

Undergraduate Handbook

of

Mechanical Engineering



The University of Texas at Tyler

Spring 2024. Version 1.0

This Mechanical Engineering (ME) undergraduate handbook provides information, rules, and policies for ME undergraduate students at the University of Texas at Tyler (UT Tyler). This handbook was drafted by Dr. Hayder Abdul-Razzak, Dr. Shih-Feng Chou, Dr. Hussain Rizvi, and Dr. Muath Salim from the undergraduate curriculum committee (UGCC) in the ME Department at UT Tyler. The ME Department at UT Tyler approves the following contents on October for 2024.

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1. Introduction/Welcome

Welcome to the Department of Mechanical Engineering (ME) at The University of Texas at Tyler (UT Tyler). Mechanical Engineering is the oldest and broadest engineering discipline, focusing on the production, transfer, and manipulation of energy and matter, through innovative systems, machines, and methods, for the benefit of humanity. As a UT Tyler mechanical engineering graduate, students will be well equipped to work in areas of high demand, such as computer-aided design and analysis, thermal and fluid systems, manufacturing processes and control, bioengineering and aerospace systems and instrumentation.

The purpose of this handbook is to document the ME Department policies that govern the undergraduate Mechanical Engineering program. It contains official policies, objectives, outcomes, courses, and degree requirements. Furthermore, it details information about the faculty and staff, the laboratories, research activities, and various student organizations. We hope your time here will be both successful and enjoyable. To learn more about our programs and options, as well as areas of expertise and research interest, please contact ME Department (Email: me@uttyler.edu, Phone: 903.566.7003).

2. General Information

2.1 Mission Statement

Our mission is to graduate and advance Mechanical Engineering professionals who are sought after by industry and graduate schools through maintaining a balanced environment of progressive education and training, advanced scholarship and research, as well as service with leadership to the public and the profession. We aim to equip our students with knowledge and skills enabling them to perform with excellence, and lead, in their engineering careers, and in changing the world into a better place.

2.2 Departmental Vision

To be the Department of opportunity for progressive Mechanical Engineering education, advancement, services, and scholarship.

2.3 Program Educational Objectives

Program Educational Objectives are statements developed by the ME faculty based on inputs from the program's constituencies and reviewed by the College of Engineering, our alumni, and the Mechanical Engineering Industrial Advisory Committee. The statements describe the expected accomplishments of graduates during the first few years after graduation.

After graduation, engineers from our program will be able to:

1. Formulate and solve complex practical and theoretical engineering problems, while considering business objectives and social, economic and ethical issues.
2. Think critically and creatively, work effectively on interdisciplinary teams and communicate clearly in both technical and non-technical forums.
3. Attain employment in an engineering capacity, serving the needs of private and public entities regionally and globally.

4. Continue to grow professionally through advanced education or professional licensure and services.

2.4 Mechanical Engineering Student Outcomes

Student Outcomes are statements that describe what students are expected to know and can do by graduation. These relate to the skills, knowledge, and behaviors that students acquire in their matriculation through the program. The ME Department has a continuous assessment process to collect and interpret data to evaluate the achievement of program outcomes. Students are encouraged to participate in a self-evaluation interview after senior year and upon graduation. The seven program/student outcomes for the UT Tyler Mechanical Engineering program are listed in Table 1.

Table 1. Students Outcomes (SOs) for Mechanical Engineering Department at the University at Texas at Tyler.

SO 1:	Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
SO 2:	Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
SO 3:	Communicate effectively with a range of audiences.
SO 4:	Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
SO 5:	Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
SO 6:	Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
SO 7:	Acquire and apply new knowledge as needed, using appropriate learning strategies.

2.5 Programs of Study

The Department of Mechanical Engineering offers programs leading to the Bachelor of Science in Mechanical Engineering and the Master of Science in Mechanical Engineering. Both programs can be completed through study in Tyler or at the Houston Engineering Center in Houston, TX. The Mechanical Engineering baccalaureate program is accredited by the Engineering Accreditation Commission of ABET, (<http://www.abet.org>). The Department offers an accelerated BSME/MSME program (Section 7) to give our qualified undergraduates the opportunity to earn a Master of Science Degree in a minimum of one year. Students interested in this program must obtain department approval to enroll in this program.

The upper division mechanical engineering completion curriculum leading to award the ABET accredited mechanical engineering baccalaureate degree offered on the campus in Tyler is among the engineering programs of study offered in the HEC.

