

MECHANICAL ENGINEERING UNDERGRADUATE HANDBOOK

(Revised January 18, 2022)

5050 Anthony Wayne Drive

Detroit, MI 48202

U.S.A.

Phone: +1-313-577-3843

Email: mechanical@wayne.edu

<http://www.eng.wayne.edu/me/>

The purpose of this handbook is to provide mechanical engineering students at Wayne State University a quick and complete source of information and guidelines to their curriculum requirements. It is the intent of the Department to revise this handbook on a yearly basis, unless deemed necessary to revise it more frequently. Always consult the Academic Advisor or the Director of Undergraduate Studies if this handbook cannot provide you with the proper guidelines or if you have any doubt or concern about your curriculum beyond the scope of this handbook. This handbook can be downloaded from the department web site, engineering.wayne.edu/mechanical/resources/forms

TABLE OF CONTENTS

Department Faculty and Staff Directory	3
Full-Time Faculty	3
Staff	3
Part-Time Teaching Faculty	4
5000-Level Coherent Technical Electives	5
Policy on Course Prerequisites	5
Code of Student Conduct	6
Table of Course Prerequisites	7
Policy on Transfer of Credits	8
Undergraduate Academic Performance Regulations	8
ME Course Offering and Class Scheduling Policies	9
APPENDIX: Forms	10
Appendix A: Petition and Authorization Form to enroll in ME 5900, 5990, or 5992	
Appendix B: AGRADE Request Form	
Appendix C: College of Engineering Academic Petition Form (General Purpose)	

Department Faculty and Staff Directory

Full-Time Faculty

Faculty Name	Areas of Research Expertise & Interest	Room	Phone	Email Address
Agbaglah, Gbemeho	Hydrodynamic instabilities, CFD, drop/bubble, Atomization and Aerodynamics	2101	7-5148	gilou.agbaglah@wayne.edu
Almubarak, Yara	Soft robotics, underwater robotics, smart materials & structures, actuators & sensors, 3D printing	2115	7-1989	YaraAlmubarak@wayne.edu
Arava, Leela (Director, Graduate Studies)	Nanomaterials, energy storage	2140	7-1986	larava@wayne.edu
Ayorinde, Emmanuel	Mechanics of structural composites emmanuel.ayorinde@wayne.edu	2148	7-5548	
Ghaffari, Azad	Safe navigation of autonomous ground and aerial vehicles, precision mechatronics	2142	--	aghaffari@wayne.edu
Hasan, M. Arif	Topological acoustics, quantum-classical analogies, mechanical metamaterials	2138	7-3905	Hasan.Arif@wayne.edu
Chalhoub, Nabil (Chair)	Dynamics, vibration, controls	2105	7-3753	ab9714@wayne.edu
Islam, Mahbub	ReaxFF, and eReaxFF molecular dynamics (MD), Density Functional Theory (DFT), interfacial chemistry of Li-ion, Metal-sulfur batteries	2119	7-3885	gy5553@wayne.edu
Jansons, Marcis	Engine technology, combustion, optical Diagnostics	2125	7-3880	mjansons@wayne.edu
Ku, Jerry	Electric-drive vehicle and battery modeling simulation and controls, heat transfer and combustion	2117	7-3814	jku@wayne.edu
Lai, Ming-Chia	Thermal and fluid engineering, energy, propulsion	2123	7-3893	lai@eng.wayne.edu
Newaz, Golam Ozbeki, Ali	Advanced materials, composites Finite element method, product development & design	2135 2146	7-3877 7-3796	gnewaz@eng.wayne.edu ozbeki@wayne.edu
Pylypchuk, Valery	Vibrations, dynamics & stability	2118	7-1233	pilipchuk@wayne.edu
Samimi-Abianeh, Omid (Director, UG Studies)	Thermodynamics, combustion, multi-phase flow	2127	7-3782	o.samimi@wayne.edu
Tan, Chin-An	Dynamics, control of structural and biological systems	2137	7-3888	tan@wayne.edu
Wu, Sean F.	Acoustics, vibration, noise control & signal processing	2133	7-3884	swu@eng.wayne.edu
Wu, Xin	Material processing and manufacturing	2144	7-3882	xwu@eng.wayne.edu

