



PHOENICIA UNIVERSITY

Innovation . Inspiration . Integrity

College of Engineering

Suggested Mechanical Engineering Degree Plan

2023-2024

College of Engineering

COE Curriculum

The Engineering curriculum at PU is designed to provide the students with broad, yet robust foundations in mathematics, basic science, and core engineering specialty within the context of a broad liberal arts academic environment. In addition to the science and engineering courses, our students are required to take general education courses, a necessary stepping stone for being well-rounded engineers. Besides conceptual/theoretical learning, the curriculum also emphasizes experiential learning as well as team work via laboratory work, practical training, and other types of hands-on experiences.

BE Program Design

The BE degree is awarded upon the satisfactory completion of 147 course credits. The program is a five-year program with the possibility to be completed in a four-year time period should the students elect to take courses during the summer term.

The breakdown of the engineering program courses is as follows:

- ***General Education courses – 30 credits***

These are common courses that all students will take with minor variations pending College selection. The target is to instill a significant dose of liberal arts education in the minds of engineering students. In this respect, the General Education requirement is a precondition for graduation.

- ***Free Elective course – 3 credits***

This course gives the students the opportunity to take a course of their choice to expand their horizon, and gain knowledge in a topic that matches their own interests.

- ***Core courses – 114 credits***

This category is divided into six groups of courses:

1. *Basic science and math requirements:* These science and math courses serve as the foundations to subsequent engineering courses.
2. *General Engineering common course requirements:* These are generally common and required engineering courses spanning across various engineering disciplines. In addition, students from any engineering discipline have the flexibility to take a 3-credit elective course from the general engineering course offering.
3. *Discipline-specific technical course requirements:* These courses represent the backbone technical knowledge necessary to gain proficiency and competency in a specific engineering discipline. The course offerings integrate a depth and breadth of expertise within each engineering discipline.
4. *Capstone design project:* All engineering departments have a 4-credit capstone design project course that the students should take in their final two semesters prior to graduation.

5. *Technical electives*: All engineering departments offer a minimum of 6 credit courses of technical electives. These courses offer opportunities for students to further deepen their knowledge in their program of study.
6. *Practical training – 0 credit (Pass/Fail basis)*. The students are expected to have an eight-week of professional training in an area related to their engineering discipline. This training provides a hands-on experience while giving the students a glimpse on what to expect in their career post-graduation. In addition, this is a unique opportunity to land a job and/or network with influential people in a specific engineering discipline.

Graduation Requirements

- **Course fulfillment**: Students need to complete all academic requirements needed according to the BE program.
- **Residence Requirements**: Students must maintain full-time status over four regular consecutive semesters with at least 12 credits of completed courses per semester.
- **Academic Performance**: Students must obtain a minimum “Program GPA” of 2.0 and a minimum “Cumulative GPA” of 2.0; no rounding (e.g., a GPA of 1.99) —whatsoever—will be applied. Additionally, students must obtain a minimum core-course GPA of 2.0.
- **Graduation Clearance**: Students obtain “Graduation Clearance” as detailed in the following section.
- **College satisfaction**: Students must exhibit personal and professional conduct in compliance with the “Student Conduct Policy”.

Graduation Clearance

Upon reaching senior-level status, students must fill out the graduation clearance form after completing all their degree requirements. The graduation clearance form should be signed by the following personnel: Departmental Coordinator, Dean of College, IT Director, Library Coordinator, Finance Director, Registrar Director, Career Center Director, Head of the Exit Interview Committee, President, and Chancellor. Failure to do so will delay graduation

COE Course Nomenclature

COE course structure and nomenclature is derived based on departmental course requirements and the common general course requirements:

General Engineering courses – GENG

Civil & Environmental Engineering courses – CENG

Electrical & Communication Engineering courses – EENG

Mechanical Engineering courses – MENG

Petroleum Engineering courses – PENG

Department of General Engineering

The Department of General Engineering was established in 2015. This department is an engineering service department; hence, it is a non-degree conferring department. The department offers basic engineering courses covering technical, managerial, economic, and professional expertise.

GENG Course Description

GENG 201. Introduction to Engineering – 3 cr.

This is an introductory course that gives a background to different types of engineering majors. Basic engineering projects are assigned so that students develop their individual and teamwork skills. At the end of this course, students are expected to understand the role of an engineer in society, and be able to identify the field of engineering as matching their interests. **Concurrent prerequisite: ENGL 101**

GENG 202. Statics – 3 cr.

