



B.S. in Electrical Engineering & Physics (dual degree)

Academic Plan of Study

William States Lee College of Engineering + College of Liberal Arts & Sciences
 Dept. of Electrical and Computer Engineering + Dept. of Physics & Optical Science

ece.uncc.edu & physics.uncc.edu

PROGRAM SUMMARY

- **Credit Hours:** 133 hours
- **Concentrations:** No
- **Declaring the Major:** Students should declare a dual degree in Physics and Engineering by their sophomore or junior year.
- **Advising (For the Major):** (Engineering) Ms. Jerena McNeil, jmcnei34@uncc.edu or another Engineering advisor; (Physics) Dr. Tom Suleski, tsuleski@uncc.edu
- **Advising (For General Education):** Engineering Advisor
- **Minimum Grades/GPA:** Students must have a 2.0 or higher average in Physics courses to graduate. A “C” or better is required in most PHYS classes before students can progress to the next PHYS course. Students must have a 2.0 overall GPA as well as in engineering courses.
- **Teacher Licensure:** No
- **Evening Classes Available:** Some but need to take day classes to complete requirements.
- **Weekend Classes Available:** No
- **Other Information:** College Internships, Co-ops, Leadership Academy, Freshmen Learning Community.
- **Contact(s):** (Engineering) Ms. Jerena McNeil Undergraduate Student Services Specialist (jmcnei34@uncc.edu, 704-687-8445, EPIC 2242); (Physics) Dr. Tom Suleski, tsuleski@uncc.edu

PROGRAM REQUIREMENTS

To obtain a dual B.S. degree in Electrical Engineering and Physics, an undergraduate student must complete all requirements for the B.S.E.E. degree as established by the Department of Electrical and Computer Engineering. In addition, the student must complete 12 hours of upper division physics courses specified by the Department of Physics and Optical Science with an average grade of C or above. To meet the upper division physics requirements, students must complete the following courses: PHYS 3121 (Classical Mechanics), PHYS 4241 (Quantum Mechanics), and 6 elective hours (at the 3000-4000 level) chosen from a list of approved courses available from the Department of Physics and Optical Science. These 6 hours of Physics elective credit must be taken under PHYS course numbers. A B.S. in Physics under this program will be awarded at the same time as or after the B.S.E.E.; the B.S. in Physics degree will not be awarded in advance of the engineering degree. Dual degree students complete the “W” in the major requirement through their Engineering degree requirements. Students in this dual degree program are not required to fulfill the College of Liberal Arts & Sciences foreign language requirement (see the CLAS General Education section in the *Catalog* for additional information).

Areas	Credit Hours	Description
Pre-Major/Prerequisites	-	
Major (Engineering)	54	
Major (Physics)	12*	These hours are in addition to physics classes required by the engineering major
General Education (not satisfied by other major requirements)	18	3 hours Writing (UWRT 1103 or UWRT 1104), 12 hours Liberal Studies (LBST 110X; two of: LBST 2101, LBST 2102, or LBST 221X; and LBST 2301), and 3 hours Social Sciences (ECON 2101 or ECON 2102)
Related Work	40	15 hours Mathematics (MATH 1241, MATH 1242, MATH 2171, MATH 2241, STAT 3128), 14 hours Natural Sciences (PHYS 2101+Lab, PHYS 2102, PHYS 3141, CHEM 1251+Lab), 3 hours Science or Math Elective (Mathematics, statistics, or natural sciences at a higher level than in Plan of Study), 8 hours Engineering (ENGR 1201, ENGR 1202-E, ENGR 3295, MEGR 3111)
Foreign Language	-	
Electives	12	12 hours Technical Electives (3000 or above ECGR courses not specified in the curriculum, of which 3 hours may be non-ECGR)
Total Credit Hours	133	*3 credit hours may be used to fulfill Science Elective requirement, and 3 credit hours may be used as a non-ECGR Technical Elective

SUGGESTED PLAN OF STUDY

Freshman Year					
Course Number	Course Title	Credit Hours	General Education	W/O Course	Notes
<i>Fall Semester</i>					
LBST 110X	LBST 1100 Series: Arts and Society	3	X		
ENGR 1201	Introduction to Engineering Practices and Principles I	2			
CHEM 1251	Principles of Chemistry	3	X		
CHEM 1251L	Principles of Chemistry Lab	1	X		
ECGR 2103	Computer Utilization in C++	3			
MATH 1241	Calculus I	3	X		
<i>Spring Semester</i>					
UWRT 1103	Writing and Inquiry in Academic Contexts (or UWRT 1104)	3	X		
ENGR 1202	Introduction to Engineering Practices and Principles II	2			
PHYS 2101	Physics for Science and Engineering I	3	X		
PHYS 2101L	Physics for Science and Engineering I Lab	1			
LBST 2XXX	LBST 2101, LBST 2102, or LBST 221X	3	X		
MATH 1242	Calculus II	3	X		

