

**ELECTRICAL ENGINEERING, CONCENTRATION—COMPUTER ENGINEERING ACADEMIC MAP: DEGREE  
BS (128 CREDIT HOURS)**

This degree map is a semester-by-semester course schedule for students majoring in **Electrical Engineering with concentration in Computer 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 mission of the Department of Electrical and Computer Engineering, commensurate with the mission of the University and the College of Engineering, is to provide quality Electrical Engineering, Computer and Information Systems Engineering, and Biomedical Engineering education, pursue basic and applied research in selected and focused critical areas, and engage in service to its constituents.

The goal of the undergraduate program offered by the Department of Electrical and Computer Engineering at Tennessee State University is to offer a high quality, broad-based program in electrical engineering, complemented by basic and applied research and public service, to prepare its graduates for starting positions in industry, government and/or pursue graduate study in related fields.

The Bachelor of Science in Electrical Engineering BSEE with a Concentration in Computer Engineering provides a broad based background in electrical engineering that builds upon basic sciences through engineering science, computer science and engineering design leading to a capstone design during the senior year. This means entering student must have a strong background in mathematics and science. Student who has satisfied all placement requirements determined at the time of admission must follow the four-year curriculum as detailed in the tables below. To make steady progress towards degree, student must complete each course with a grade of 'C' or better. Student must have a grade of 'C' in prerequisite courses to take the next course but must also repeat the 'D' grade the very next time that prerequisite course is offered. Student cannot graduate with more than two 'D' grades and cannot carry them to the senior year.

Another milestone for students is the Engineering Entrance Examination (EEE). Students with a minimum Grade Point Average of 2.5 in the following courses: CHEM 1110/1111, MATH 1910, MATH 1920, PHYS 2110/2111, PHYS 2120, and with a minimum cumulative Grade Point Average of 2.5 are waived from taking the EEE. Students with less than 2.5 GPA, must pass this exam with, a score of 76% overall and 75% on each part (calculus, chemistry and physics) before being allowed to enroll in upper division courses (3000-4000 level).

During the period from sophomore year to senior year, student must gain practical engineering experience for a full-time equivalent of eight (8) weeks and take the ETS (Senior Exit Exam) during the final year of graduation. Also during the senior year, student must take ENGR 4201 – Engineer-in-Training Lab and pass with a satisfactory grade. The student should select Humanities and Social studies courses only from the TBR approved list of course or General Education Courses listed in the TSU catalog. Technical elective courses must be taken after approval of the advisor and the department head also from approved list of courses. Student must seek approval of the academic advisor for courses to be taken every semester. At the beginning of the final year of graduation, student must meet with the academic advisor and file an approved graduation check list along with latest transcript and a copy of the approved evaluation of transfer credits from the graduation application.

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: Advanced Placement Program, American Council of Education (ACE) Military 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 at (615) 963-7001 or [adultstudentsupport@tnstate.edu](mailto:adultstudentsupport@tnstate.edu).

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**Department Web Address: <http://www.tnstate.edu/ece/>**

<b>Fall Schedule</b>		<b>Milestones</b>
<b>Semester 1</b>	<b>Hrs.</b>	<b>Semester 1</b>
ENGL 1010	3	Pre-requisite Course: Must be taken before ENGL 1020, and HIST 2010, HIST 2020, HIST 2030, HIST 2060, HIST 2070, or HIST 2700; Minimum grade of "C" Required.
MATH 1910*	4	Pre-requisite Course: Must be taken before MATH 1920; PHYS 2110/2111; and ENGR 2230. 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	Pre-Requisite Course: Must be taken before ENGR 2230; Minimum Grade of "C" Required.
EECE 1151	1	Minimum Grade of "C" Required.
UNIV 1000***	1	
<b>Total Hours</b>	<b>14</b>	

\* Before taking this course, students should discuss with an engineering academic advisor previous mathematics courses 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.

