

Computer Engineering Technical Electives

Group 1*

Course #	Course Name	Cr	Pre- and Co-requisites
ECE 428	Modern Communication Systems	3	P: ECE 301, ECE 302
ECE 547	Intro to Computer Communication Networks	3	P: ECE 302
ECE 567	FPGA Designs for Signal Processing Applications	3	P: ECE 358, ECE 301
CS 321	Computer Graphics	3	CS Department approval
CS 360	Software Engineering	4	CS Department approval
CS 364	Intro to Database Systems	3	P: CS 260 or ECE 368
CS 384	Numerical Analysis	3	CS Department approval

* ECE 495 or other ECE 5XX courses in Computer Engineering area can be included in group 1 technical elective 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.

Group 2*

Course #	Course Name	Cr	Pre- and Co-requisites
ECE 311	Electric and Magnetic Fields	3	P: MA 363, PHYS 251
ECE 313	Energy Conversion Lab	1	C: ECE 324
ECE 324	Introduction to Energy Systems	3	P: PHYS 251, ECE 255 C: ECE 208
ECE 333	Automatic Control Systems	3	P: ECE 301, ME 253
ECE 436	Digital Signal Processing	3	P: ECE 301
ECE 483	Digital Control Systems – Analysis and Design	3	P: ECE 301
ECE 496	Computer Engineering Projects**	3(max)	Department approval
ECE 497	Research in Computer Engineering I**	3	P: honors classification
ECE 498	Research in Computer Engineering II**	3	P: ECE 497 and honors classification
ECE 538	Digital Signal Processing I	3	P: ECE 436, ECE 302
SE 510	System Engineering***	3	senior or graduate standing
SE 520	Engineering Economics	3	senior or graduate standing
SE 530	Engineering Management***	3	senior or graduate standing
SE 550	Advanced Manufacturing Systems and Processes	3	senior or graduate standing
MA 417	Mathematical Programming	3	P: MA 261 or MA 263 and one of: MA 262, MA 351, or MA 511 with grades of C- or better
MA 418	Computations Laboratory for MA 417	1	P: CS 160 or CS 114 C: MA 417
ME 253	An Introduction to Mechanics	2	P: MA 261, PHYS 152
PHYS 322	Optics	3	P: PHYS 251
PHYS 342	Modern Physics	3	P: PHYS 251
PHYS 345	Optics Laboratory I	1	C: PHYS 322
PHYS 550	Introduction to Quantum Mechanics	3	P: PHYS 342

* Other 5xx-level courses offered by ECE, math, computer science, or physics departments may be taken by the student in Group 2 technical electives with the approval of the advisor.

** ECE 496/497/498 requires approval of the CMPE curriculum committee.

*** Due to topic overlapping between SE 510 and SE 530, students can take either SE 510 or SE 530, but not both as their technical electives.

Note: 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: <http://www.ipfw.edu/departments/etcs/depts/ece/5-year-bsmse-program/>)

Computer Engineering majors can easily earn a minor in Math and in Physics. For more information, visit: <http://www.ipfw.edu/departments/coas/depts/math/undergraduate/mathminor.html> and <http://www.ipfw.edu/departments/etcs/depts/ece/undergraduate/minor-physics.html>.

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