

FREDERICK UNIVERSITY
SCHOOL OF ENGINEERING AND APPLIED SCIENCES
MECHANICAL ENGINEERING DEPARTMENT, BSc in Mechanical Engineering

Subjects and Prerequisites

1. Required Courses

Code	Name	ECTS	Lecture	Lab	Prerequisites Codes
AMAT 111	Calculus and Analytic Geometry I	5	3	0	None
AMAT 122	Calculus and Analytic Geometry II	5	3	0	AMAT 111
AMAT 181	Linear Algebra with MATLAB	5	3	0	None
AMAT 204	Differential Equations	5	3	0	AMAT 122, AMAT181
AMAT 223	Calculus III	5	3	0	AMAT 122
AMAT 300	Probability and Statistics	5	3	0	AMAT 122
AMAT 314	Numerical Methods	5	3	0	AMAT181, AMAT 204, AMAT223
APHY 111	Mechanics, Heat, and Waves with Lab	5	3	1	AMAT111+
APHY 112	Electromagnetism and Optics with Lab	5	3	1	APHY 111, AMAT122+
ACSC 104	Computer Programming for Engineers	5	2	2	None
AEEE 103	Electrical Science I	5	3	1	None
AMEM 100	Freshman Mechanical Engineering	4	3	0	None
AMEW 101	Mechanical Workshop	2	0	3	None
AMEM 107	Introduction to Materials	5	3	0	None
AMEM 110	Materials Engineering	5	3	0	AMEM 107
AMEG 103	Engineering Drawing	4	3	0	None
AMEG 202	Computer Aided Design	5	1	3	AMEG 103
ACES 103	Statics	5	3	0	None
AMEM 208	Dynamics	5	3	1	ACES 103
AMEM 214	Strength of Materials and Structures with Lab	6	3	2	ACES 103, AMEM110
AMEM 219	Introduction to Finite Element Method in Structural Engineering	5	3	0	AMEM 214, AMAT181
AMEE 200	Thermodynamics I	5	3	1	AMAT 122+
AMEE 202	Fluid Mechanics I	5	3	1	AMAT 204+
AMEM 201	Manufacturing Processes	5	3	0	AMEM 110
AMEM 211	Instrumentation and Data Acquisition Systems	5	3	1	AEEE 103, ACSC104
AMEM 203	Engineering Economy	5	3	0	AMAT 111
AMEM 316	Machine Elements I	6	3	1	AMEM 219
AMEM 323	Mechanical Vibrations and Machine Dynamics	6	3	1	AMAT 204, AMEM208
AMEE 304	Heat Transfer	6	3	1	AMEE 200, AMEE202
AMEM 317	Machine Elements II	6	3	1	AMEM 316
AMEM 327	Analysis and Design of Mechanical Control Systems	6	3	1	AMAT 314
AMEE 310	Hydraulics and Pneumatics	5	3	1	AMEE 200, AMEE202
AMEE 407	Alternative Sources of Energy	5	3	0	AMEE 303
AMEE410	Analysis of Power Generation Technologies	5	3	0	AMEE 200, AMEE 202
AMEM 400	Design and Organization of Production Systems	5	3	0	AMEM 303

AMEG 408	Heating, Cooling and Air Conditioning	6	3	1	AMEE 200, AMEE202
AMEE 431	Internal Combustion Engine Fundamentals	5	3	0	AMEE 200, AMEE202
AMEM 405	Manufacturing Processes with the aid of CAD/CAM Systems	6	3	1	AMEG 202, AMEM201
AMEM 414	Mechanical Engineering Design & Optimization	5	3	0	AMEM 317
AMEM 413	Mechatronics	5	3	0	AMEM 326, AMEM 317, AMEE 310, AMEE 302
AMET 400	Senior Project	8	1	0	None

2. Mechanical Engineering Electives

Code	Name	ECTS	Lecture	Lab	Prerequisites Codes
AMEE 303	Energy Management and Conservation	5	3	0	None
AMEE 401	Aerodynamics	5	3	0	AMEE 202, AMEE 200
AMEE 402	Turbomachinery	5	3	0	AMEE 200, AMEE202
AMEE 404	Advanced Heat Transfer	5	3	0	AMAT 204, AMEE302
AMEE 405	Thermodynamics II	5	3	0	AMEE200, AMAT 223
AMEE 406	Fluid Mechanics II	5	3	0	AMEE 202
AMEE 408	Mechanical Engineering Analysis	5	3	0	AMAT 204, AMAT 223
AMEM 308	Total Quality Management	5	3	0	AMAT300
AMEM 309	Tribology I	5	3	0	AMEM 201
AMEM 315	Kinematics of Mechanisms	5	3	0	AMEM 208
AMEM 310	Introduction to Composite Materials	5	3	0	AMEM 110, AMEM210
AMEM 402	Introduction to Robotics	5	3	0	AMEM 211, AMEM326, AMEM208
AMEM 403	Operations Management	5	3	0	AMEM 400
AMEM 407	Introduction to Boundary Elements in Engineering	5	3	0	AMAT 204, AMAT 223
AMEM 408	Tribology II	5	3	0	AMEM 309
AMEE 403	Gas Turbines	5	3	0	AMEE 200, AMEE202
AMEM 410	Nanotechnology	5	3	0	AMEM 201
AMEM 411	Advanced Manufacturing Processes	5	3	0	AMEM 201
AMEG 203	Computer Aided Design Methodology II	5	1	3	AMEG104, AMEG202