Technical Electives for BSEE

Group I: Electrical Engineering Technical Electives: An Electrical Engineering student is required to take two courses from **Group I**.

Course No.	Course Title	Cr	Pre- and Co-requisites
ECE 478	Robotics and Automation	3	ECE 36200, ME 253, CS 229, ECE 363
ECE 465	Embedded Microprocessors	3	P: ECE 362
ECE 474	Introduction to RF Circuit Design	3	P: PHYS 251, ECE 255
ECE 483	Digital Control Systems Analysis and Design	3	P: ECE 301 or ME 333
ECE 547	Introduction to Computer Comm. Network	3	P: ECE 302

*All Electrical Engineering Technical Electives have design content. ECE 495 can be counted as a Group I technical elective upon the approval by the EE curriculum committee. Other ECE 5xx courses may be included in this group upon the approval by the EE curriculum committee.

Group II: Other Technical Electives: An Electrical Engineering student is required to take two courses from **Group II**.

Course No.	Course Title	Cr	Pre- and Co-requisites
ECE 293	Measurements and Instrumentation	2	P: ECE 201, COM 114, ENG W131
ECE 358	Introduction to VHDL	3	P: ECE 270, CS 229
ECE 368	Data Structures	3	P: CS 229
ECE 437	Computer Design and Prototyping	4	P: ECE 358, ECE 362
ECE 485	Embedded Real-Time Operating Sys.	4	P: ECE 362, ECE 368
SE 510*	Systems Engineering	3	P: Senior or graduate standing
SE 520	Engineering Economics	3	P: Senior or graduate standing
SE 530*	Engineering Management	3	P: Senior or graduate standing
CS 321	Computer Graphics	3	P: CS Department approval
CS 360	Software Engineering	4	P: CS Department approval
MA 175**	Introductory Discrete Math	3	P: MA 165 or MA 153 and CS 160; or MA 153 and EET 264 with grade of C- or better in each course
MA 275**	Intermediate Discrete Math	3	P: MA 261 or MA 263
MA 417+	Mathematical Programming	3	P: MA 261 or MA 263, and one of: MA 262, MA 351, or MA 511 with grade of C- or better
PHYS 322	Optics	3	P: PHYS 251
PHYS 342	Modern Physics	3	P: PHYS 251

*Either SE 510 or SE 530, but not both, can be used as a Group II technical elective course.
** Either MA 175 or MA 275, but not both, can be used as a Group II technical elective course.
+Any 500 level math course can replace MA 417 when this course is not offered.
++ECE 496, ECE 497, and ECE 498 can be counted as Group II technical electives, with the maximum of 3 credit hours each, upon the approval by the EE curriculum committee.

Note: A course cannot be counted toward 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/)

Electrical Engineering majors can easily earn a Minor in Math or 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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