-level and above courses offered by math, computer science, or physics departments may be taken by the student as Group 1 or Group 2 technical electives with the approval of the Computer Engineering Curriculum committee. Once a course is approved, a student can take it as a regular technical elective with the approval of the advisor.
2. For students admitted to the 5 year combined BS/MSE program, additional graduate-level courses have been approved as technical electives. A list of such courses can be located in the section of 5 Year BS/MSE Program on the ECE Department website.
3. Students need to take six credits from group 1, six credits from group 2 and 3 credits from either group 1 or group 2.
4. A course cannot be counted towards both an undergraduate degree and a graduate degree, with the exception of the students enrolled in the 5 Year BS/MSE Combined Degree Program. For more information, visit the ECE Department website.

Computer Engineering majors are encouraged to explore the requirements for a minor in Computer Science, Math or Physics. For more information, visit the ECE Department website.

Updated: September 2024, effective Fall 2026