

# Major: Mechanical Engineering

Accredited by ABET (see inside front cover.)

Offered by: **School of Mechanical and Aerospace Engineering**

108 Upson Hall, 255-3573, [www.mae.cornell.edu](http://www.mae.cornell.edu)

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## Program Objectives

Cornell University is a learning community that seeks to serve society by educating the leaders of tomorrow and extending the frontiers of knowledge. As members of this community, we affirm these objectives. Specifically, we are committed to excellence and seek to graduate baccalaureate engineers in Mechanical Engineering who

- are broadly educated, on conceptual, theoretical, and experimental grounds, in the disciplines central to engineering and applied science—mathematics, physics, chemistry, computation—and also in the disciplines central to mechanical engineering—continuum mechanics, thermal phenomena, materials, dynamics, systems—and can apply these disciplines to engineering practice with exceptional skill;
- embrace a vision and practice of engineering, which includes a major focus on the conception, design, and realization of useful products, systems, and services respecting economic, environmental, cultural, life safety, and ethical standards or constraints;
- understand the essential need for discovering and applying new knowledge and developing new tools for the practice of engineering and are well prepared to pursue graduate studies and to participate in life-long learning;
- can communicate efficiently and gracefully, can work with and lead others in both disciplinary and inter-disciplinary settings, and are engaged with their communities, profession, and the world.

## Concentrations

With concentrations in aerospace engineering, biomechanics, engineering materials, mechanical systems and design, thermo-fluids engineering, vehicle engineering.

## Engineering Distributions

- ENGRD 202      Mechanics of Solids (required)  
ENGRD 221      Thermodynamics (recommended)

## Required Major Courses

- ENGRD 203      Dynamics  
ENGRD 210      Introduction to Circuits for Electrical and Computer Engineers I  
ENGRD 221      Thermodynamics  
M&AE 212      Mechanical Properties and Selection of Engineering Materials  
M&AE 225      Mechanical Design and Synthesis  
M&AE 323      Introductory Fluid Mechanics  
M&AE 324      Heat Transfer  
M&AE 325      Analysis of Mechanical and Aerospace Structures  
M&AE 326      Systems Dynamics  
M&AE 327      Mechanical Property and Performance Lab  
M&AE 427      Fluids/Heat Transfer Laboratory  
M&AE 428      Engineering Design

## Major-Approved Electives

Design elective<sup>2</sup>

Mathematics elective (T&AM 310 or OR&IE 270 or CEE 304)

Technical elective<sup>3</sup>

Major concentration electives (2 courses)<sup>4</sup>

The upper-level common curriculum (approved electives) and the Major-approved electives can be used to build a program with particular emphasis for individual students, appropriate for a wide range of career objectives, including supervised engineering practice, advanced professional engineering education, and other professional education (business, medicine, law).

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<sup>1</sup>M&AE 378 Mechatronics or PHYS 360 Introductory Electronics are allowable substitutions.

<sup>2</sup>Taken during the senior year. See M&AE Undergraduate Handbook at [www.mae.cornell.edu/academic.html](http://www.mae.cornell.edu/academic.html).

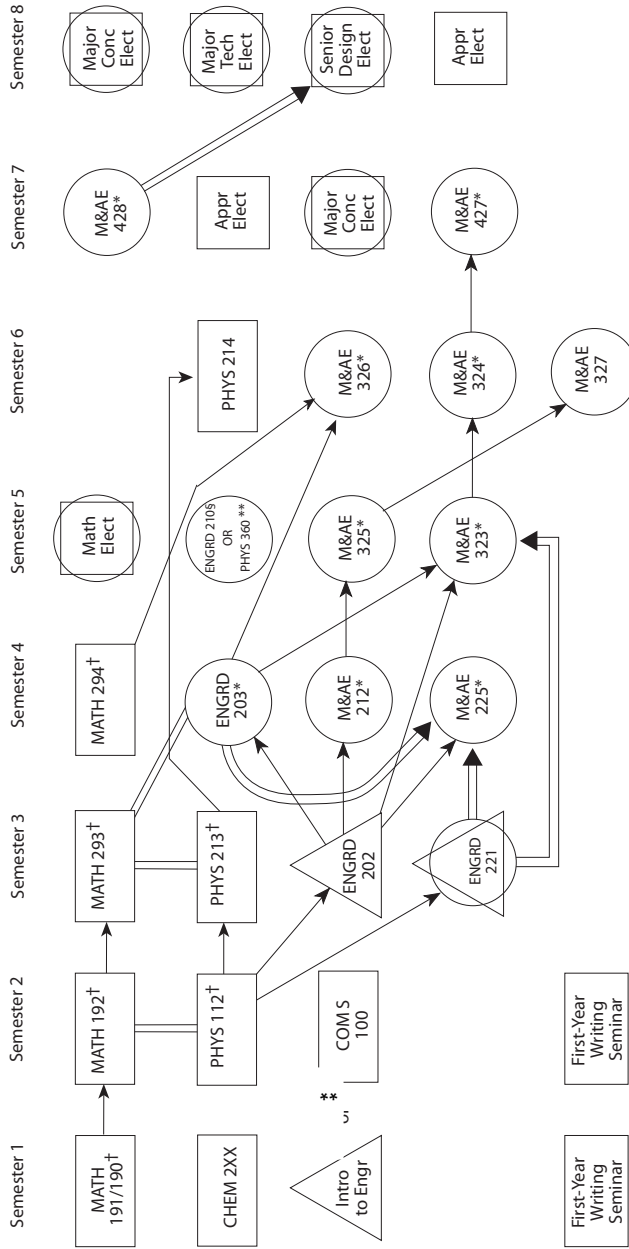
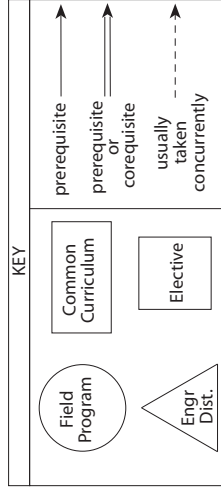
<sup>3</sup>Generally any course at a level beyond the required courses of the college curriculum in engineering, mathematics, or science (chemical, physical, or biological). Business or organization courses excluded.