2.6 Distinctive Features of our Program

- The program provides a student-focused, hands-on approach to engineering education, producing highly sought-after graduates by employers and graduate schools across the nation.
- The broad range of professional electives allows students to tailor their studies to their career interests.
- The program equipped you well to work in high-demand areas, such as computer-aided design and analysis, thermal and fluid systems, manufacturing processes and control, bioengineering, and aerospace systems and instrumentation.
- The program offers a blend of instruction in mechanical engineering theory and practice through a combination of classroom instruction and hands-on lab experiences culminating in the senior capstone design project, which spans two semesters when students work in groups on sponsored projects.
- You also will gain valuable experiences through membership in student chapters of the American Society of Mechanical Engineers (ASME); the American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE); and the Society of Automotive Engineers (SAE).
- There are opportunities for undergraduate research with professors in energy and thermofluids, material science and processing, manufacturing, mechanics, mechatronics, robotics, and dynamic systems and control.

3. Admission Requirements

3.1 Freshman Requirements for Admission in Mechanical Engineering

Students joining as a freshman must complete an accredited high school program and should meet the following requirements:

Requirements

Top 25%	Automatically admitted
2 nd -4 th quartile	A minimum GPA of 2.75

Top 25% Applicants

- The applicant must graduate from an accredited high school and have a grade point average in the Top 25% of the applicant's high school graduating class to be admitted automatically (subject to applicable enrollment limit).
- An applicant is only eligible for automatic admission up to two years from their high school graduation date.

Regular Admission

- An applicant who does not qualify for automatic admission but meets the following listed criteria also qualifies for regular admission.

Minimum High School Units Required

Beginning freshmen must submit an official high school transcript before classes begin in order to verify graduation and completion of required courses.

Required Coursework:

- English Language Arts (4 credits)
- Mathematics (3 credits)
- Science (3 credits)
- Social Studies (3 credits)
- Physical Education (1 credit)
- Language other than English (2 credits)
- Fine Arts (1 credit)
- Speech (Demonstrated Proficiency)
- Electives (5 credits)

For more information and to apply to the program, please visit:

<https://www.uttyler.edu/admissions-aid/>

3.2 Transferring to Mechanical Engineering from Another Institution:

The University of Texas at Tyler have established partnerships with community colleges across East Texas to facilitate a smooth transfer of credits to UT Tyler degree plans. Plus, we have academic advisors you can meet with to ensure you are on the right track to successfully complete your degree.

Requirements

Credit Hours	30+ at an accredited institution*
GPA	2.0 on a 4.0 scale
Official Transcripts	Provided from any institution attended

*If below 30 hours, must meet freshman admission requirement

For more information and to transfer to the mechanical engineering program, please visit:

<https://www.uttyler.edu/admissions-aid/transfer/>

3.3 Transferring to Mechanical Engineering after Receiving an Associate of Science in Engineering Science (ASES) Degree:

The University of Texas at Tyler has partnered with various Community Colleges to allow students to earn a Bachelor of Science degree in engineering at the UT Tyler Houston Engineering Center (HEC), students who earn their associate of science in engineering sciences degree at community colleges offering the ASES degree, can pursue a UT Tyler BS degree at the Houston Engineering Center.

Students who complete the prescribed [ASES curriculum](#) with an overall GPA of at least 2.5 and no grade lower than C are automatically admitted to the baccalaureate degree program. No further testing or evaluation is required.

It is part of a statewide model ASES degree program established in Texas, made available at participating community colleges, and supported by participating universities.

Institutions offering the ASES degree include:

- [Houston Community College](#)

- [San Jacinto College](#)
- [TSTC-Harlingen](#)
- [South Texas College](#)

4. Course Registration and Student Advising

4.1 Course Registration Policies

UT Tyler students can register online on [myUTTyler](#) using their Patriot Account user name and password. In-person registration is available at the One-Stop Service Center (STE 230) using the [registration form](#). Please visit the [Office of the Registrar](#) page for more details. Students need to check the [academic calendar](#) for the deadline of registration as well as dropping classes.

New students, including freshmen and transfers, admitted to the ME program need to meet with their academic advisor to establish their Degree Plan, see the form below, before the start of their first semester at UT Tyler.

For late registration or class drops, students need to contact the ME Department administrative assistant via me@uttyler.edu (not the course instructor). Prior to the first day of classes for a semester, students should conduct all drops online via their Student Center in their [MyUTTyler](#). This functionality is disabled once classes begin for each semester.

4.2 Student Advising

Students are advised to consult with the [Mechanical Engineering Undergraduate Curriculum](#) and the academic advisors to learn when each course is offered and to find course pre and co-requisites.

Continuing students are highly encouraged to register for classes when the registration period opens. The advising period with the academic advisors starts three weeks of registration. It is the student's responsibility to meet with the academic advisor each semester. All students should make appointment with their academic advisors during the advising period to discuss their academic progress and curriculum plans. A list of all academic advisors is maintained by the College of Engineering. Students can find their faculty adviser's name by contacting the ME Department via me@uttyler.edu.

