

Mechanical Engineering Major Degree Plan

The specific course requirements for the MAE preprofessional program and the MAE professional programs are quite extensive and may occasionally change. For these reasons, the complete requirements are not listed here. For more information, contact the department or send an Internet e-mail request to joan.smith@usu.edu.

Required Coursework (126 credits)

Pre-professional Program

Freshman Year (32 credits)

Fall Semester (15 credits)

MATH 1210 (QL) ² Calculus I.....	4
CHEM 1210 ² Principles of Chemistry I.....	4
CHEM 1215 ² Chemical Principles Laboratory I.....	1
University Studies Breadth courses.....	6

Spring Semester (17 credits)

MATH 1220 (QL) ² Calculus II.....	4
PHYS 2200 ² Elements of Mechanics.....	2
MAE 1200 ² Engineering Graphics.....	2
MAE 2650 ² Manufacturing Processes.....	3
University Studies Breadth courses.....	6

Sophomore Year (31 credits)

Fall Semester (16 credits)

MATH 2210 (QI) ² Multivariable Calculus.....	3
ENGR 2010 ² Engineering Mechanics Statics.....	2
ETE 2210 ² Electrical Engineering for Nonmajors.....	4
ENGL 2010 (CL2) ² Intermediate Writing: Research Writing in a Persuasive Mode.....	3
PHYS 2220 (BPS/QI) ² General Physics—Science and Engineering II.4	

Spring Semester (15 credits)

MATH 2250 (QI) ² Linear Algebra and Differential Equations.....	4
MAE 2300 ² Thermodynamics I.....	3
ENGR 2030 ² Engineering Mechanics Dynamics.....	3
ENGR 2140 ² Strength of Materials.....	2
MAE 2160 ² Material Science.....	3

Professional Program

Junior Year (31 credits)

Fall Semester (16 credits)

MAE 2200 Engineering Numerical Methods I.....	3
MAE 3040 Mechanics of Solids.....	3
MAE 3320 Advanced Dynamics.....	3
MAE 3400 Thermodynamics II.....	3
MAE 3420 Fluid Mechanics.....	3
MAE 3600 Engineering Professionalism and Ethics.....	1

Spring Semester (15 credits)

MAE 2450 Engineering Numerical Methods II.....	3
MAE 3340 Instrumentation and Measurements.....	3
MAE 3440 (QI) Heat and Mass Transfer.....	3
MAE 4300 Machine Design.....	3
STAT 3000 (QI) Statistics for Scientists.....	3

Senior Year (31-32 credits)

Fall Semester (16-17 credits)

MAE 4400 (CI) Fluids/Thermal Laboratory.....	2
MAE 4800 (CI) Capstone Design I.....	3
MAE 5300 Vibrations.....	3
Technical Elective courses ¹	6
University Studies Depth Humanities and Creative Arts (DHA) course.....	2-3

Spring Semester (15 credits)

MAE 4810 Capstone Design II.....	3
Technical Elective courses ¹	6
University Studies Breadth course.....	3
University Studies Depth Social Sciences (DSS) course.....	3

¹Students must select 15 credits of technical elective courses from the list of approved MAE Technical Elective Courses shown below.

²These courses are required for admission to the Professional Engineering Program (PEP).
Caution: Even though MAE 2200 and 2450 are lower-division courses and are sometimes taken by sophomores, they are not required for admission to the Professional Program. Hence, they are subject to the Professional Program "one repeat allowed" rule.

Note: Elective courses, once selected and undertaken by a student, become part of the required program for that student.

The selection of elective courses needs to be given careful consideration. The preparation for a career in the broad field of mechanical and aerospace engineering and the selection of classes by real interest is more important than the maximization of the undergraduate grade point average.

MAE Technical Elective Courses

MAE/CEE 5020 Finite Element Methods in Solid Mechanics I (F).....	3
MAE/CEE 5060 Mechanics of Composite Materials I (Sp).....	3
MAE 5310 Dynamic Systems and Controls (F).....	3
MAE 5410 Design and Optimization of Thermal Systems (F).....	3
MAE 5420 Compressible Fluid Flow (F).....	3
MAE 5440 Computational Fluid Dynamics (Sp).....	3
MAE 5500 Aerodynamics (F).....	3
MAE 5510 Dynamics of Atmospheric Flight (Sp).....	3
MAE 5520 Elements of Space Flight (F).....	3
MAE 5540 Propulsion Systems (Sp).....	3
MAE 5560 Dynamics of Space Flight (F).....	3
MAE 5600 Reliability and Quality of Engineering Systems (F).....	3
MAE 5640 Design for Manufacturability (F).....	3
MAE 5650 Additive Manufacturing Processes (Sp).....	3
MAE 5670 Fracture Mechanics (F).....	3
MAE 5900 Cooperative Practice (F,Sp).....	3
ECE 3710 Microcontroller Hardware and Software (F,Sp).....	4
ECE 5230 Spacecraft Systems Engineering (F).....	3
ECE 5240 Space System Design (Sp).....	3
ECE 5310 Control Systems (F).....	3
ECE 5320 Mechatronics (Sp).....	4
MGT 5730 Continuous Improvement (F).....	3

Students may choose *one* of their technical electives from the following courses:

MATH 5270 Complex Variables (Sp).....	3
MATH 5410 Methods of Applied Mathematics (F).....	3
MATH 5420 Partial Differential Equations (Sp).....	3
MATH 5620 Numerical Solution of Differential Equations (Sp).....	3
MATH 5640 Optimization (Sp).....	3
STAT 5200 Design of Experiments (Sp).....	3
STAT 5300 (QI) Statistical Process Control.....	3

Special Problems courses under MAE 5930 may be used as technical electives with prior approval.