The course covers the principles of force and moment vectors, the distribution of loads, the use of free-body diagrams and the internal forces, with applications to shear and moment diagrams under different loading conditions. **Concurrent prerequisite: MATH 201**

GENG 203. Dynamics – 3 cr.

This course presents the fundamentals of engineering dynamics, namely kinematics and kinetics. Students will learn to apply kinematics and kinetics to a particle and then move on to the principles of work and energy and impulse and momentum. These concepts are then applied to rigid bodies. **Prerequisite: GENG 202**

GENG 205. Engineering Drawings & Tools – 3 cr.

The course teaches undergraduate students the fundamentals of engineering drawing. Technical engineering drawing is covered in details: orthogonal projections, sectional views, auxiliary views, dimensions, and detailing. Applications focus on using a computer to generate CAD drawings and designs (AutoCAD).

GENG 206. Mechanics of Materials – 3 cr.

This course covers the mechanical behavior (stress-strain relationships) of different materials under tension, compression, bending, and shear stress. Mohr's circle, transformation equations, and Hooke's law are discussed. **Prerequisite: GENG 202**

GENG 207. Probability & Statistics in Engineering – 3 cr.

Covered topics include understanding and interpreting statistical measures, calculating probabilities associated with multiple events as well as common probability distributions. Other covered topics include conditional probability, Bayes theorem, correlation, linear regression, confidence intervals, and hypothesis tests. The course will be given from an Engineering perspective, with focus on solving probability and statistics problems in Engineering. (*Students can substitute GENG 207 with STAT 202 (Students cannot receive credit for both GENG 207 and STAT 202)*)

GENG 208. Thermodynamics – 3 cr.

This introductory course in Thermodynamics provides students with the tools (laws, skills, etc.) required to solve classical problems involving open and closed thermodynamic systems. From the basic zeroth law of thermodynamics to the energy conservation expressed in the first law to the concept of entropy generation in the second law, students learn to calculate work, heat transfer, and compare real systems to theoretical systems having maximum efficiency.

GENG 209. Fluid Mechanics – 3 cr.

This course covers the fundamentals of fluids properties and the principles of fluid mechanics. Topics include fluid statics, fluids in motion, drag and lift, hydraulic design, energy and momentum principles, turbulent and laminar flows, and measurement techniques. Other applications include Bernoulli's and Euler's equations. **Prerequisite: GENG 202**

GENG209L. Fluid Mechanics Laboratory – 1cr.

The laboratory introduces the students to the basic fluid mechanics experiments to supplement theoretical concepts covered in the classroom. **Corequisite: GENG 209**

GENG 210. Electric Circuits – 3 cr.

This course covers electric circuits' fundamentals. Starting with basic circuit variables, definitions, and relationships, to DC circuit analysis tools, such as node and mesh analysis, source transformations, Thevenin and Norton equivalent circuits, and maximum power transfer. Students will also cover AC circuit basics, basic inductor and capacitor circuits, phasor analysis, AC power calculations, and steady-state and transient responses.

GENG 211. Material Science – 3 cr.

This course covers the relationship between the structure of materials (metals, ceramics, and polymers) and their optical, thermal, mechanical, and electrical properties. It also includes the study of the bonding and atomic structure of materials including the crystal structures and defects. Microstructural development and phase equilibria will also be covered.

GENG 212. Introduction to Engineering Programming – 3 cr.

This course aims to familiarize students with programming as a tool for solving Engineering problems. It encompasses the fundamentals of computer programming, such as language structure, arithmetic operations, operator precedence, file input and output, conditions, loops, functions, arrays, and memory allocation. The course also includes 2.5 teaching hours of weekly lab sessions.

Non-Technical Core General Engineering Courses

GENG 204. Engineering Economics – 3 cr.

This course investigates methods of economic analysis for decision making in engineering applications. Topics include cost of capital, net present value, rates of return, investment decision, replacement analysis, capital financing and financial statement analysis.

GENG 213. Accounting & Finance for Engineers – 3 cr.

The intent of this course is to provide engineering students with the information and skills necessary to understand the language of business and, accordingly, make informed financial decision making at both an operational level and a business enterprise level. Some of the covered topics include basic principles in financial/managerial accounting, the generation and understanding of financial statements, ratio analysis, financial planning and growth, capital asset pricing model, cost of capital, capital structure and other relevant topics. **Prerequisite: GENG 204**

GENG 214. Engineering Ethics, Leadership & Professionalism – 3 cr.