UT Tyler students can contact the [Office of Career Success](#) to learn more about the career development process. This will allow students to meet with employers during several career fairs during the year and will refine the students' skills in resume writing and networking. Besides that, career coaches can help students with job and internship searches, resumes, cover letters, career exploration, interviews, or just general career guidance.

5. Curriculum for the B.S. Degree in Mechanical Engineering

5.1 BSME 4-year Course Curriculum

The Department of Mechanical Engineering at the UT Tyler offers a 4-year course curriculum for the Bachelor of Science degree in Mechanical Engineering (BSME) as shown in Table 2. The degree requires completion of at least 128 credit hours of course work described in the BSME curriculum. The curriculum comprises a broad spectrum of art/science, mathematics, and humanity/history courses aligned with the Texas general education core curriculum. In addition, the curriculum for the BSME degree consists of core courses in the major areas of Mechanical Engineering, such as Mechanics/Materials, Design/Controls, Thermodynamics/Fluid, and professional cutting-edge electives in each of the major area. Course descriptions can be found in the UT Tyler catalog available at www.uttyler.edu/catalog.

Table 2. The 4-year course curriculum for the undergraduate program in the Department of Mechanical Engineering at UT Tyler.

Freshman Year						
First Semester (Fall)				Second Semester (Spring)		
Course	Title	SCH		Course	Title	SCH
ENGL 1301	College Composition I	3		ENGL 1302	College Composition II / or ENGL 2311	3
MATH 2413	Calculus I	4		PHYS 2325	University Physics I	3
CHEM 1311	General Chemistry I	3		PHYS 2125	University Physics I Lab	1
CHEM 1111	General Chemistry I Lab	1		MATH 2414	Calculus II	4
MENG 1301	Engineering Graphics and Design	3		EENG 3308	Programming Languages for Design	3
CMST 1315	Introduction to Public Speaking	3		HIST 1303	History of Tech and Innovation in the US	3
	Semester Credit Hours	17			Semester Credit Hours	17
Sophomore Year						
First Semester (Fall)				Second Semester (Spring)		
Course	Title	SCH		Course	Title	SCH
PHYS 2326	University Physics II	3		MENG 3306	Mechanics of Materials	3
PHYS 2126	University Physics II Lab	1		MATH 3351	Probability and Statistics for Engineers	3
MATH 3203 or 3315	Matrix Methods or Linear Algebra and Matrix Theory	2		ECON 2302 or 2301	Principles of Microeconomics or Principles of Macroeconomics	3
MATH 2415	Multivariate Calculus	4		MATH 3305	Ordinary Differential Equations	3
ENGR 2301	Engineering Mechanics - Statics	3		ENGR 2302	Engineering Mechanics - Dynamics	3
MENG 3319	Materials Science and Manufacturing	3				
	Semester Credit Hours	16			Semester Credit Hours	15
Junior Year						
First Semester (Fall)				Second Semester (Spring)		
Course	Title	SCH		Course	Title	SCH
MENG 3401	Thermodynamics	4		MENG 3316	Heat Transfer	3
MENG 3310	Fluid Mechanics	3		MENG 3309	Mech. Systems Design	3

	Technical Elective	3		EENG 3301	EE Circuits, Systems, and Applications	3
MENG 3210	Experimental Measurements and Techniques	2		MENG 3211	Thermal-Fluids Lab	2
	Creative Arts	3		PHIL 2306	Introduction to Ethics	3
				MENG 3303	Dynamics of Machinery	3
	Semester Credit Hours	15			Semester Credit Hours	17
Senior Year						
First Semester (Fall)				Second Semester (Spring)		
Course	Title	SCH		Course	Title	SCH
HIST 1301	U. S. History I	3		POLS 2306	Introductory Texas Politics	3
MENG 4215	Senior Capstone Design I	2		MENG 4326	Finite Element Analysis	3
MENG 4312	System Dynamics & Control	3		MENG 4216	Senior Capstone Design II	2
POLS 2305	Intro. American Gov't.	3			Technical Elective	3
	Technical Elective	3			Technical Elective	3
	Technical Elective	3				
	Semester Credit Hours	17			Semester Credit Hours	14

5.2 Core Curriculum Courses for Engineering Majors (62 hrs):

Undergraduate students in the Department of Mechanical Engineering are required to take general education courses, shown in Table 3, in the areas of social sciences, humanities, and others related non-technical areas that are an integral part of all engineering degree programs. These courses enable engineering graduates on the awareness of their social responsibilities, understanding in the impact of engineering in a global and societal context, and appreciation of social and political constraints on viable engineering solutions. The courses also satisfy the core curriculum requirements of UT Tyler.

Table 3. Core curriculum courses for the undergraduate program in the Department of Mechanical Engineering at UT Tyler.