Staff

Name	Position	Room	Phone	Email
Wadley, Keith	Academic Advisor III	2129	7-5939	keith.wadley@wayne.edu
Rapicano, Lisa	Administrative Assistant II	2103	7-8940	eg9835@wayne.edu
Front Desk	Student Assistant	2100	7-3843	

Note that all phone numbers have the following format: (313) 57X-XXXX.

Part-Time Teaching Faculty

Faculty Name

Abdolhosseini, Reza
AbdulNour, Bashar
Farhat, Hassan
Ganesan, Velayudham
Grace, Ihab
Jie, Min
Mital, Naveen
Peterson, Amy
Schihl, Peter

Email Address

av6359@wayne.edu
babdulnour@wayne.edu
hmfarhat@wayne.edu
fw6721@wayne.edu
igrace@wayne.edu
min.jie@wayne.edu
Naveen.mital@wayne.edu
amypeterson@wayne.edu
bm8429@wayne.edu

5000-Level Coherent Technical Electives:

- ME 5000 Engineering Analysis I
- ME 5990 Directed Study
- ME 5992 Research Experiences for Undergraduates

Advanced Materials and Manufacturing

- ME 5040 Finite Element Methods I
- ME 5453 Automotive Manufacturing System and Processes
- ME 5580 Computer-Aided Mechanical Design
- ME 5620 Fracture Mechanics in Engineering Design
- ME 5700 Fundamentals of Mechanics
- ME 5720 Mechanics of Composite Materials
- ME 5995 Special Topics in Mechanical Engineering
 - Multi-Disciplinary Design Optimization
 - Lean Product Development

Advanced Propulsion and Energy Systems

- ME 5110 Fundamental Fuel Cell Systems
- ME 5210 Convective and Radiative Heat Transfer
- ME 5215 Fundamentals of Battery Systems for Electric and Hybrid Vehicles
- ME 5300 Intermediate Fluid Mechanics
- ME 5800 Combustion Engines
- ME 5810 Combustion and Emissions
- ME 5995 Special Topics in Mechanical Engineering
 - Data Acquisition for Automotive Powertrains

Noise and Vibration Controls

- ME 5400 Dynamics II
- ME 5410 Vibrations II
- ME 5425 Analyses of Vibration Measurements & Instrumentation
- ME 5440 Industrial Noise Control
- ME 5460 Fundamentals in Acoustics and Noise Control
- ME 5995 Special Topics in Mechanical Engineering
 - Vehicle Dynamics I

Biomedical Engineering

- ME 5100 Engineering Physiology
- ME 5160 Musculoskeletal Biomechanics
- ME 5170 Design of Human Rehabilitation Systems
- ME 5180 Introduction to Biomaterials

Policy on Course Prerequisites

The Mechanical Engineering Department has instituted a system of prerequisites and co-requisites for every undergraduate course. These requirements are designed to ensure that students have the necessary background knowledge for the course in which they are currently enrolled. This strategy is also essential to ensure that students will successfully complete those courses and to maintain our ABET (The Accreditation Board for Engineering and Technology, <http://www.abet.org/>) accreditation. Thus, the Department will **adhere strictly to this established policy, and waivers may be considered for truly**

exceptional cases only. Request for waiving any established department or college rules must be **submitted to the Director of Undergraduate Studies** using the **standard petition form (Appendix D)**. The Director will then consider each petition carefully and provide his/her decision to the student by e-mail. For special cases, the Director of Undergraduate Studies may consult the Mechanical Engineering Undergraduate Committee to make the decision.