This course is an analytical excursion into the behavioral aspects of the engineering leader, particularly as it relates to the moral responsibility of the engineering leader. The course first introduces the fundamental leadership theories, namely the traits' approach, the behavioral approach, the contingency fundamental and the contemporary approach. The course then tackles moral philosophy, including universalism, utilitarianism, relativism, egoism, and virtue ethics. The course further tackles engineering professionalism from the standpoint of how engineers ought to practice and conduct themselves to be good stewards of the profession and society. The course then explores the relative effectiveness of ethics programs, such as compliance-based versus integrity-based ethical programs. Finally, the relevance and importance of engineering licensure will be discussed. **Prerequisite: ENGL 201**

GENG 216. Engineering Management & Public Policy – 3 cr.

This course exposes students to the fundamentals of engineering management principles and exposes them to the policy making process that integrates political, economic, social, technological, ecological (sustainability) and legal considerations. **Prerequisite: MNGT 201**

GENG 217. Strategic Management for Engineers – 3 cr.

This course is an integrative, big-picture course in which the engineering professional learns the key strategic issues facing managers in engineering corporations, including strategy formulation, strategy implementation, and strategy evaluation. This course enables the student to appreciate the integrative nature of engineering in relation to other core functional disciplines such as finance, accounting, marketing, sales supply chain, and human resources. This course heavily relies on case studies and/or simulation games. **Prerequisite: GENG 216**

GENG 218. Advanced Engineering Economics – 3 cr.

This course exposes the engineering students to advanced topics in economics and finance. Some covered topics include cost of capital, financial engineering, risk diversification, and valuation tools for the levered and unlevered firm/project. This is an experiential learning course that heavily makes use of simulation techniques via spreadsheets. **Prerequisite: GENG 204**

GENG 219. Effective Communication for Engineers – 3 cr.

This course provides engineering students with the effective communication skills necessary to convey engineering ideas and technical information through well-developed oral presentations and written reports. Students will learn how to prepare persuasive engineering presentations, write technical reports, and communicate across different contexts and situations team members and leaders. **Prerequisite: ENGL 201**

GENG 220. Advanced Engineering Programming– 3 cr.

This course introduces students to MATLAB specific programming topics that are relevant to Engineering. Topics include: Vectorization, 2D and 3D plots, timer functions, hardware interfaces, and creating Graphical User Interfaces. The course includes a project where students create a complete MATLAB application that supports one of their other course requirements. **Prerequisite: GENG 212**

General Engineering Courses across various Engineering Departments

Course Code	Course Title	Prerequisite(s)
MENG210	Advanced Thermodynamics	GENG208
MENG220	Mechanics of Machines	GENG203
MENG225	Characterization & Properties of Materials	GENG211
EENG202	Analog Signal Processing	GENG210
EENG211	Fundamentals of Microcontrollers	GENG212 or CMPS200
EENG251	Power & Machines	GENG210
CENG202	Geology for Engineering	ENGL101 (<i>concurrent prerequisite</i>)
CENG240	Hydraulics & Hydrology	GENG209
CENG260	Construction & Project Management	ENGL201 & GENG204
PENG202	Petroleum Geology	ENGL101 (<i>concurrent prerequisite</i>)

NB: Any of the above listed courses can be deemed as a general engineering elective, given that the course is not part of the student's degree plan and that the prerequisite(s) is/are met.

Department of Mechanical Engineering

The Department of Mechanical Engineering, established in 2015, offers a Bachelors of Engineering in Mechanical Engineering.

The mechanical engineering program exposes the students to the salient sub-disciplines within the mechanical engineering profession, namely thermal and fluid engineering, materials engineering, design and manufacturing engineering, and mechatronics. The students would be equipped with the robust skills to meet the local and global contemporary challenges inherent to the mechanical engineering profession.

MENG Program Educational Objectives

Within the first few years following graduation, the program's graduates should be able to:

- PEO1. Stand out as mechanical engineering professionals with the distinctive ability to employ a wide range of techniques, skills, and technological tools to solve problems within the broad scope of the mechanical engineering profession.
- PEO2. Become positive influencers with well-rounded personalities and with distinctive leadership skills to initiate and implement meaningful and long-lasting changes to their communities and their profession.
- PEO3. Exhibit ethical and professional judgment in understanding the impact of mechanical engineering design and implementation by accounting for economic, safety, societal, and environmental considerations.
- PEO4. Pursue a lifelong learning journey through the relentless pursuit of further formal and informal education for significant and relevant personal and professional growth.