Course	Title
Communication/Human Expression (9 hrs)	
ENGL 1301	College Composition I
ENGL 1302	College Composition II / or ENGL 2311
CMST 1315	Introduction to Public Speaking
Mathematics (20 hrs)	
MATH 2413	Calculus I
MATH 2414	Calculus II
MATH 3203	Matrix Methods
MATH 2415	Multivariate Calculus
MATH 3351	Probability and Statistics for Engineers
MATH 3305	Differential Equations
Life and Physical Science (12 hrs)	
CHEM 1311	General Chemistry I
CHEM 1111	General Chemistry I Lab
PHYS 2325	University Physics I
PHYS 2125	University Physics I Lab
PHYS 2326	University Physics II
PHYS 2126	University Physics II Lab
Language, Philosophy and Culture (3 hrs)	
PHIL 2306	Introduction to Ethics

Creative Arts (3 hrs)	
MUSI 1306	Music Appreciation
MUSI 2301	Cultural Music of the Americas
THTR 1301	The Theatre: Plays in Performance
THTR 1356	The Cinema: Films and Performers
ART 1301	Introduction to Art
ART 2303	Art History Survey I
ART 2304	Art History Survey II
American History (6 hrs)	
HIST 1301	United States History I
HIST 1303	History of Technology and Innovation in the U. S.
Political Science (6 hrs)	
POLS 2305	Introductory American Government
POLS 2306	Introductory Texas Politics
Social & Behavioral Science (3 hrs)	
ECON 2302	Principles of Microeconomics

5.3 Core BSME Curriculum (51 hrs):

For the BSME program, the major courses consist of 51-hr upper division courses in the major areas of Mechanics/Materials, Design/Controls, and Thermodynamics/Fluids. Table 4 lists these required core courses in each specific area. In the senior year, students will enroll in Senior Capstone Design courses, which serve as comprehensive courses for mechanical engineers, to demonstrate their abilities on the integration of application of intellectual knowledge in Mechanical Engineering.

Table 4. Core BSME curriculum courses at UT Tyler.

Course	Title
Mechanics/Materials (12 hrs)	
MENG 3319	Materials Science and Manufacturing
ENGR 2301	Engineering Mechanics - Statics
MENG 3306	Mechanics of Materials
ENGR 2302	Engineering Mechanics - Dynamics
Design/Controls (23 hrs)	
MENG 1301	Engineering Graphics and Design
EENG 3308	Programming Languages for Design
MENG 3303	Dynamics of Machinery
MENG 3210	Experimental Measurements Lab
MENG 3309	Mechanical Systems Design
EENG 3301	EE Circuits, Systems, and Applications
MENG 4312	System Dynamics & Control
MENG 4326	Finite Element Analysis
Thermodynamics/Fluid (12 hrs)	
MENG 3401	Thermodynamics
MENG 3310	Fluid Mechanics
MENG 3316	Heat Transfer
MENG 3211	Thermal-Fluids Lab
Comprehensive (4 hrs)	
MENG 4215	Senior Capstone Design I
MENG 4216	Senior Capstone Design II

5.4 Mechanical Engineering Technical Electives (15 hrs):

In the Department of Mechanical Engineering, students can select five three-hour Technical Electives for a total of 15 hours starting in the second semester of the junior year. Table 5 provides a list of frequently offered technical electives at the advanced level of Mechanics/Materials, Design/Controls, and Thermodynamics/Fluids areas with the associated prerequisites. These technical electives are seat limited to ensure effective learning, and therefore, students are encouraged to make appointments with academic advisors to pick the appropriate electives.

Table 5. Technical electives offered in the Department of Mechanical Engineering at UT Tyler.

Course	Title	Prerequisites
Mechanics/Materials		
MENG 4317	Vibrations	ENGR 2302 and MATH 3305
MENG 4320	Design for Manufacturing	MENG 3319
MENG 4333	Mechanics of Composite Materials	MENG 3306
MENG 4347	Polymer Science and Engineering	MENG 3319
MENG 4362	Biomaterials	MENG 3319
Design/Controls		
MENG 4308	Robotic Vision and Control	MENG 4312
MENG 4309	Robotics Engineering	MENG 3303
MENG 4311	Introduction to Mechatronics	MENG 3210, EENG 3301, and EENG 3308
MENG 4322	CAD/CAM	MATH 3404 and MENG 1301
MENG 4330	Process Control	MENG 4312
Thermodynamics/Fluid		
MENG 4329	Compressible Flow	MENG 3310
MENG 4342	Energy Management	MENG 3401
MENG 4345	Energy Conversion	MENG 3316
MENG 4348	Applied CFD and Heat Transfer	MENG 3316
MENG 4349	Intro to Renewable Energy Systems	MENG 3401
Comprehensive		
MENG 4150-4350	Topics in Mechanical Engineering	Consent of Instructor and Department Chair
MENG 4199-4399	Independent Study	Consent of Instructor and Department Chair
MENG 4370	Undergraduate Internship	
MENG 4371	Honors Internship	Consent of the Department Chair
MENG 4373	Undergraduate Internship II	
MENG 4395	Undergraduate Research	Consent of the Department Chair