<b>Spring Schedule</b>		<b>Milestones</b>
<b>Semester 2</b>	<b>Hrs.</b>	<b>Semester 2</b>
ENGL 1020	3	Pre-Requisite Course: Must be taken before taking HIST 2010, HIST 2020, HIST 2030, HIST 2060, HIST 2070, or HIST 2700; Minimum grade "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	Co-Requisite Course: Must be taken with MATH1920; Pre-requisite Course: Must be taken before PHYS 2120/2121, MATH 3120, and ENGR 2110; Minimum Grade of "C" Required.
COMM 2200	3	Minimum Grade of "C" Required.
Humanities**	3	Minimum Grade of "C" Required.
<b>Total Hours</b>	<b>17</b>	

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

\*\* Humanities and Social Science electives must be chosen from an approved list with the approval of the academic advisor.

<b>Fall Schedule</b>		<b>Milestones</b>
<b>Semester 3</b>	<b>Hrs.</b>	<b>Semester 3</b>
MATH 2110	4	Pre-Requisite Course: Must be taken before enrolling in, ENGR 2000 and ENGR 2001; Minimum Grade of "C" Required.
PHYS 2120/2121	4	Pre-requisite Course: Must be taken before ENGR 2000/2001, ENGR 2250, ENGR 3300; Minimum Grade of "C" Required.
ENGR 2110	3	Pre-Requisite Course: Must be taken before enrolling in Math 1920 and ENGR 2000, 2001 and 2120; Minimum Grade of "C" Required
ENGR 2230	3	Pre-Requisite Course: Must be taken before ENGR 2000, ENGR 2001, ENGR 3061 and ENGR 3400; Minimum Grade of "C" Required.
HIST 2010*	3	Minimum Grade of "C" Required.
<b>Total Hours</b>	<b>17</b>	

\*The Department recommends HIST 2010; however, HIST 2030, HIST 2060, HIST 2070 or HIST 2700 satisfy this requirement.

<b>Spring Schedule</b>		<b>Milestones</b>
<b>Semester 4</b>	<b>Hrs.</b>	<b>Semester 4</b>
		<b>All Students are required to take and pass the Engineering Entrance Exam (EEE) before enrolling in upper division (3000-4000) Engineering and major courses.</b>
MATH 3120*	3	Co-Requisite with ENGR2000/2001; Pre-requisite Course: Must be taken before EECE 2120, ENGR 3400; Co-requisite with ENGR 2000 and ENGR 2001 Minimum Grade of "C" Required.
ENGR 2000/2001*	4	Co-Requisite with MATH 3120; Pre-requisite Course: Must be taken before EECE 2120, EECE 3100, EECE 3101; EECE3301; 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>	

All students are required to take and pass the Engineering Entrance Examination (EEE) prior to enrolling in the Junior and Senior level major (EECE) and engineering (ENGR) courses. EEE Score \_\_\_\_\_ Date \_\_\_\_\_

<b>Fall Schedule</b>		<b>Milestones</b>
<b>Semester 5</b>	<b>Hrs.</b>	<b>Semester 5</b>
EECE 2120	3	Pre-requisite Course: Must be taken before EECE 3200, EECE 3210 and EECE 3300; EECE 3410; Minimum Grade of "C" Required.
EECE 3100/3101	3	Pre-requisite Course: Must be taken before EECE 4150; EECE 4300; EECE 4360/4361 and EECE 4800. Minimum Grade of "C" Required.
ENGR 3250	3	Pre-requisite Course: Must be taken before EECE 3410; EECE 3500; EECE 4000, EECE 4100; EECE 4300; EECE 4410; EECE 4800; ENGR 4500. Minimum Grade of "C" Required.
ENGR 3300	2	Pre-requisite Course: Must have taken Before EECE 3300; Minimum Grade of "C" Required.
EECE 3061	1	Pre-Requisite Course: Must be taken before enrolling in 4310 Minimum Grade of "C" Required.
ENGR 4400	3	Minimum Grade of "C" Required.
<b>Total Hours</b>	<b>16</b>	

