DEPARTMENT OF MECHANICAL ENGINEERING

Bachelor of Science Mechanical Engineering Fall 2019 and Later (122 units)

General Education Lower Division Requirements (21 units)

BLOCK A – Basic Subjects

A1 - Oral Communication	COMM 1100 or HNRS 1100 (3)
A2 - Written Communication	ENGL 1005B or 1010 (3)
A3 - Critical Thinking and Composition	Fulfilled within Major

AMERICAN INSITUTIONS

U.S. History	1 course from approved list (3)
U.S. Constitution / Local Govt	1 course from approved list (3)

BLOCK C – Arts & Humanities

C1- Arts	1 course from approved list (3)
C2- Humanities	ENGR 3010 (3)

BLOCK D – Social Sciences CE/EE/ME 3000 (3)

BLOCK E – Lifelong Understanding ENGR 1500** (3) or GE Block E

BLOCK F – Ethnic Studies 1 course from approved list (3)

Writing Intensive Requirement
ME 4971 and ME 4972

Civic Learning/Community Engagement Requirement
ENGR 1500 at lower division
ME 4971 and ME 4972 at upper division

Diversity (2 courses, can also meet other GE reqs)
Select one race/ethnicity (re)(3)
Select one diversity (d) or (re) (3)

BLOCK B – Natural Science and Math met within major

Upper Division GE met within the major

Note: Prior to Fall 2021 GE requirement included additional Block D instead of Block F.

Major Requirements (101 units) [*A C or better is required for courses with a* **]

Lower Division Major Requirements (50 units)

CHEM 1040**	**General Chemistry for Engineers (4)** Prerequisites: Completion of GE Math (B4) or GE Math supported instruction is not required (Math Placement Category I or II). Must be an engineering major.
CE/ME 2010**	**Statics (3)** Prerequisites: MATH 2120 and PHYS 2100 both with a minimum C grade.
ME 2030**	**Introduction to Mechanical Design (3)** Prerequisite: ENGR 1500 and PHYS 2100 both with a minimum C grade.
ME 2040**	**Circuit Analysis for Mechanical Engineers (3)** Prerequisites: Math 2120 and PHYS 2200 with a minimum C grade.
CE/ME 2050**	**Strength of Materials I (3)** Prerequisites: CE/ME 2010 with a minimum C grade.
ME 2070**	**Materials Science and Engineering (3)** Prerequisites: CHEM 1040 and MATH 2110 both with a minimum C grade.
CE/ME 2800**	**Numerical Methods for Engineers I (1)** Prerequisites: MATH 2550 with a minimum C grade.
MATH 2110**	**Calculus I (4)** Prerequisites: MATH 1040 with a minimum C grade, or MATH 1081 and MATH 1083 both with a minimum C grade, or MATH 1082 and MATH 1083 with both a minimum C grade, or ESM 1082 and MATH 1083 both with a minimum C grade, and with satisfactory score on placement examination. Co-requisite: MATH 2111 with same section number if any of the prereq courses is graded below B-.
MATH 2120**	**Calculus II (4)** Prerequisites: MATH 2110 with a minimum C grade; students with a grade of less than B- in MATH 2110 must enroll concurrently in MATH 2121.
MATH 2130**	**Calculus III (3)** Prerequisites: MATH 2120 with a minimum C grade; students with a grade of less than B- in MATH 2120 must enroll concurrently in MATH 2131.
MATH 2150**	**Differential Equations (3)** Prerequisites: MATH 2130 with a minimum C grade.
MATH 2550**	**Introduction to Linear Algebra (3)** Prerequisite: MATH 2120 with a minimum C grade.
PHYS 2100**	**General Physics I (5)** Prerequisites: MATH 2110 with a minimum C grade.
PHYS 2200**	**General Physics II (5)** Prerequisites: PHYS 2100 with minimum C grade
ENGL 2030**	**Introduction to Technical Writing (3)** Prerequisites: ENGL 1010 with a minimum C grade.

Upper Division Major Requirements (45 units)

CE/EE/ME 3000**	**Economics for Engineers (3)** Prerequisites: None
ENGR 3010**	**Ethics & Professionalism in Engineering (3)** Prerequisites: Junior or Senior standing in engineering.
CE/ME 3030**	**Fluid Mechanics I (3)** Prerequisites: PHYS 2100 and CE/ME 2010 both with minimum C grade.