6. Graduation Requirements

6.1 General Baccalaureate Degree Requirements

The BSME curriculum is designed and constructed for students to achieve the seven Student Outcomes described in section 2.4. In order to graduate, a student must fulfill catalog requirements in effect at matriculation or any subsequent catalog during their period of enrollment. A catalog over six years old may be used to determine requirements for a degree only if the student has been enrolled continuously in fall and spring semesters. If a student has not enrolled at UT Tyler in the past year, the student is required to complete a readmission application. Students who complete a readmission application are admitted under the catalog in effect at the time of readmission.

To graduate with a Bachelor of Science degree in Mechanical Engineering, the student must

1. earn a grade of “C” or better in any MENG, EENG, or ENGR course,
2. earn a grade of "C" or better in any course that is a prerequisite for subsequent courses in the curriculum prior to taking a course that requires the prerequisite. However, a “D” grade in these prerequisite courses at UT Tyler allows the student to move on but the course must be repeated to get a “C” or better grade. “D” grades from other institutions do not transfer,
3. complete the general baccalaureate degree requirements of the University, and
4. complete the ME curriculum requirements.

6.2 College of Engineering Policies on Repeating Courses

Regarding item 2 in the general requirement for graduation with a BSME degree, a student may repeat any course previously taken at UT Tyler that would not normally be repeatable for credit if the last grade received in the course meets the criteria for their career level, which is “D” or “F” for undergraduate students. Repeated courses may not be taken on a CR/NC or Pass/Fail basis. Students repeating a single course more than two times may be billed at a higher tuition rate. All grades will appear on the student’s official transcript. Once the degree has been awarded by UT Tyler, a student may repeat a course taken prior to graduation, but the repeated course will not be used to recalculate the grade point average.

Students who repeat a course in which they previously earned credit hours based on a grade of “D” or higher, and earn an additional grade of “D” or higher, without using the grade replacement option (See [Grade Replacement](#) policy) may only apply earned credit hours from one course completion toward the 120 unique credit hours required for a baccalaureate degree (See General Baccalaureate Degree Requirements).

Students cannot enroll in repeated courses through the [MyUTTyler](#) Student Center; submission of a Course Repeat / Grade Replacement Enrollment Form to the One-Stop Service Center is required for all course repeats. See the [Grade Replacement](#) policy for additional details.

6.3 GPA Requirement

The undergraduate program in the Department of Mechanical Engineering at UT Tyler follows the University policies on GPA requirements, as listed below.

- Complete Core Curriculum requirements with a grade of “C” or better in each course.
- Maintain a 2.0 overall grade point average or higher.

6.4 Transfer Students Who Have Completed a Pre-Engineering Program

Students transferring to UT Tyler after completing a pre-engineering Associate degree program at a junior or community college may be able to complete their BSME degrees in two more years. These students will be classified as direct transfers. UT Tyler does not have any age limit on transferring courses from other institutions for non-science and non-engineering courses with a minimum of “C” grade.

Since engineering courses in the ME curriculum are built on rigorous science prerequisites, the ME Department will not transfer science and engineering courses that are more than 5 years old. Transfer of courses will be based on the contents of the course, level, and rigor. The student is

responsible to get copies of complete course syllabus and any relevant information relating to the course, and a copy of the unofficial transcript to the department.

Solid modeling is required as part of the graphics course to get credit for MENG 1301 Engineering Graphics and Design. Students should have completed twelve credits of calculus through multivariate and differential equations; introductory chemistry with lab; eight credits of university physics; a Statics course equivalent to UT Tyler ENGR 2301; a Dynamics course equivalent to ENGR 2302; and a Programming Languages course equivalent to EENG 3308.

6.5 Houston Engineering Center

Starting in Fall 2013, The College of Engineering established the University of Texas at Tyler Houston Engineering Center on the Hayes Road campus of Houston Community College in West Houston. The center provides a significant education and research presence in Houston through which students will be able to obtain baccalaureate level engineering degrees. The Houston Engineering Center (HEC) offers upper division mechanical engineering completion curricula that lead to award of the ABET accredited BSME degree offered on the campus at UT Tyler.

