

Joint BS in Engineering Physics/MS in Electrical and Computer Engineering

Degree Requirements

The joint Bachelor of Science in Engineering Physics (BSEP) and Master of Science in Electrical and Computer Engineering (MSECE) is designed for undergraduates with outstanding academic performance who desire to pursue graduate studies in electrical and computer engineering, or who wish to prepare themselves for advanced placement in the workplace. Students will earn both a BSEP degree and an MSECE degree upon completion of the program, with 8 hours of coursework shared between the two degrees.

The requirements for completion of the joint degree program are identical to the completion of these two separate degrees; however, 8 shared hours counting towards both degrees. Completion of 120 semester hours at the undergraduate level; plus 8 hours counting toward both degrees; plus 28 hours at the graduate level will result in joint BSEP/MSECE degrees.

Students who have completed at least 30 hours of ECE core courses and have an overall institutional GPA of 3.25 or higher can apply for the joint program. Undergraduate students admitted into the joint program can register for two technical-elective ECE courses and receive graduate credit for them. In taking 400-level courses as graduate-level courses, students may take advantage of differential credit to earn 4 hours (in each course respectively), instead of the typical 3 hours (or they may earn 5 hours if the course is already a 4-hour course with a laboratory component). These two courses, which may apply up to 8 hours to both degrees, will require pre-approval by an academic advisor and will be recorded in the student's academic record by the ECE Student Affairs Office; in addition, the ECE Student Affairs Office will submit the necessary paperwork to allow the undergraduate student to register for the graduate section of these courses that will be used at the undergraduate level to fulfill 8 hours of technical elective requirements, and at the graduate level to fulfill required coursework for the MS course-only option.

Sample Course Schedule

Course	Title	Hours
Freshman Year		
First Semester		
MATH 180	Calculus I	4
CHEM 122	Matter and Energy	3
CHEM 123	Foundations of Chemical Inquiry I	2
ECE 115	Introduction to Electrical and Computer Engineering	4
ENGL 160	Academic Writing I: Writing in Academic and Public Contexts	3
ENGR 100	Engineering Success Seminar ^a	1
Hours		16
Second Semester		
MATH 181	Calculus II	4
PHYS 141	General Physics I (Mechanics)	4
CS 107	Introduction to Computing and Programming	4
ENGL 161	Academic Writing II: Writing for Inquiry and Research	3

General Education Core course		3
Hours		18
Sophomore Year		
First Semester		
MATH 210	Calculus III	3
PHYS 142	General Physics II (Electricity and Magnetism)	4
CME 260	Properties of Materials	3
ME 211	Fluid Mechanics I	4
General Education Core course		3
Hours		17
Second Semester		
MATH 220	Introduction to Differential Equations	3
PHYS 240	Fundamentals of Modern Quantum Theory	3
PHYS 245	Introduction to Vibrations, Waves, and Thermal Physics	4
Math Elective		3
General Education Core course		3
Hours		16
Junior Year		
First Semester		
PHYS 215	Computational and Mathematical Methods for the Physical Sciences	4
PHYS 481	Modern Experimental Physics I	4
PHYS 499	Survey of Physics Problems	1
ECE 225	Circuit Analysis	4
ECE 346	Solid State Device Theory	4
Hours		17
Second Semester		
PHYS 441	Theoretical Mechanics	4
ECE 310	Discrete and Continuous Signals and Systems	3
ECE 322	Introduction to Electromagnetics and Applications	4
ECE 440	Nanoelectronics	3
General Education Core course		3
Hours		17
Senior Year		
First Semester		
PHYS 411	Quantum Mechanics I	4
ECE 396	Senior Design I	2
ECE 421	Introduction to Antennas and Wireless Propagation	3
Technical Elective		3
General Education Core course		3
Hours		15
Second Semester		
BME 450	Molecular Biophysics of the Cell	4
ECE 397	Senior Design II	2
ECE 499	Professional Development Seminar	0
Technical Elective		3
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Hours		12
Fifth Year		
First Semester		
MS Coursework		14
Hours		14
Second Semester		
MS Coursework		14
Hours		14
Total Hours		156