ME 3039	**Fluid Mechanics Lab I (1)** Co-requisites: CE/ME 3030 with a minimum C grade.
ME 3040**	**Experimental Methods for Engineers (3)** Prerequisites: EE/ME 2040 and MATH 2120 both with a minimum C grade.
CE/ME 3120	**Strength of Materials Lab I (1)** Prerequisite: CE/ME 2050
ME 3200**	**Dynamics (3)** Prerequisites: CE/ME 2010 with minimum C grade.
ME 3210**	**Kinematics of Mechanisms (3)** Prerequisite: ME 3200 with a minimum C grade.
ME 3230**	**Machine Design I (3)** Prerequisites: ME 2030, CE/ME 2050, ME 2070 and MATH 2130 all with a minimum C grade.
ME 3260**	**Thermodynamics (3)** Prerequisites: MATH 2120 and PHYS 2200 both with minimum C grade
ME 3270**	**Manufacturing Processes (3)** Prerequisites: ME 2030, CE/ME 2050 and ME 2070 all with a minimum C grade.
CE/ME 3800**	**Numerical Methods for Engineers II (2)** Prerequisites: CE/ME 2800 and MATH 2150 both with minimum C grades
ME 4061**	**Heat Transfer I (3)** Prerequisites: MATH 2150, CE/ME 3030, and ME 3260 all with minimum C grades
ME 4069	**Thermal Systems Lab (1)** Prerequisites: ME 4061 with minimum C grade
ME 4110	**Vibrational Analysis (3)** Prerequisites: CE/ME 3200, and MATH 2150 both with minimum C grade
ME 4310	**Material Lab (1)** Prerequisite: ME 2070 with a minimum C grade.

Senior Design Requirements

The Senior Design requirement is a two course series that must be completed sequentially. ME 4971 is only offered in Fall.

ME 4971**	**Mechanical Engineering Senior Project I (3)** Prerequisites: ME 3000, ENGR 3010, ME 3210, and ME 3230. Prerequisite or Co-requisite: ME 3040, ME 3270, ME 3800 and ME 4061. All Prerequisite with minimum C grades.
ME 4972**	**Mechanical Engineering Senior Project II (3)** Prerequisites: ME 4971 with minimum C grade.

Upper Division Technical Electives (6 units) *Select at least 6 units from courses listed below in consultation with academic advisor.*

ME 4020	**Strength of Materials II (3)** Prerequisites: ME 3230 and MATH 2150 both with a minimum C grade.
ME 4030	**Aerodynamics (3)** Prerequisites: CE/ME 3030 and MATH 2130 both with a minimum C grade.
ME 4040	**Propulsion Systems (3)** Prerequisites: ME 3030 and ME 3260 both with minimum C grade
ME 4062	**Heat Transfer II (3)** Prerequisites: ME 4061 with minimum C grade
ME 4070	**Heating, Ventilation and Air Conditioning Systems (3)** Prerequisites: ME 3030, ME 3260 and ME 4061 all with minimum C grade
ME 4090	**Mechanical Engineering Analysis (3)** Prerequisites: MATH 2150 with a minimum C grade and senior standing
ME 4120	**Control of Mechanical Systems (3)** Prerequisites: ME 4110 and PHYS 2200 both with a minimum C grade.
ME 4140	**Machine Design II (3)** Prerequisite: ME 3230 with a minimum C grade.
ME 4180	**Energy Systems and Sustainability (3)** Prerequisites: CHEM 1040 and ME 3260 both with a minimum C grade.
ME 4210	**Dynamics of Mechanisms (3)** Prerequisites: ME 3210. Prerequisite/co-requisite: ME 3800. All prerequisites with minimum C grades.
ME 4220	**Optimization of Mechanical Engineering Systems (3)** Prerequisites: ME 4061, MATH 2150 and PHYS 2200 all with minimum C grades.
ME 4230	**Finite Element Analysis (3)** Prerequisites: MATH 2550, ME 2800 and MATH 2150; Co-requisites: ME 3230 and ME 4061 all prerequisites with a minimum C grade.
ME 4300	**Properties and Selection of Engineering Materials (3)** Prerequisites: ME 2070, ME 3270 both with a minimum C grade.
ME 4500	**Biomechanics (3)** Prerequisites: CE/ME 2050 and ME 3200 with a minimum C grade.
ME 4510	**Biomaterials (3)** Prerequisites: CHEM 1040, CE/ME 2050 and ME 2070 all with a minimum C grade.
ME 4540	**Special Topics in Mechanical Engineering (1-3)** Prerequisites: Senior standing in ME; enrollment subject to approval of instructor.
ME 4590	**Rehabilitation Design & Internship (3)** Prerequisites: ME3200 with a minimum C grade; Co-requisites: ME 3210 or ME 4210 all with a minimum C grade.
ME 4810	**Introduction to Robotics (3)** Prerequisites: ME 2040 and ME 3200 with a minimum C grade.
ME 4990	**Undergraduate Directed Study (1-4)** Prerequisites: Consent of an Instructor, application form