Students who have earned the Texas Associate of Science in Engineering Science (ASES) degree from an ASAC/ABET accredited program at a participating community college, with an overall GPA of at least 2.50/4.00 and with no grade lower than “C” are eligible to pursue the Mechanical Engineering Completion Program to earn a Bachelor of Science degree in Mechanical Engineering. Students who are awarded ASES degree with “D” grades will be required to repeat those courses at UT Tyler to get at least “C” grades in those courses. This pathway enables a student to begin their engineering degree program at a participating community college and complete the degree at UT Tyler. ME Department policies and procedures will apply to all students seeking transfer credits.

7. The Degree Plan

The Degree Plan, the form of which is given below in this section, is a summary sheet showing the sequence of courses that the student plans to take, and it provides a plan for graduation for the student and adviser. Each continuing student must see their adviser regularly to monitor progress toward the degree and adjust individual schedules as appropriate.

All ME students need to establish their degree plan with the academic advisor before the start of their first semester at UT Tyler. Also, students need to update and review their degree plan before the start of any semester. The academic advisor approval is required before making any changes on the degree plan. It is advised that students keep a copy of the updated Degree Plan.

8. Frequently Accessed Forms

Students can access the below forms together with the explanations and a list of other forms by using one of the following links:

1. UT Tyler Forms Hub: <https://www.uttyler.edu/forms/>
2. Office of the Registrar: <https://www.uttyler.edu/current-students/registrar/forms.php>
3. Graduate School Forms: <https://www.uttyler.edu/graduate/forms/>




9. Accelerated BSME/MSME (4+1) Program

Undergraduate students in Mechanical Engineering can choose the Graduate program to get a master's degree in a minimum of one year. Undergraduate students are required to take 9 credits of approved graduate-level courses, as well as one credit of undergraduate seminar, in their senior year. Students interested in this program must obtain department approval to enroll in this program. Students with a minimum GPA of 3.0 will be provisionally admitted to this program in the Fall semester of their senior year and will receive full admission to the graduate program after they complete all BSME graduation requirements. Students must obtain an average "B" grade in all the graduate-level courses taken during their senior year.




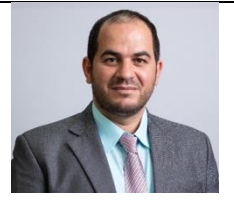
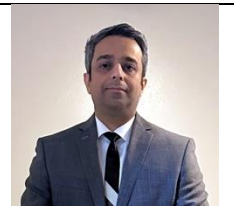
Use the [link](#) to declare your intention to enroll in Accelerated BSME/MSME program. If eligible, you will receive an email confirming your enrollment in the program. Please note that enrollment in Accelerated BSME/MSME program doesn't guarantee your admission to the MSME program.

10. Faculty and Their Research Areas

10.1 ME Faculty


	<p>Nael Barakat, Professor and Chair of Mechanical Engineering. Ph.D., McMaster University Teaching Interests: Senior Capstone Design, Engineering Leadership, Ethics, and Professionalism. Research Interests: Mechatronics, Energy Harvesting, Robotics and Automation, Control Systems and System Integration, Engineering Leadership, Ethics, and Professionalism.</p>
	<p>Hayder Abdul-Razzak, Professor of Instruction of Mechanical Engineering. Ph.D., Illinois Institute of Technology Teaching Interests: Thermodynamics, Fluid Mechanics, Heat Transfer, Computational Fluid Dynamics and Heat Transfer, Air Conditioning. Research Interests: Design, analysis, and 3D modeling of fluid, thermal, and energy systems; computational fluid dynamics and heat transfer; energy conservation and management; renewable energy; aerosols-cloud-climate interactions.</p>
	<p>Mohammad Biswas, Associate Professor of Mechanical Engineering. Ph.D., University of Florida Teaching Interests: Thermal Fluid Sciences, System dynamics and control, Energy Conversion. Research Interests: Process Dynamics and Control, Fuel Cell System, Thermal Fluid Energy System, and Engineering Education.</p>

