

## ELECTRICAL ENGINEERING ACADEMIC MAP: DEGREE BS (128 CREDIT HOURS)

This degree map is a semester-by-semester course schedule for students majoring in [Electrical Engineering](#). The milestones listed to the right of each semester are designed to keep a student on track to graduate in four years. The schedule serves as a general guideline to help build a full schedule each semester. Milestones are courses and special requirements necessary for timely progress to complete a major. When one or more milestones are missed, students should consult with an academic advisor to determine if another degree path would be more suitable. The College of Engineering encourages students to meet with the academic advisor at the beginning of each semester.

The goal of the undergraduate program in Electrical Engineering is to offer a high quality, broad-based degree that is complimented by basic applied research, public service, and preparation of its graduates for starting positions in industry, government and/or pursue graduate study in related fields. Engineering is a profession in which the knowledge of mathematics and natural science is crucial. One of the major engineering curriculum objectives at Tennessee State University is to provide students with the ability to systematically apply engineering fundamentals to the design of engineering components, systems and processes. Electrical engineering students build upon basic sciences through engineering science and design courses. Thus, entering students must have a strong background in mathematics and science.

In order to provide students with the best opportunity for success in Engineering, the Department has devised a plan for student enrollment in the mathematics courses needed to complete the degree. Students who have an ACT score (or Equivalent SAT) of 23 or a grade of "C" or better in Math 1710, 1720 – Pre-calculus I and II courses may enroll in the required course MATH 1920. The score of 19 or better on the ACT. Students scoring below a 19 on the ACT will be placed in courses based upon ACT (or Equivalent SAT) sub-scores in Mathematics. Students who have satisfied all placement requirements determined at the time of admission should follow the four-year curriculum as detailed in the tables below. To make steady progress towards the degree, students must complete each course with a grade of 'C' or better. Electrical engineering students must have a grade of "D" in prerequisite courses. The grade of "D" in pre-requisite and major courses must be repeated the next time the course is offered. Students cannot graduate with more than two "D" grades.

Another milestone for students in the program is sitting for the Engineering Entrance Examination (EEE). Students must pass this exam with, a score of 75% overall and 75% on each part (calculus, chemistry and physics) before being allowed to enroll in upper division courses (3000-4000 level). Eligibility criteria for taking the EEE are: (1) a minimum Grade Point Average of 2.5 in the following courses: CHEM 1110/1111, MATH 1910, MATH 1920, PHYS 2110/2111, PHYS 2120, (2) a minimum cumulative Grade Point Average of 2.5, and (3) completion and submission of the EEE eligibility form to the Dean's Office at least one week prior to the examination. The college offers the exam at least five (5) times per year. Each student is allowed three (3) attempts to pass the examination. After the second attempt, the student is required to take at least one of the following courses: CHEM 1110, MATH 1910 or MATH 1920, PHYS 2110 before the examination can be taken a third and final time. Transfer students must successfully complete the examination before taking 3000 level courses.

Between the sophomore and senior years, students must engage in a practical engineering work experience. This practicum is a full-time, continuous eight (8) week activity. Seniors must take an exit examination (Senior Exit Exam) prior to graduation and they must enroll in ENGR 4201 – Engineer-in-Training Lab and receive a satisfactory grade. At the beginning of the final year, students must meet with the academic advisor and file an approved graduation check list; seniors should come prepared with the latest transcript and any evaluation of transfer credits. It must be remembered that during the final year, students are unable to transfer more than six (6) credit hours.

Tennessee State University recognizes that students have diverse learning, life, and professional experiences. The University provides opportunities for students to earn college credit toward the degree through a number of assessment options that evaluate their learning experiences. These paths are grouped under the category "Prior Learning Assessment" (PLA). Various means of earning PLA credit at TSU are the following: Advance Placement Program, American Council of Education (ACE) Military Credit, American Council on Education (ACE) other Assessed Credit, College Level Exam Program (CLEP), DSST Credit by Examination Program (includes DANTES Examination), Institutional Course Challenge Exams (Departmental Exams),

International Baccalaureate Credit, Other Military Service, Portfolio Assessment. To learn more about PLA contact your academic advisor or the Office of Student Support Services for Adult and Distance Learners (615) 963-7001.

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Fall Schedule		Milestones
<b>Semester 1</b>	<b>Hrs.</b>	<b>Semester 1</b>
ENGL 1010	3	Minimum Grade of "C" Required
MATH 1910*	4	Pre-requisite Course: Must be taken before PHYS 2110/2111; Minimum Grade of "C" Required
CHEM 1110/1111**	4	Pre-requisite Course: Must be taken before ENGR 3300; Minimum Grade of "C" Required
ENGR 1020	1	Minimum Grade of "C" Required
ENGR 1151	1	Minimum Grade of "C" Required
UNIV 1000 ***	1	Minimum Grade of "C" Required
<b>Total Hours</b>	<b>14</b>	

\*Before taking this course, students should discuss with an engineering academic advisor previous mathematic course experience(s) or scores on the ACT or SAT.