Although we rely primarily on the Banner system for prerequisite and pre-professional checks, students will be **administratively withdrawn at any time during the term** if through any other means we find them lacking the necessary requirements. Compliance with prerequisite and pre-professional requirements is **solely the responsibility of the student**. Curricular checks provided by faculty or advisors, in response to a student's request, are to be regarded as advises only. Only the authorized faculty member, and **not the course instructor**, can approve any deviation from established department or college rules.

Code of Student Conduct

It is the responsibility of each student to adhere to the principles of academic integrity. Academic integrity means that a student is honest with him/herself, fellow students, instructors, and the University in matters concerning his or her educational endeavors. Thus, a student should not falsely claim the work of another as his/her own, or misrepresent him/herself so that the measures of his/her academic performance do not reflect his/her own work or personal knowledge. In this regard, cheating will not be tolerated. Cheating includes (but is not limited to) any communication (written or oral) during examinations and sharing of work, such as using the same models or computer programs or copying work. All homework and projects must be an individual effort unless specifically noted. **STUDENTS WHO CHEAT ON ANY ASSIGNMENT OR DURING ANY EXAMINATION WILL BE ASSIGNED A FAILING GRADE FOR THE COURSE.** Therefore avoid all appearance of improper behavior! Students who witness cheating should report the incident to the instructor as soon as possible. Students are also welcome to discuss any concerns related to cheating with the Chair of the Mechanical Engineering Department.

Table of Pre/Co-Requisites for Mechanical Engineering Undergraduate Courses

Effective Winter 2018 Semester

<u>Course</u>	<u>Pre/Co-Requisite(s)</u>
ME 2200, 3 cr.	BE 1500, MAT 2020, PHY 2175, with BE 1300/1310 as pre/co-requisite
ME 2410, 3 cr.	BE 1500, MAT 2020 and PHY 2175
ME 2420, 3 cr.	ME 2410 or CE 2410
ME 2500, 2 cr.	BE 1500, MAT 2030, with MAT 2150 as pre-/co-requisite
ME 3300, 4 cr.	ME 2410, BE 2550 or ME 2500; Admission to professional program
ME 3400, 3 cr.	ME 2500, ME 2410 and MAT 2150; Admission to professional program
ME 3450, 3 cr.	BE 1500, ME 2420, BE 1300/1310; Admission to professional program
ME 4150, 4 cr.	ME 3450 and BE 2100
ME 4210, 4 cr.	ME 3300 and ENG 3050
ME 4300, 4 cr.	ME 4210 and ENG 3060
ME 4410, 4 cr.	ME 3400 and ENG 3050
ME 4420, 4 cr.	ME 3400
ME 4500, 4 cr.	ME 4150, ENG 3060, BE 2550 or ME 2500, with ME 4410 as pre/co-requisite

NOTES:

- **ME 4500 & ME 4300 cannot be taken concurrently.**
- **Prerequisites are cumulative.**
- **ME 2200 & 2410 are pre-professional courses.**

Policy on Transfer of Credits

- Students who wish to enroll in courses at other accredited institutions and transfer the credits of these courses to their curriculum at WSU should first consult the Academic Advisor or the Director of Undergraduate Studies before making their plans.
- **All transfer of credits for ME courses must be approved by the Director of Undergraduate Studies.** Use the form in Appendix C for such requests. Both the university online course transfer equivalency table and recommendations by the Registrar Office are used as a guide only as these have not been updated to reflect ME's continuous curriculum improvements.
- For all students: Under normal circumstances, most 4000-level courses (ME 4210, 4150, 4300, 4410, 4420, 4500) are **NOT** transferable. Exceptions pertain to special exchange programs (e.g., Germany exchange program). Those cases will be considered by the Director of Undergraduate Studies on a case-by-case basis.
- For WSU regular students: Only courses that are similar in content to our courses are transferable. For example, if a student takes a thermodynamics course without a laboratory component at another institution, then this course cannot be counted as similar to ME 2200 and thus is not transferable.
- For transfer students: At least twenty-four of the University-required minimum thirty-two credits for WSU degree must be ME courses. Of these twenty-four credits, twenty credits go to the 4000-level courses and no restriction is imposed on the remaining four credits as long as they are consistent with our pre- and co-requisite requirements and other requirements that are applicable.

