



# Bachelor of Science in Electrical Engineering (BSEE)

## Academic Plan of Study

William States Lee College of Engineering  
Department of Electrical and Computer Engineering  
[ece.uncc.edu](http://ece.uncc.edu)

### PROGRAM SUMMARY

- **Credit Hours:** 124 hours
- **Concentrations:** Power and Energy Systems
- **Declaring the Major:** Minimum GPA of 2.0 required if already in the College of Engineering, 2.5 if transferring from outside of the College of Engineering; must have completed freshman year requirements with a C or better. For freshman and transfer admission requirements; and the online application, please visit the UNC Charlotte's Undergraduate Admissions website at <http://admissions.uncc.edu>.
- **Advising (For the Major):** Required, college advisors for freshmen or departmental advisors for sophomore-seniors.
- **Advising (For General Education):** by CLAS advising center.
- **Minimum Grades/GPA:** GPA of 2.0 overall and in the major required for graduation.
- **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):** Mrs. Jerena McNeil Undergraduate Student Services Specialist ([jmcnei34@uncc.edu](mailto:jmcnei34@uncc.edu), 704-687-8445, EPIC 2242)

### PROGRAM REQUIREMENTS

The Electrical Engineering (B.S.E.E.) degree has a very structured curriculum. An eight-semester sequence of courses at more than a full-time load forms the core of the curricula to develop the concepts and design and analysis techniques fundamental to the various areas of specialization. This program should be initiated early while at UNC Charlotte. Beginning the program late or after transferring from another institution will likely delay completion within 4 years. Students interested in majoring in Electrical Engineering must complete all freshman level courses with a C or above and earn a minimum GPA of 2.5 before completing a Change of Major form to apply to the program.

Emphasis is placed on the utilization of computers throughout the curricula. Our graduates have a wide range of job opportunities as power engineers, communication engineers, digital design engineers, test engineers, embedded system developers, network engineers, control engineers, project engineers, robotic system engineers, optoelectronic engineers, application engineers, analog engineers, medical product engineers, and process engineers.

Areas	Credit Hours	Description
<b>Pre-Major/ Prerequisites</b>	21	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
<b>Major</b>	48	
<b>General Education (not satisfied by other major requirements)</b>	18	3 or 4 hours English (UWRT 1103 or UWRT 1104), 12 hours Liberal Studies (LBST 11xx, LBST 2301, and two of LBST 2101, LBST 2102, LBST 22XX), and 3 hours Social Sciences (ECON 2101 or ECON 2102)
<b>Related Work</b>	19	9 hours Mathematics (MATH 2171, MATH 2241, STAT 3128), 6 hours Natural Sciences (PHYS 2102, PHYS 3141), 4 hours Engineering (ENGR 3295, MEGR 3111)
<b>Foreign Language</b>	-	
<b>Electives</b>	18	12 hours of 4000-level ECGR courses not specified in the curriculum, 3 hour Technical Electives (3000 or above ECGR courses not specified in the curriculum, or non-ECGR courses dealing with engineering science, analysis, synthesis, or design), 3 hours Science or Math Elective (Mathematics, statistics, or natural sciences at a higher level than in Plan of Study)
<b>Total Credit Hours</b>	124	

### **Electrical Engineering - Technical Electives**

The Fall 2015 B.S.E.E. curriculum requires fifteen (15) hours of technical electives. **Twelve (12) hours of these technical electives must be chosen from 4000 level ECGR courses** while the remaining three (3) may be chosen from any 3000 level and higher ECGR courses that are not part of the degree requirements, or non-ECGR course dealing with engineering science, analysis, synthesis, or design. Co-op students may count up to three (3) hours of ECGR 3695 co-op course toward their technical elective requirements. **Individual study and Undergraduate Research** courses **may not be taken as technical electives.**

#### **Limit of One *outside* of the department.**

Consistent with the student's educational objectives and in consultation with their academic advisor, up to three (3) hours of the technical electives may be taken outside the ECE Department. The following process should be used in selecting this **non-ECGR technical elective course**:

1. A 3-hour 3000-level or above course that is consistent with the student's educational objectives, and is more advanced than similar courses that are required by the student's academic plan of study, should be selected by the student and approved by his/her academic advisor **and** the Department Associate Chair.
2. The student **must seek the approval of his/her advisor and** the Associate Chair **before** taking the course.
3. In cases when a student request transfer credits for the non-ECGR technical elective, the Department Associate Chair will evaluate the request to determine whether or not the requested transfer credits are consistent with the requirements in (1) above.

## SUGGESTED PLAN OF STUDY – BSEE

Freshman Year					
Course Number	Course Title	Credit Hours	General Education	W/O Course	Notes
<b>Fall Semester</b>					
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		
<b>Spring Semester</b>					
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	Liberal Studies Course (LBST 2101, LBST 2102, or LBST 22XX)	3	X		
UWRT 1103	Writing and Inquiry in Academic Contexts I & II ( <u>Or</u> UWRT 1104)	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
<b>Fall Semester</b>					
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			
LBST 2301	Critical Thinking & Communication	3	X		
<b>Spring Semester</b>					
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			
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
<b>Fall Semester</b>					
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			
LBST 2XXX	Liberal Studies Course (LBST 2101, LBST 2102, or LBST 22XX)	3	X		
<b>Spring Semester</b>					
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
<b>Fall Semester</b>					
ECGR 3159	Professional Practice	2			
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			
XXXX XXXX	Technical Elective	3			
<b>Spring Semester</b>					
ECGR 4242	Electrical Engineering Senior Design II	3			
MEGR 3111	Thermodynamics I	3			
ECGR 4XXX	4000 Level ECGR Course	3			
ECGR 4XXX	4000 Level ECGR Course	3			
ECON 2101	Principles of Econ. Macro or ECON 2102 Principles of Econ. Micro	3	X		

31 Credit Hours for Year

## **ADVISING RESOURCES**

- General Education Requirements for ALL Students: [ucol.uncc.edu/general-education](http://ucol.uncc.edu/general-education)
- Undergraduate Catalog: [catalog.uncc.edu](http://catalog.uncc.edu)
- Central Advising website: [advising.uncc.edu](http://advising.uncc.edu)
- William States Lee College of Engineering advising website: [coe.uncc.edu/current-students/advising.html](http://coe.uncc.edu/current-students/advising.html)
- University Advising Center website: [advisingcenter.uncc.edu](http://advisingcenter.uncc.edu)