<b>Spring Schedule</b>		<b>Milestones</b>
<b>Semester 6</b>	<b>Hrs.</b>	<b>Semester 6</b>
EECE 3200	3	Pre-requisite Course: Must be taken before EECE 3500, EECE 4000; EECE 4100; EECE 4350. Minimum Grade of "C" Required.
EECE 3300/3301	4	Pre-requisite Course: Must be taken before EECE 3330; EECE 4101; EECE 4150. Minimum Grade of "C" Required.
ENGR 3400	3	Pre-requisite Course: Must be taken before EECE 3420. Minimum Grade of "C" Required.
EECE 3210	3	Co-requisite Course: Must be taken with EECE 3420; Minimum Grade of "C" .
ENGL	3	Literature
<b>Total Hours**</b>	<b>16</b>	<b>Engineering Practicum</b>

\*The Department recommends one of 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
<b>Semester 7</b>	<b>Hrs.</b>	<b>Semester 7</b>
		<b>All Electrical Engineering - Computer Engineering majors must review degree requirements with the Departmental Chair at least one semester prior to the one in which graduation is anticipated.</b>
ENGR 4500*	1	Pre-Requisite Course: Senior Standing; Must be taken before ENGR 4510 Minimum Grade of "C" Required.
EECE 4300	3	Minimum Grade of "C" Required.
EECE 4360/4361	4	Minimum Grade of "C" Required.
EECE 3500	3	Minimum Grade of "C" Required.
ENGR 4201*	0	Pre-Requisite: Senior Standing; Minimum Grade of "S" Required
EECE 4101	1	Minimum Grade of "C" Required.
Social Elective**	3	
<b>Total Hours</b>	<b>15</b>	

\*Must be a graduating senior to enroll in these courses: ENGR 4500 and ENGR 4201.

\*\*Humanities and Social Science electives must be chosen from an approved list with the approval of the academic advisor.

Spring Schedule		Milestones
<b>Semester 8</b>	<b>Hrs.</b>	<b>Semester 8</b>
		Take Senior Exit Exam and Apply for Graduation.
ENGR 4510*	1	Must Be a Graduating Senior; Minimum Grade of "C" Required.
EECE 4310	3	Minimum Grade of "C" Required.
Humanities**	3	
EECE 4800	3	Minimum Grade of "C" Required.
ENGR 4900*	1	Must be a Graduating Senior. Minimum Grade of "C" Required.
Technical Elective***	3	Minimum Grade of "C" Required.
Social Science Elective ****	3	
<b>Total Hours</b>	<b>17</b>	

- (1) Technical and design electives must be chosen from the following courses with approval from the advisor  
(EECE 33030, 3430, 4020, 4150, 4300, 4410, 4630, 4631, 4800)
- (2) Social Science and Humanities Electives must be chosen from the approved list of general education courses.
- (3) ENGR 4201 Engineering-in Training course must be taken during the graduation year. Student must pass this course with a satisfactory grade. Selected students will be encouraged to take the FE/EIT exam.
- (4) Students must provide proof of practicum experience of a minimum of continuous eight (8) weeks.  
Organization \_\_\_\_\_ Location \_\_\_\_\_ Dates \_\_\_\_\_ Supervisor \_\_\_\_\_
- (5) Student must take the ETS examination in the Final year. ETS date: \_\_\_\_\_ ETS score \_\_\_\_\_

**Employment Information:**

Electrical Engineering, with concentration in Computer Engineering graduates have many opportunities such as employment with federal agencies, defense industry such as Boeing, Lockheed Martin, Harris Corporations, and private utility companies such as NES, TVA Georgia Power, manufacturing plants such as GM and software development companies such as Microsoft, Intel and IBM. Our graduates also seek employment with communication companies such as AT&T Bell Labs. Some students continue their education and seek a Master's degree in Electrical or Software Engineering, MBA, Law or Medicine. Over 30 percent of Electrical Engineering graduates pursue graduate study. Electrical Engineering graduates who had a concentration in Computer Engineering can work in engineering and research labs.

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

Job titles for Electrical Engineering graduates, with concentration in Computer Engineering, 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 programmers and software engineers, or software developers 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 software engineer title, quality assurance engineering, project manager, etc.

**Representative Employers:**

Representative employers include Information Systems industry such as health industry, defense industry such as Lockheed Martin, Boeing, GE, Harris Corp, and software development industry such as IBM, Microsoft, yahoo, 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 academic 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.