

**MECHANICAL and MANUFACTURING ENGINEERING ACADEMIC MAP:
DEGREE BS (128 CREDIT HOURS)**

This degree map is a semester-by-semester sample course schedule for students majoring in **Mechanical and Manufacturing Engineering**. The milestones listed to the right of each semester are designed to keep you 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.

All Mechanical Engineering students are required to take the following engineering core courses: Mathematics (18 semester hours): MATH 1910, 1920, 2110, 3120, ENGR 3400; Science (12 semester hours): CHEM 1110, 1111; PHYS 2110, 2111, 2120, 2121; Engineering Science (15 semester hours): ENGR 2000, 2001, 2010, 2110, 2120, 3300; Engineering design Courses (5 semester hours): ENGR 3200, 4500, 4510; Humanities (9 semester hours of which three (3) hours must be a sophomore literature course from the approved Humanities/Fine Arts list); Social Science (6 semester hours); History (6 semester hours): HIST 2010, 2020 or 2030; Other (16 semester hours): ENGL 1010, 1020, COMM 2200; UNIV 1000, ENGR 1020, 1151, 2230, 4201, 4900 and a three credit-hour mathematics/science elective. Total Engineering Core - 90 semester hours.

In addition to the University requirements for graduation, the following specific College graduation requirements must be met by students in the College:

1. All "D" grades earned in mathematics, science, departmental, or major courses must be repeated the very next time the courses are offered until a minimum grade of "C" is earned. However, students may graduate with a maximum of two "D" grades in these courses.
2. All Mechanical Engineering students who plan to take upper division engineering courses, 3000 and 4000 level courses must have passed the Engineering Entrance Examination (EEE) with minimum score of 75% on each part (calculus, chemistry, and physics) of the examination. The Engineering Entrance Examination will be waived for students with a cumulative GPA of 2.5 and higher for the group of courses listed in the below item (a). Engineering Entrance Examination: The eligibility criteria for taking the Engineering Entrance Examination are:
 - a. Minimum grade of "C" in each of the following courses: CHEM 1110, 1111; MATH 1910, 1920; PHYS 2110, 2111, 2120.
 - b. Minimum cumulative GPA of 2.5 and a cumulative GPA of less than 2.5 for the group of courses listed in the above Item (a) at the time of taking the Engineering Entrance Examination.
 - c. Completion and submission of the EEE eligibility form to the Dean's Office at least one week prior to the examination.
3. All graduating seniors must take and successfully complete all components of the Exit Examination (ETS) during the senior year.
4. Mechanical Engineering students must take ENGR 4201 EIT/FE Review Laboratory and are encouraged to take the Fundamentals of Engineering Examination ONLY with the consent of the department chair.

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.

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Fall Schedule		Milestones
Semester 1	Hrs.	Semester 1
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 "C" Required
MATH 1910	4	Minimum Grade of "C" required before taking MATH 1920, PHYS 2110, and ENGR 2230 courses
CHEM 1110	3	Minimum Grade of "C" Required before taking ENGR 3300; it is required for taking EEE ¹
CHEM 1111 W/Lab	1	Minimum Grade of "C" Required; co-requisite of CHEM 1110; it is required before taking EEE
ENGR 1020	1	Minimum Grade of "C" Required before taking ENGR 2230
ENGR 1151	1	Minimum Grade of "C" Required
UNIV 1000*	1	
Total Hours	14	

*An Orientation course 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
Semester 2	Hrs.	Semester 2
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
MATH 1920	4	Minimum Grade of "C" Required before taking MATH 2110 and ENGR 2000 courses; It is Required before taking EEE
PHYS 2110	3	Minimum Grade of "C" Required before taking PHYS 2120, ENGR 2110 and ENGR 2010
PHYS 2111 W/Lab	1	Minimum Grade of "C" Required
ENGR 2230	3	Minimum Grade of "C" Required before taking ENGR 2000 and ENGR 3400
COMM 2200	3	
Total Hours	17	

Fall Schedule		Milestones
Semester 3	Hrs.	Semester 3
MATH 2110	4	Minimum Grade of "C" Required before taking MATH 3120 and ENGR 2000
HIST 2010*	3	
ENGR 2110	3	Minimum Grade of "C" Required before taking ENGR 2120 and CVEN 3120
ENGR 2010	3	Minimum Grade of "C" Required before taking CVEN 3100 and MEEN 4150.
PHYS 2120	3	Minimum Grade of "C" Required before taking ENGR and ENGR 3300; It is Required before taking EEE
PHYS 2121 W/Lab	1	Minimum Grade of "C" Required before taking ENGR 2000
Total Hours	17	

*The Department recommends HIST 2010; however, HIST 2030, HIST 2050, HIST 2060 or HIST 2700 satisfy this requirement.