	<p>Shih-Feng Chou, Associate Professor of Mechanical Engineering. Ph.D., Auburn University Teaching Interests: Materials Science, Polymers, Design for Manufacturing, CAD/CAM. Research Interests: Structure-Properties of Soft Biomaterials, Materials Characterizations, Electrospun Fibers, Drug Delivery, Tissue Engineering, Wound Healing.</p>
	<p>Nelson Fumo, Associate Professor of Mechanical Engineering. Ph.D., Mississippi State University Teaching Interests: Fluid Mechanics, Thermal-Fluids, Energy Management, HVAC. Research Interests: Energy in Buildings, Evaporative Cooling, HVAC Equipment Performance, Whole Building Energy and HVAC Equipment Simulation.</p>
	<p>Chung Hyun Goh, Associate Professor of Mechanical Engineering. Ph.D., Georgia Institute of Technology Teaching Interests: Mechanical Design, System Dynamics and Control, Finite Element Methods, Robotics, Machine Vision. Research Interests: Computer-assisted Integrated Design, Robotics and Automation, Rehabilitation Robotics, Biomedical Device Design, Machine Learning-assisted Sim-to-Real Transfer.</p>
	<p>Wathiq Ibrahim, Assistant Professor of Mechanical Engineering. Ph.D., The State University of New York at Binghamton Teaching Interests: MEMS, Biomechanics, Vibrations, Dynamics Research Interests: Self-Powered Biosensors, Triboelectric and Piezoelectric Vibration Energy Harvesters, Nonlinear Dynamics, MEMS/NEMS.</p>
	<p>Tahsin Khajah, Associate Professor and Associate Chair of Mechanical Engineering. Ph.D., Old Dominion University Teaching Interests: Finite Element Method, Mechanical System Design, System Dynamics. Research Interests: Numerical analysis of wave propagation, shape optimization, Finite Element Method, Isogeometric Analysis, Scaled Boundary Finite Elements, Image-based analysis, Evolutionary optimization, Absorbing Boundary Conditions.</p>

	<p>Soren Maloney, Assistant Professor of Instruction of Mechanical Engineering. Ph.D., University of Cambridge Teaching Interests: Thermodynamics, Fluid Mechanics, Heat Transfer, Solar and Wind Energy, Design.</p>
	<p>Andrew Robbins, Assistant Professor of Mechanical Engineering. Ph.D., Texas A & M University Teaching Interests: Mechanics, Biomechanics, Medical Device Design, Medical Device Regulations. Research interests: Orthopedic Biomechanics and Medical Device Design, including Orthopedic Implants and Prosthetics, Sports Biomechanics, Tissue Biomechanics, Injury Biomechanics.</p>
	<p>Ola Al-Shalash, Lecturer in Mechanical Engineering. M.S., The University of Texas at Tyler Teaching Interests: Mechanics of Material, Measurements and Instrumentation.</p>
	<p>Muath Salim, Assistant Professor of Instruction of Mechanical Engineering. Ph.D., Texas A&M University-Kingsville Teaching Interests: Engineering Graphics, Thermodynamic, Mechatronics, Senior Design, and Data Analytics. Research Interests: Water-Energy Nexus, Renewable Energy, Water Desalination, Smart Control Systems, HVAC, Engineering Education Research.</p>
	<p>Hamedreza Seyyedhosseinzadeh, Visiting Professor of Mechanical Engineering. Ph.D., Amirkabir University of Technology Teaching Interests: Advanced Manufacturing, Heat Transfer, Mechanics of Materials, Thermodynamics. Research interests: Computational Mechanics, Metal Additive Manufacturing.</p>

For more information about our faculty research areas please view [faculty research profiles](#).

10.2 ME Staff

	<p>Andrea Hansen, Administrative Assistant III Office: RBN 3001 Phone: 903.566.7003 E-mail: ahansen@uttyler.edu</p>
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11. Resources

This section listed additional information and resources available to the ME students at UT Tyler.

11.1 Professional Societies

Consider joining one or more engineering professional societies. ASME, SAE, SWE, and ASHRAE Society student chapters are led by engineering students who plan activities and programs. Student Chapters of professional societies provide an opportunity to network with professional engineers employed in the community and to learn about career opportunities. Student societies plan field trip and plant tours. Participating in a professional society will permit you to meet your classmates and faculty members in a social environment. Upon graduation, you may become a full member of an engineering society and continue to develop professional connections and technical competencies through your involvement with the society.

American Society of Mechanical Engineering (ASME)

The mission of the UT Tyler student chapter of ASME shall be the advancement and dissemination of the theory and practice of mechanical engineering, the presentation of proper perspective of engineering work and the opportunity to become acquainted with the personnel and activities of the Society as well as to promote professional consciousness and fellowship. Membership is open to all engineering majors. Dr. Abdul-Razzak and Dr. Chung Hyun Goh are the faculty advisors for ASME.

American Society of Heating Refrigeration and Air-Conditioning Engineers (ASHRAE)

The mission of ASHRAE is to advance the arts and sciences of heating, ventilation, air conditioning, refrigeration and related human factors to serve the evolving needs of the public. The society is a global leader in this field, and is the foremost, authoritative, most timely and responsive source of technical and educational information, standards and guidelines. The faculty advisor for ASHRAE is Dr. Nelson Fumo.

Society of Automotive Engineers (SAE)

The goal of SAE is to increase the knowledge of Mechanical Engineering students as it pertains to the automotive industry. The organization will accomplish this through practical application of design and fabrication.

