



B.S. in Computer 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:** 131 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 (jmcnei@uncc.edu, 704-687-8445, EPIC 2242); (Physics) Dr. Tom Suleski, tsuleski@uncc.edu

PROGRAM REQUIREMENTS

To obtain a dual B.S. degree in Computer Engineering and Physics, an undergraduate student must complete all requirements for the B.S.Cp.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 3141 (Introduction to Modern Physics), PHYS 4231 (Electricity and Magnetism), PHYS 4241 (Quantum Mechanics). **Students must also complete MATH 2241.** A B.S. in Physics under this program will be awarded at the same time as or after the B.S.Cp.E.; the B.S. 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 *Undergraduate Catalog* for additional information).

Areas	Credit Hours	Description
Pre-Major/Prerequisites	24	8 hours natural science (CHEM 1251+Lab, PHYS 2101+Lab), 6 hours mathematics (MATH 1241, MATH 1242), 4 hours of introduction to engineering (ENGR 1201, ENGR 1202), and ECGR 2103 and ECGR 2104.
Major (Engineering)	44	
Major (Physics)	12*	These hours are in addition to physics classes required by the engineering major
General Education <i>(not satisfied by other major requirements)</i>	18	3 hours English (UWRT 1103 or UWRT 1104), 12 hours Liberal Studies (LBST 11XX; two of: LBST 2101, LBST 2102, or LBST 221X; and LBST 2301), 3 hours Social Sciences (ECON 2101 or ECON 2102)
Related Work	20	15 hours Mathematics (MATH 2171, MATH 1165, MATH 2241, MATH 2164, STAT 3128), 4 hours Natural Sciences (PHYS 2102+Lab), 1 hour Engineering (ENGR 3295)
Foreign Language	-	
Electives	18	9 hours Depth Elective requirements, 9 hours Technical Elective requirements
Total Credit Hours	133	*3 credit hours may be used to fulfill Restricted Technical Elective requirement.

SUGGESTED PLAN OF STUDY

Freshman Year					
Course Number	Course Title	Credit Hours	General Education	W/O Course	Notes
Fall Semester					
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		
Spring Semester					
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			
ECGR 2104	Computer Engineering Programming II	3			
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
Fall Semester					
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			
PHYS 2102L	Physics for Science and Engineering II Lab	1			
Spring Semester					
ECGR 2112	Network Theory II	3			
ECGR 2156	Logic and Networks Laboratory	1	X	W	
ECGR 2252	ECE Sophomore Design	2		O	
MATH 2241	Calculus III	3			
MATH 2164	Matrices and Linear Algebra	3			
PHYS 3141	Intro to Modern Physics (Math or Science Restricted Elective)	3			*Counts towards both degrees (Available Summer)
LBST 2301	Critical Thinking and Communication	3	X		

32 Credit Hours for Year

Junior Year					
Course Number	Course Title	Credit Hours	General Education	W/O Course	Notes
Fall Semester					
ECGR 3111	Signals and Systems	3			
ECGR 3131	Fundamentals of Electronics and Semiconductors	3			
ECGR 3155	Systems and Electronics Lab	1	X	W	
ECGR 3183	Computer Organization	3			
MATH 1165	Introduction to Discrete Structures	3			
LBST 2XXX	LBST 2101, LBST 2102, or LBST 221X	3	X		
Spring Semester					
ECGR 3101	Embedded Systems	3		O	
ECGR 3123	Data Communications and Networking	3			
ECGR 3132	Electronics	3			
ECGR 3157	ECE Junior Design	2			
ECON 2101	Principles of Economics Macro (or ECON 2102 Prin. of Econ. Micro)	3	X		
LBST 2XXX	LBST 2101, LBST 2102, or LBST 221X	3	X		

33 Credit Hours for Year

Senior Year					
Course Number	Course Title	Credit Hours	General Education	W/O Course	Notes
Fall Semester					
ECGR 4251	Computer Engineering Senior Design I	2		W,O	
XXXX XXXX	Depth Elective #1	3			
ECGR 4124	Digital Signal Processing	3			
ENGR 3295	Professional Development	1			
PHYS 3121	Classical Mechanics (Technical Elective #1)	3			*Counts towards both degrees
STAT 3128	Probability & Statistics for Engineers	3			
Spring Semester					
ECGR 4252	Computer Engineering Senior Design II	3	X	W,O	
ECGR 3159	Professional Practice	2			
XXXX XXXX	Depth Elective #2	3			
PHYS 4231	Electromagnetic Theory I	3			*Physics Degree
ECGR 4XXX	Technical Elective #2	3			
ECGR 4XXX	Technical Elective #3	3			

32 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	3			*Physics Degree
XXXX XXXX	Depth Elective #3	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