MENG Program Design

The BE degree is awarded upon the satisfactory completion of 147 course credits. The program is a five-year program with the possibility to be completed in a four-year time period should the students elect to take courses during the summer term.

General Education Courses	
Arabic	3 Credits
English	6 Credits
Communication	3 Credits
Computing	3 Credits
Civilizations	6 Credits
Basic Science	3 Credits
Social Science	3 Credits
Globalization & World Cultures	3 Credits
Total GE Courses	30 Credits
Free Elective Courses	
Free Electives	3 Credits
Total Free Elective Courses	3 Credits
Core Math & Science Courses	
Math Courses	15 Credits
Science Courses	6 Credits
Total Core Math & Science Courses	21 Credits
Core General Engineering Courses	
GENG Courses	37 Credits
GENG Elective Courses	3 Credits
Total GENG	40 Credits
Mechanical Engineering Courses	
Core Courses	37 Credits
Professional Internship	0 Credits
Capstone Project	4 Credits
Engineering Technical Electives	12 Credits
Total MENG Courses	53 Credits

Suggested Mechanical Engineering Degree Plan

First Year					
Fall 1			Spring 1		
Course	Title	Wt.	Course	Title	Wt.
ENGL 201	English 1	3	ENGL 202	English 2	3
GENG 201	Introduction to Engineering	3	GENG 203	Dynamics	3
GENG 202	Statics	3	GENG 208	Thermodynamics	3
MATH 201	Calculus & Analytical Geometry	3	MATH 212	Differential Equations	3
CHEM 201	General Principles of Chemistry	3	PHYS 201	Introduction to Physics	3
CHEM 202	Introduction to Chemical Laboratory Techniques	2	PHYS 202	Introduction to Physics Lab	1
Total Credits		17	Total Credits		16

Summer 1		
Course	Title	Wt.
ARAB 201	Arabic 1	3
GENG 204	Engineering Economics	3
GENG 212	Introduction to Engineering Programming	3
Total Credits		9

Second Year					
Fall 2			Spring 2		
Course	Title	Wt.	Course	Title	Wt.
MATH 213	Numerical Methods	3	CIVL 201	Civilizations I	3
GENG 210	Electric Circuit	3	GENG 205	Engineering Drawings & Tools	3
GENG 211	Material Science	3	GENG 207	Probability & Statistics	3
GENG 206	Mechanics of Materials	3	EENG 251	Power and Machines	3
GENG 209	Fluid Mechanics	3	EENG 251L	Power and Machines Laboratory	1
GENG 209L	Fluid Mechanics Laboratory	1	GENG XXX	General Engineering Elective	3
Total Credits		16	Total Credits		16

Summer 2		
Course	Title	Wt.
CIVL 202	World Civilizations II	3
MATH 210	Linear Algebra	3
COMM 201	Communication Elective (Public Speaking)	3
Total Credits		9

Third Year					
Fall 3			Spring 3		
Course	Title	Wt.	Course	Title	Wt.
MNGT 201	Principles of Management & Organizational Behavior	3	GENG 214	Engineering Ethics, Leadership & Professionalism	3
XXXX XXX	Free Elective	3	MENG 211	Heat Transfer	3
EENG 201	Electronics	3	MENG 211L	Heat Transfer Laboratory	1
EENG 201L	Electronics Laboratory	1	MENG 221	Mechanical Design	3
MENG 210	Advanced Thermodynamics	3	MENG 222	Manufacturing Process	3
MENG 220	Mechanics of Machines	3	MENG 231	Instrumentation & Measurement	3
BCOM 300	Workplace Etiquette (Mandatory Workshop)				
Total Credits		16	Total Credits		16

Summer 3	
Course	Title
MENG290	Professional Internship
Total Credits	

Fourth Year					
Fall 4			Spring 4		
Course	Title	Wt.	Course	Title	Wt.
GENG216	Engineering Management & Public Policy	3	SOCL 210	Globalization & World Cultures	3
MENG 291	Final Year Project I	1	MENG292	Final Year Project II	3
MENG232	Control Systems	3	MENG212	Design of Thermal Systems	3
MENG232L	Control Systems Laboratory	1	XXXX XXX	Engineering Elective 3	3
MENG 233	Dynamic System Analysis	3	XXXX XXX	Engineering Elective 4	3
XXXX XXX	Engineering Elective 1	3			
XXXX XXX	Engineering Elective 2	3			
Total Credits		17	Total Credits		15