Undergraduate Academic Performance Regulations

Pre-professional and Professional Programs

(For details see "Handbook for Pre-Professional Students," downloadable from College website.)

Students must first complete the pre-professional program (basically the freshman and sophomore years) before applying to the professional program (basically the junior and senior years). Students are allowed to register for 3000-, 4000-, or 5000-level engineering courses ONLY AFTER they are admitted to the professional program. Pre-professional requirements include earning a C-minus or better in each, and a minimum 2.5 GPA, in the following courses: MAT 2010, 2020 and 2030; CHM 1125 and 1130; PHY 2175 and 2185; BE 1200 and 1300/1310; ENG 1020; and ME 2200 and 2410.

Students who complete the pre-professional curriculum but do not meet the necessary GPA requirement should meet with the Associate Dean for Academic Affairs to determine if a Plan of Work can be developed that will allow the student to demonstrate greater academic mastery of the technical subjects and also elevate his/her GPA. This Plan of Work may include repeating courses, or taking additional courses that may not count towards the degree requirements. Students who do not complete the Plan of Work so as to raise their GPA to the required level within a stipulated period of time will be excluded from the College.

Repeating Courses

Students must earn a grade of C-minus or higher in all courses (see Pre-professional Handbook). If a substandard grade (which includes WF/WN/WP) is earned in any course, the student **MUST** repeat the course in the next regular semester that the course is offered.

The grade earned in a repeated course will replace the original grade in GPA calculation, if a “Repeat of Course” form, approved by the Academic Advisor, is submitted to the Registrar’s Office, but the original grade will remain on the transcript. Students who have studied only at Wayne State will be **allowed only five repeats** in their pre-professional and professional programs. If a sixth repeat is required to complete the required curriculum, exclusion proceedings will be initiated. Transfer students will earn one allowed repeat for every 24 credits earned at Wayne State.

Students will be **allowed only two repeats** in a single course. Students who receive three (3) substandard grades in a single class will be subject to exclusion considerations from the College.

Probation and Exclusion

Any student whose University or College GPA falls below 2.0 will be placed on probation, and is given a warning letter or e-mail message, and is required to meet with their academic advisor. The letter will explain that the student has one semester in which to bring up his/her GPA, or he/she will risk exclusion from the College of Engineering.

Any students who has (a) not met the conditions of the probation, (b) exceeded the number of repeated allow or (c) received three (3) substandard grades in a single course, will be considered for exclusion from the College of Engineering and issued a letter to this effect. Following exclusion, the privilege of registering in Engineering will be withheld for at least one calendar year. Students must gain readmission through the appeal process to re-enroll in the College of Engineering in future semesters.

Students can appeal the exclusion decision to the Mechanical Engineering Undergraduate Committee, and ultimately the College of Engineering Academic Standards Committee.

ME Course Offering and Class Scheduling Policies

Fall and winter are considered “primary” semesters, for which the Department will offer all required UG courses. Summer is not considered a primary semester.

The Department will offer every required course in a time slot after 5 PM at least once each academic year. Based on students’ preferences (in a student survey), every attempt will be made to offer 2000-level courses during the day, and 3000- and 4000-levels after 5 PM. The Fall and Winter course schedules will be set up such that there are no conflicts among courses intended to be taken in the same semester according to the “[Suggested BSME Curriculum](#)”.

APPENDIX: FORMS

Appendix A: Petition and Authorization Form to enroll in ME 5900, 5990, or 5992

Please use the following link: https://eng.wayne.edu/me/students/appendix_b.pdf

Appendix B: AGRADE Request Form

Please use the following link:

<https://engineering.wayne.edu/academics/programs/undergrad-experience/agrade>

Appendix C: College of Engineering Academic Petition Form (General Purpose)

Please use the following link: <https://eng.wayne.edu/me/students/cofeappeal.pdf>