<sup>4</sup> See M&AE Undergraduate Handbook at [www.mae.cornell.edu/academic.html](http://www.mae.cornell.edu/academic.html).

## MECHANICAL ENGINEERING MAJOR (ME)

Notes: Courses without prerequisites may be rearranged

- \* This course must be taken in the term indicated.
- † Assuming no advanced placement, this course must be taken in the term indicated.
- § Most beneficial if taken before (or concurrently with) M&AE 326.
- \*\* MAE 378 is the recommended substitution for ENGRD 210 or PHYS 360



## Mechanical Engineering Major Checklist

	<i>Min.</i> <i>Credit Hours</i>	<i>✓ When Done</i>
MATH 191 (or 190)	4	n
MATH 192	4	n
MATH 293	4	n
MATH 294	4	n
CHEM 211 (or 207 or 215)	4	n
PHYS 112 (or 116)	4	n
PHYS 213 (or 217)	4	n
PHYS 214 (or 218)	4	n
COM S 100	4	n
Intro. to Engr. (ENGR1 1XX)	3	n
Engr. Dist. 1: ENGRD 202 (required)	4	n
Engr. Dist. 2: ENGRD 221 (recommended)§	3	n
First-Year Writing Seminar 1†	3	n
First-Year Writing Seminar 2	3	n
Liberal Studies Distribution—6 courses (18-credit minimum)‡		
Lib. Studies 1		n
Lib. Studies 2		n
Lib. Studies 3		n
Lib. Studies 4		n
Lib. Studies 5		n
Lib. Studies 6		n
Approved Elective (2 courses; 6-credit minimum)		n
Approved Elective		n
Physical Education (2 semesters) and swim test		
Required Major Courses (52-credit minimum)‡		
ENGRD 203	3	n
ENGRD 210 (or PHYS 360 or M&AE 378)	3, 4, 4	n
ENGRD 221§	3	n
M&AE 212	3	n
M&AE 225	4	n
M&AE 323	4	n
M&AE 324	3	n
M&AE 325	3	n
M&AE 326	4	n
M&AE 327	2	n
M&AE 427†	3	n
M&AE 428	2	n
Major-Approved Electives		
Major-Approved Elective (Design)	3	n
Major-Approved Elective (Math)	3	n
T&AM 310 or ENGRD 270 or CEE 304		n
Major-Approved Technical Elective	3	n
Major Concentration Elective	3	n
Major Concentration Elective	3	n

Total Required Credits    126 min.

Additional Elective Courses (0 credits min., no max.)	n
†Technical Writing Course: M&AE 427	n

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†In addition to the first-year writing seminars, a technical writing course must be taken as an engineering distribution, liberal studies, approved elective, or major course (M&AE 427 satisfies this requirement).

‡Approved courses must be chosen from at least three of the following six groups: (1) Cultural Analysis (CA), (2) Historical Analysis (HA), (3) Literature and the Arts (LA), (4) Knowledge, Cognition, and Moral Reasoning (KCM), (5) Social and Behavioral Analysis (SBA), (6) Foreign Languages (not literature courses). At least two courses must be from the first three groups (CA, HA, LA). At least two of the six courses must be at 200-level or higher.

#The 9 credits of Major-complementary courses (outside the major) are ENGRD 202, ENGRD 203, and T&AM 310 or ENGRD 270 or CEE 304.

§May simultaneously satisfy Major and distribution requirements. In this case, students may satisfy total required credits in a variety of ways following affiliation.

Note: This engineering checklist is formatted to conform to the general specifications of the College of Engineering. We strongly recommend that you visit 108 Upson Hall for an official Mechanical Engineering Major checklist.