30 Credit Hours for Year

Sophomore Year					
Course Number	Course Title	Credit Hours	General Education	W/O Course	Notes
<i>Fall Semester</i>					
LBST 2301	Critical Thinking and Communication	3	X		
ECGR 2111	Network Theory I	3			
ECGR 2155	Instrumentation and Networks Laboratory	1	X	W	
ECGR 2181	Logic Systems Design I	3			
MATH 2171	Differential Equations	3			
PHYS 2102	Physics for Science and Engineering II	3			
<i>Spring Semester</i>					
ECGR 2112	Network Theory II	3			
ECGR 2156	Logic and Networks Laboratory	1	X	W	
ECGR 2252	Electrical Engineering Design I	2		O	
MATH 2241	Calculus III	3			
PHYS 3141	Introduction to Modern Physics	3			*Counts towards both degrees
MATH 2164	Matrices and Linear Algebra	3			

31 Credit Hours for Year

Junior Year					
Course Number	Course Title	Credit Hours	General Education	W/O Course	Notes
<i>Fall Semester</i>					
ECGR 3111	Signals and Systems	3			
ECGR 3121	Introduction to Electromagnetic Fields	3			
ECGR 3131	Fundamentals of Electronics and Semiconductors	3			
ECGR 3155	Systems and Electronics Lab	1	X	W	
STAT 3128	Probability & Statistics for Engineers	3			
PHYS 3121	Classical Mechanics I (Science Elective)	3			*Physics Degree
<i>Spring Semester</i>					
ECGR 3122	Electromagnetic Waves	3			
ECGR 3132	Electronics	3			
ECGR 3142	Electromagnetic Devices or ECGR 3133 Solid State Microelectronics	3			3142 or 3133
ECGR 3156	Electromagnetic and Electronic Devices Laboratory	1		W	
ECGR 3112	System Analysis II or ECGR 3181 Logic System Design II	3			3112 or 3181
ECGR 3157	Electrical Engineering Design II	2		O	
ENGR 3295	Professional Development	1			

32 Credit Hours for Year

Senior Year					
Course Number	Course Title	Credit Hours	General Education	W/O Course	Notes
<i>Fall Semester</i>					
ECGR 4241	Electrical Engineering Senior Design I	2		W,O	
ECGR 4123	Analog and Digital Comm. or ECGR 4124 Digital Signal Processing	3			4123 or 4124
ECGR 4XXX	4000 Level ECGR Course	3			
ECGR 4XXX	4000 Level ECGR Course	3			
ECGR 3159	Professional Practice	2			
LBST 2XXX	LBST 2101, LBST 2102, or LBST 221X	3	X		
<i>Spring Semester</i>					
ECGR 4242	Electrical Engineering Senior Design II	3			
MEGR 3111	Thermodynamics I	3			
PHYS 4231	Electromagnetic Theory I (Restricted Elective)	3			*Counts towards both degrees
ECGR 4XXX	4000 Level ECGR Course	3			
ECGR 4XXX	4000 Level ECGR Course	3			
ECON 2101	Principles of Economics Macro (or ECON 2102 Prin. of Econ. Micro)	3	X		

34 Credit Hours for Year

Additional Semester					
Course Number	Course Title	Credit Hours	General Education	W/O Course	Notes
<i>Fall Semester</i>					
PHYS 4241	Quantum Mechanics I (non ECGR Technical Elective)	3			
PHYS XXXX	PHYS Elective (must be 3000-4000 level and from approved list)	3			
					6 Credit Hours for Year

Other layouts are possible, particularly with summer courses. For whatever layout students choose, they must abide by the prerequisites and progression policies of both departments.

ADVISING RESOURCES

- General Education Requirements for ALL Students: ucol.uncc.edu/general-education
- Undergraduate Catalog: catalog.uncc.edu
- Central Advising website: advising.uncc.edu
- College of Liberal Arts & Sciences advising website: clas.uncc.edu/students/Advising-News/
- William States Lee College of Engineering advising website: coe.uncc.edu/current-students/advising.html
- University Advising Center website: advisingcenter.uncc.edu