\*\*Students must have taken either High School Chemistry earning at least a 75% or CHEM 1000/1001 and two years of High School Algebra before enrolling in CHEM 1110/1111.

\*\*\*An orientation courses taken at another University does **NOT** meet this requirement. Students with less than 60 credit hours must take UNIV 1000 at TSU

Spring Schedule		Milestones
<b>Semester 2</b>	<b>Hrs.</b>	<b>Semester 2</b>
ENGL 1020	3	Minimum Grade of "C" Required
MATH1920*	4	Co-Requisite Course: Must be taken with PHYS 2110/2111; Pre-requisite Course: Must be taken before enrolling in MATH 2110; Minimum Grade of "C" Required
PHYS 2110/2111*	4	Minimum Grade of "C" Required
COMM 2200	3	
Humanities Elective**	3	
<b>Total Hours</b>	<b>17</b>	

\*These courses are co-requisites and must be taken simultaneously.

\*\*Students must take a 3 credit hour course from the following list of approved general education Humanities courses: AREN 2310, ART 1010, HIST 1000, THTR 1020, MUSC 1010, PHIL 1030, or RELS 2010.

Fall Schedule		Milestones
<b>Semester 3</b>	<b>Hrs.</b>	<b>Semester 3</b>
MATH 2110	4	Pre-requisite Course: Must be taken before MATH 3120, ENGR 2000/2001; Minimum Grade of "C" Required
PHYS 2120/2121	4	Pre-requisite Course: Must be taken before Math 3120, ENGR 2000/2001, ENGR 2250, ENGR 3300; Minimum Grade of "C" Required
ENGR 2110	3	Pre-requisite Course: Must be taken before ENGR 2120; Minimum Grade of "C" Required
ENGR 2230	3	Pre-requisite Course: Must be taken before EECE 3061, ENGR 3400 ; Minimum Grade of "C" Required
HIST 2010	3	
<b>Total Hours*</b>	<b>17</b>	Engineering Entrance Exam/Application Required

\*All Students are required to take and pass Engineering Entrance Exam before enrolling in upper division (3000-4000) Engineering courses.

Spring Schedule		Milestones
Semester 4	Hrs.	Semester 4
MATH 3120*	3	Pre-requisite Course: Must be taken before EECE 2120, ENGR 3400 ; Minimum Grade of "C" Required
ENGR 2000/2001*	4	Co-Requisite with MATH 3120: Pre-requisite Course; Must be taken before EECE 3100, EECE 3300; Minimum Grade of "C" Required
ENGR 2250	3	Minimum Grade of "C" Required
ENGR 2120	3	Minimum Grade of "C" Required
HIST 2020	3	
<b>Total Hours</b>	<b>16</b>	

\*These courses are co-requisites and must be taken simultaneously.

Fall Schedule		Milestones
Semester 5	Hrs.	Semester 5
EECE 2120	3	Pre-requisite Course: Must be taken before EECE 3200, EECE 3210 and EECE 3410; Minimum Grade of "C" Required
EECE 3100/3101	4	Minimum Grade of "C" Required
ENGR 3200	3	Pre-requisite Course: Must be taken before EECE 3410, EECE 4000, EECE 3500; Minimum Grade of "C" Required
ENGR 3300	2	Minimum Grade of "C" Required
EECE 3061	1	Pre-Requisite Course: Must be taken before EECE 4310; Minimum Grade of "C" Required
ENGR 4400	3	Minimum Grade of "C" Required
<b>Total Hours</b>	<b>16</b>	

Spring Schedule		Milestones
Semester 6	Hrs.	Semester 6
EECE 3200	3	Pre-requisite Course: Must be taken before EECE 4000, EECE3500; Minimum Grade of "C" Required
EECE 3300/3301	4	Pre-requisite Course: Must be taken before EECE 4101 Minimum Grade of "C" Required
ENGR 3400	3	Minimum Grade of "C" Required
EECE 3210	3	Pre-requisite Course: Must be taken before EECE 3420 Minimum Grade of "C" Required
ENGL 2110 or ENGL 2310*	3	
<b>Total Hours**</b>	<b>16</b>	Practicum

\*The department recommends the courses cited above; however, courses within the range of ENGL 2012 through ENGL 2322 will meet this requirement.

\*\*Each engineering student must complete a practicum prior to graduation. The experience must be eight (8) weeks in length and pre-approved by the advisor and the Department Chair.