MENG Technical Elective Courses

Course Details		Cr.
MENG 213	HVAC	3
MENG 214	Advanced Fluid Mechanics	3
MENG 216	Internal Combustion Engine	3
MENG 223	Finite Element Analysis	3
MENG 225	Characterization & Properties of Materials	3
MENG 227	CAD / CAM	3
MENG 234	Vibrations Engineering	3
MENG 235	Mechatronics	3
MENG 245 *	Energy Engineering	3
MENG 293	Honor Thesis	3
CENG 243	Special Topics in Environmental Engineering	3
CENG 251	Advanced Mechanics of Materials	3
EENG 252 *	Renewable Energy Engineering	3
PENG 226	Petroleum Storage & Transmission	3
* Mechanical engineering students are not allowed to register in both MENG 245 and EENG 252. They can only choose either of these two courses.		

MENG Course Description

Thermal & Fluid Engineering Courses

MENG 210. Advanced Thermodynamics – 3 cr.

This course covers the advanced engineering concepts of thermodynamics including chemical processing, phase change, flow processes, air-conditioning, and energy transfer. It includes statistical thermodynamic analysis of heat, work, and entropy. **Prerequisite: GENG 208**

MENG 211. Heat Transfer – 3 cr.

This course focuses on the fundamental concepts of heat transfer: conduction, radiation, and convection. It includes numerical and experimental problems such as heat exchanger design, radiation exchange, and conduction simulations. Condensation and boiling heat transfer are also introduced. Mechanical engineering applications include jet engines designs, and microelectronics cooling. **Prerequisites: GENG 208 and GENG 209**

MENG 211L. Heat Transfer Laboratory – 1 cr.

This laboratory provides a hands-on exposure to the principles covered in the course. **Corequisite: MENG 211**

MENG 212. Design of Thermal Systems – 3 cr.

The course integrates the fundamental concepts of rate mechanisms (heat transfer, fluid dynamics and others) into the thermodynamic modeling systems by accounting for technical, economic, manufacturability, environmental and ethical considerations. **Prerequisite: MENG 211**

MENG 213. HVAC – 3 cr.

This course focuses on designing, building, and analyzing energy systems that include heating, ventilation, and air-conditioning applications. The students get trained on designing, testing, and operating equipment such as compressors, evaporators, and condensers. **Prerequisite: MENG 210**

MENG 214. Advanced Fluid Mechanics – 3 cr.

The course exposes the students to the advanced principles and applications of fluid mechanics. The salient topics include energy equations, viscous flows equations, and conservation laws. Other relevant topics include dimensional analysis, potential flow, compressible flow, shock waves, fluid pumps, and turbulence. **Prerequisite: GENG 209**

MENG 216. Internal Combustion Engine – 3 cr.

This course focuses on the fundamentals of operating and designing internal combustion engines. The analysis includes engine performance parameters, combustion calculation, efficiency, emissions, and environmental effects. Different engine types are introduced, such as spark ignition engine, gas turbines, and diesel turbines. **Prerequisites: MENG 210, MENG 231 and CHEM 201**

Design, Manufacturing, and Materials Engineering Courses**MENG 220. Mechanics of Machines – 3 cr.**

This course mainly covers the principles of machines and their mechanisms. Specifically, the course addresses the dynamics and kinematics analysis of machines, mechanism synthesis, linkage synthesis, cam design, and gear design. **Prerequisite: GENG 203**

MENG 221. Mechanical Design – 3 cr.

This course focuses on the fundamental understanding of machine components and their effective and efficient designs with practical application. Machine components include bearings, belts, shafts, springs, gears, screws, brakes, and welding joints. **Prerequisite: GENG 211; Concurrent prerequisite: GENG 206**

MENG 222. Manufacturing Process – 3 cr.

This course covers traditional and non-traditional manufacturing processing. Processes include CNC machines, welding, brazing, cutting, casting, etc. The course also covers process limitations, product selection, and design implications on cost, quality, and safety. **Prerequisite: GENG 211**

MENG 223. Finite Element Analysis – 3 cr.

This course introduces finite element analysis to mechanical systems design. Engineering applications include fluid mechanics, structural analysis, and heat and mass transfer. **Prerequisites: MENG 221 and MATH 213**

MENG 225. Characterization and Properties of Materials – 3 cr.