Society of Women Engineers (SWE)

SWE aims to break barriers and inspire the next generation of female engineers. Also, SWE assists women engineers in readying themselves for successful professional practice and to attain high levels of education and professional achievement. Dr. Shih-Feng Chou is the SWE faculty advisor.

11.2 Faculty Mentoring

Faculty mentoring is different than the academic advising. Faculty mentoring provides ME students with opportunities to talk to ME faculty for any questions during their study at UT Tyler. Mentors can guide students to achieve their academic and career goals. Students should meet with their faculty mentor at least once a semester. Please contact the ME Department to find your faculty mentor.

11.3 Laptop Requirements for BSME

Students taking courses from Mechanical Engineering (ME) are expected to have a laptop at their disposal. Certain courses may require that a laptop be brought to class or lab sessions.

Operating System Requirement

Undergraduate students will be required to install specific software packages on their laptops. Some of the software packages used in our program are **only** available on the Microsoft Windows Platform. Due to this need, all students are required to have a laptop with a **Windows** operating system. Required software for courses are **not** fully compatible with macOS devices.

PC Minimum Requirements

To accommodate software used in teaching Mechanical Engineering courses, a minimum level of hardware capacity is expected to be available in students' laptops. Consequently, students are advised that a new laptop may be required if their current system is more than three-years old, or if it fails to meet certain minimum specifications. Table 6 summarizes ME recommended minimum specifications for students purchasing a new computer for the upcoming academic year. If your current computer does not meet these minimum requirements, you may find that your system will need to be upgraded or replaced within three years and/or may not provide acceptable performance for some or all ME courses. ME does not recommend purchasing a new laptop with specifications less than those shown below.

Table 6. Recommended hardware specifications for ME students' laptop.

Computer Spec	Minimum	Recommended
OS	Windows 10 64-Bit	Windows 10 64-Bit
Processor	Intel Core i5 (8 th gen or higher)	Intel Core i7 (8700 or higher)
Memory (RAM)	16 GB	32 GB
Hard Drive	500 GB with 100 GB free for courseware	500GB Solid State Drive (SSD)
Graphics	Integrated graphics card	Dedicated graphics card for engineering/science applications
Port	Minimum of: 1 USB Port, 1 HDMI port	
Wireless	802.11 ac, Bluetooth 4.1	
Other	Built-in HD webcam with microphone	
Warranty	An extended warranty with accidental damage coverage is highly recommended	An extended warranty with accidental coverage is highly recommended
Backup	USB external hard drive, Microsoft One Drive	USB external hard drive, Microsoft One Drive

Required Software

All computers must have an active antivirus subscription before being connected to the campus network. Systems running Windows 8 and above have the built-in Microsoft Defender installed. In addition, many other software packages are available at steep discounts and further information is available at IT Purchases (<https://www.utt Tyler.edu/it/it-purchases.php>). Table 7 provides the recommended software package to be installed based on the student laptop requirements.

Table 7. Required Software package and links to access.

Package	Availability
Microsoft Office	Free to students (https://www.uttyler.edu/it/office365/365-students.php)
Anti-Virus	Free
MATLAB	Free students' install option – Request link from instructor
NI Labview	Free students' install option – Request link from instructor
Ansys	Free students' install option – Request link from instructor
Autodesk Inventor	Free students' install option – Request link from instructor
Arduino IDE	Free students' install option – Request link from instructor
Solid works	Special price students' option – Request link from instructor

Financial Aid

Students receiving aid and that are loan eligible may contact the [Financial Aid Office](#) to check if their aid can be adjusted to include the cost of their laptop.

11.4 Resources for Mechanical Engineering Students

- [UT Tyler Student Accessibility and Resource \(SAR\) Office](#) provides needed accommodations to students with document needs related to access and learning.
- [UT Tyler Writing Center](#)
- [The Mathematics Learning Center](#)
- [UT Tyler PASS Tutoring Center](#)
- [UT Tyler Supplemental Instruction](#)
- [Upswing \(24/7 online tutoring\)](#) covers nearly all undergraduate course areas.
- [Robert Muntz Library](#) and [Library Liaison](#)
- [Canvas 101](#) helps to learn how to use Canvas, an important an educational tool for students.
- [LIB 422](#) The library computer lab for students.
- [The Career Success Center](#)
- [UT Tyler Testing Center](#)
- [Office of Research & Scholarship Design and Data Analysis Lab](#)

11.5 Additional Resources for Mechanical Engineering Students

- [UT Tyler Counseling Center](#)
- [TAO Online Support Center](#)
- [Military and Veterans Success Center](#)
- [UT Tyler Patriot Food Pantry](#)
- [UT Tyler Financial Aid and Scholarships](#)
- [UT Tyler Registrar's Office](#)
- [Office of International Programs](#)
- [Title IX Reporting](#)
- [Patriots Engage](#)