Fall Schedule		Milestones
Semester 7	Hrs.	Semester 7
ENGR 4500*	1	Minimum Grade of "C" Required
EECE 3410	3	Minimum Grade of "C" Required
EECE 4000/4001	4	Minimum Grade of "C" Required
EECE 3500	3	Minimum Grade of "C" Required
ENGR 4201*	0	Minimum Grade of "S" Required
EECE 4101	1	Minimum Grade of "C" Required
Social Science **	3	
<b>Total Hours***</b>	<b>15</b>	Program Review

\*Only graduating seniors may enroll in these courses: ENGR 4500 and ENGR 4201.

\*\*Select one (1) of the following courses to meet the Social Science requirement AFAS 2010, ANTH 2300, ECON, 2010, GEOG 1010, HPSS 1510, POLI 1010 PSYC 2010, WMST 2000, and URBS 2010.

\*\*\*All electrical engineering majors must review degree requirements with the Department Chair at least one semester prior to the semester in which graduation is anticipated.

Spring Schedule		Milestones
Semester 8	Hrs.	Semester 8
		Take Senior Exit Exam and Apply for Graduation
ENGR 4510*	1	Minimum Grade of "C" Required
EECE 3420	3	Minimum Grade of "C" Required
Humanities**	3	
Technical Elective***	3	Minimum Grade of "C" Required
ENGR 4900 *	1	Minimum Grade of "C" Required
Technical Elective***	3	Minimum Grade of "C" Required
Social Science****	3	
<b>Total Hours*****</b>	<b>17</b>	

\*Only graduating seniors may enroll in these courses: ENGR 4510 and ENGR 4900.

\*\*Students must take a 3 credit hour course from the following list of approved general education Humanities courses: AREN 2310, ART 1010, HIST 1000, THTR 1020, MUSC 1010, PHIL 1030, or RELS 2010. Students must remember not to duplicate a Humanities course option from a previous semester.

\*\*\*Students must meet with an academic advisor to enroll in the one of the following technical electives: EECE 3330, EECE 3430, EECE 4020, EECE 4100, EECE 4150, EECE 4300, EECE 4350, EECE 4410, EECE 4360, EECE 4361, and EECE 4800.

\*\*\*\*The following courses can meet the Social Science requirement: AFAS 2010, ANTH 2300, ECON, 2010, GEOG 1010, HPSS 1510, POLI 1010 PSYC 2010, WMST 2000, and URBS 2010. Students must remember not to duplicate a Humanities course option from a previous semester.

\*\*\*\*\*Students planning to graduate must take the Senior Exit Exam and apply for graduation.

### **Employment Information:**

Electrical Engineering graduate students have many opportunities, such as seek employment with federal agencies, defense industry such as Boeing, Lockheed Martin, Harris Corporations, and private utility companies such as NES, TVA Georgia Power, and manufacturing plants such as GM. Our graduates also seek employment with communication companies such as AT&T Bell Labs. Some students continue their education and seek a Master Degree in Electrical Engineering, MBA, Law or Medicine. Over 30 percent of Electrical Engineering graduates pursue graduate study. Most other Electrical Engineering graduates also work in consulting engineering and research labs.

### **Representative Job Titles Related to this Major:**

Job titles for Electrical Engineering graduates vary based upon prior experience in industry. Those with no experience may start as training on rotation to find the most fit for interest others start as design engineers or electrical engineer under the supervision of a senior engineer as part of a team. With experience, the titles change to reflect experience, responsibility and income leading to senior engineer title, project engineer, project manager, etc.

**Representative Employers:**

Representative employers include utility companies such as TVA, Georgia Power, NES, defense industry such as Lockheed Martin, Boeing, GE, Harris Corp, and Manufacturing industry such as GM, Ford Motor, SISCO, etc.

**Graduate Study leading up to Ph.D. degree is available:**

The department offers concentration in Electrical Engineering and Biomedical Engineering under the Master of Engineering Program and M.S. in Computer, Information and Systems Engineering. We also offer two concentrations under the Ph.D. in Computer, Information and Systems Engineering. Eligible students are encouraged to pursue graduate study at Tennessee State University

**International study is available for all TSU students and may include opportunities for internships or taking course work towards various minors.** International study may have an impact on the MAP; therefore, it is important to consult with the academic advisor for this major before participating in an international Program opportunity. Students interested in study abroad opportunities should contact the Office of International Programs and consult with their academic advisor.

This map is not intended to be a contract; either expressed or implied, between the University and the students, but represents a flexible program of the current curriculum which may be altered from time to time to carry out the academic objectives of the University. TSU specifically reserves the right to change, delete or add to any MAP at any time within the student's period of study at the University.

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