**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.

Spring Schedule		Milestones
Semester 4	Hrs.	Semester 4
		All Students are required to take and pass the Engineering Entrance Exam (EEE) before enrolling in upper division (3000-4000) Engineering and major courses.
MATH 3120	3	Minimum Grade of "C" Required; MATH 3120 is required for ENGR 3400 and MEEN 4100, 4700
ENGR 2000	3	Minimum Grade of "C" Required before taking MEEN 3511 and MEEN 4100;
ENGR 2001 W/Lab	1	Minimum Grade of "C" Required
Hum. Elect*	3	
ENGR 2120	3	Minimum Grade of "C" Required before taking MEEN 3210 and MEEN 4700
ENGR 2130	3	Minimum Grade of "C" Required before taking MEEN 3220
ENGR 2131 W/Lab	1	Minimum Grade of "C" Required
Total Hours	17	

*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.

Fall Schedule		Milestones
Semester 5	Hrs.	Semester 5
ENGR 3200	3	Minimum Grade of "C" Required before taking ENGR 4500
ENGR 3300	2	Minimum Grade of "C" Required before taking MEEN 3100 and MEEN 3521
ENGR 3400	3	Minimum Grade of "C" Required before taking MEEN 3250 and MEEN 4150
MEEN 3210	3	Minimum Grade of "C" Required before taking MEEN 4230
MEEN 3511 W/Lab	1	Minimum Grade of "C" Required before taking MEEN 3521 and MEEN 4011
CVEN 3100	3	Minimum Grade of "C" Required before taking MEEN 4021, MEEN 4150, MEEN 4300 and MEEN 4600
ENGL	3	
Total Hours	18	

Spring Schedule		Milestones
Semester 6	Hrs.	Semester 6
Math/Science Elective	3	Minimum Grade of "C" Required to satisfy total required credits for mathematics and sciences courses
MEEN 3100	3	Minimum Grade of "C" Required before taking MEEN 4400; co-requisite for MEEN 3521
MEEN 3220	3	Minimum Grade of "C" Required before taking MEEN 4230
MEEN 3250	3	Minimum Grade of "C" Required before taking MEEN 4230
MEEN 3521 W/lab	1	Minimum Grade of "C" Required
Technical Elective Course*	3	Minimum Grade of "C" Required
Total Hours**	16	Engineering Practicum

*Technical Electives are: MEEN 4100, 4120, 4300, 4400, 4600, 4700 or EECE 4020. Other technical elective courses may be selected if approved by the Department Chair.

**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
HIST 2020*	3	
MEEN 4011	1	Minimum Grade of "C" Required
MEEN 4150	3	Minimum Grade of "C" Required before taking MEEN 4021 and MEEN 4250,
MEEN 4230	3	Minimum Grade of "C" Required before taking MEEN 4800
ENGR 4201	0	Minimum Grade of "C" Required
ENGR 4500	1	Minimum Grade of "C" Required before taking ENGR 4510
ENGR 4900	1	Minimum Grade of "C" Required
Social Behavioral Elective**	3	
Total Hours	15	

*The Department recommends HIST 2020; however, HIST 2030, HIST 2050, HIST 2060 or HIST 2700 satisfy this requirement. Students must remember not to duplicate a course option from a previous semester.

**The following courses can meet the Social Science elective: AFAS 2010, ANTH 2300, ECON, 2010, GEOG 1010, HPSS 1510, POLI 1010 PSYC 2010, WMST 2000, and URBS 2010.

Spring Schedule		Milestones
Semester 8	Hrs.	Semester 8
		Take Senior Exit Exam and Apply for Graduation
MEEN 4021	1	Minimum Grade of "C" Required
MEEN 4250	3	Minimum Grade of "C" Required
ENGR 4510	1	Minimum Grade of "C" Required
Design Elective*	3	Minimum Grade of "C" Required to satisfy the graduation requirement
Humanities**	3	
Social Behavioral Elective***	3	
Total Hours	14	

*These electives must be chosen from an approved list of upper level courses with the advisor's approval: MEEN 4200, MEEN 4800, other courses may be selected with the approval of the Department Chair.

**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.

***The following courses can meet the Social Science elective AFAS 2010, ANTH 2300, ECON, 2010, GEOG 1010, HPSS 1510, POLI 1010 PSYC 2010, WMST 2000, and URBS 2010.

Employment Information:

Mechanical engineering is the broadest of engineering disciplines. Mechanical engineers research, design, develop, manufacture, and test mechanical and thermal systems. They also oversee the manufacturing processes, and design tools that other engineers need for their work.

Representative Job Titles Related to this Major:

Acoustics and vibration engineer, automotive engineer, building systems engineer, chief mechanical engineer, consulting mechanical engineer, design engineer, energy conservation engineer, nuclear engineer, fluid mechanics engineer, heating/ventilation and air conditioning (HVAC) engineer, internal combustion engineer, marine mechanical engineer, mechanical hydraulic engineer, maintenance engineer, mechanical power engineer, power generation engineer, and tribologist.

Representative Employers:

Aerospace industries, air quality control industries, automotive and related industries, biomechanics and medical industries, chemical industries, construction industries, defense related industries, engineering consulting firms, environmental related industries, food industry, manufacturing and production companies, materials and metals industries, ocean engineering industries, pharmaceuticals industry, software engineering companies, and utilities companies.

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.

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.