This advanced materials engineering course covers a variety of tools and techniques that are used to characterize micro-structural and mechanical behavior of different materials. **Prerequisite: GENG 211**

MENG 227. CAD/CAM– 3 cr.

This course covers computer-aided design (CAD) and computer-aided manufacturing (CAM) tools that focus on mechanical engineering design problems and applications. **Prerequisite: MENG 221**

Mechatronics Engineering Courses

MENG 231. Instrumentation & Measurement – 3 cr.

This course exposes the students to various sensors used in the industry, as well as their integration into instrumentation systems, and data acquisition methods. The course emphasis is on industrial control and automation systems. **Prerequisite: EENG 201**

MENG 232. Control Systems – 3 cr.

This course covers the mathematical principles of control systems: Modeling of linear, time-invariant continuous systems, transfer functions, open and closed loop state-space models, system stability, and feedback. **Prerequisite: MENG 231**

MENG 232L. Control Systems Laboratory – 1 cr.

This laboratory course supports the control systems course. Covers different types of control systems (On/Off, PD, PI, PID), designing controllers depending on applications, simulating system response, and experimentally demonstrating stability, and output of different control systems. **Corequisite: MENG 232**

MENG 233. DSA (Dynamic System Analysis) – 3 cr.

This course covers mathematical modeling of dynamic systems for mechanical, electrical, and thermal engineering systems. The course introduces simulation diagrams and the analysis of dynamical systems. **Prerequisites: GENG 203 and MATH 212**

MENG 234. Vibrations Engineering – 3 cr.

This course covers the analysis of forced and free vibrations of damped and non-damped systems. It includes vibration analysis of multi-degree freedom systems, nonlinear systems, and continuous systems. **Prerequisite: GENG 203**

MENG 235. Mechatronics – 3 cr.

This course combines both mechanical and electrical disciplines to provide the fundamental framework for designing mechatronic systems. Topics include control theory, sensors, signal conditions, and actuators. **Prerequisites: MENG 231 or EENG 242**

Power and Energy Engineering Courses**MENG 245. Energy Engineering – 3 cr.**

This course covers the various applications of renewable energy (such as solar energy and other forms of clean energy), as well as their sustainability. Particular emphasis would be in energy generation, transmission, consumption, and storage. **Prerequisite: EENG 251**

Projects (Team / Individual) / Special Topic Courses**MENG 290. Professional Internship**

The students are expected to have an eight-week of professional training in an area related to mechanical engineering. Students become eligible to register for this course after completing 90 credit hours. **Prerequisites: GENG 205, MENG 211, MENG 220, MENG 222, BCOM 300, ENGL 202, COMM 201, and MNGT 201.**

MENG 291. Final Year Project I – 1 cr.

A group of engineering students are required to write a proposal for a capstone project under the guidance and approval of a faculty member. The group is expected to clearly define the project, state its objectives, complete a literature survey, and select a design method(s) that will culminate in the actual construction of a product and/or the generation of an actionable plan in the subsequent semester. The criteria to evaluate project proposal include a substantive evaluation of proposal content, an ability to communicate effectively (both orally and in writing), and a keen awareness of project management skills, health, safety, social, economic and environmental impacts of their proposals. **Prerequisites: Senior Standing, MENG210, MENG220, MENG222, and Departmental Approval**

MENG 292. Final Year Project II – 3 cr.

This is a continuation to Final Year Project 1. Students will implement their proposals by taking into account the feedback offered by the faculty committee in Capstone Project 1. Students are expected to defend their product at the end of the semester to a committee, and submit a technical report and presentation. The criteria for evaluation of the Capstone Project 2 include a demonstration of strong technical knowledge, an ability to communicate effectively (both orally and in writing), a keen

awareness of project management skills, an understanding of ethical conundrums in the context of a contemporary global world, and an ability to intertwine technological, economic, societal, ecological, legal, and health issues. **Prerequisite: MENG 291**

MENG 293. Honor Thesis – 3 cr.

The honor thesis course is to give opportunities to outstanding students to work on a challenging research or industry project, where the outcome is either a research publication or industry prototype.

Prerequisite: MENG 290

BCOM 300. Workplace Etiquette

This is a mandatory workshop that all students should successfully complete prior to their internships. The course comprises a series of workshops that focus on workplace etiquette and communication in formal and professional settings. In this course, students develop their business etiquette and professional practice skills in addition to their presentation skills so that they are well-equipped for their internships. **Prerequisite: ENGL 201**



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