



**Mechanical Engineering**  
UNIVERSITY OF COLORADO **BOULDER**

# Undergraduate Advising Guide for Mechanical Engineering - AY 2013-2014

---



**Department of Mechanical Engineering**  
**UCB 427, ECME Wing**  
**Boulder, CO 80309-0428**  
**<http://me.colorado.edu>**

**Chris Anderson**

Undergraduate Academic Advisor  
Student Last Name A-L  
Office: ECME 112D  
Ph. 303-492-8753

**Kat McConnell**

Undergraduate Academic Advisor  
Student Last Name M-Z  
Office: ECME 112A  
Ph. 303-492-8483

**Sharon Anderson**

Graduate Academic Advisor  
BS/MS, MS, PhD Students  
Office: ECME 112B  
Ph. 303-492-7444

## Table of Contents

---

Introduction & Mission Statement.....	1
Program Educational Objectives.....	1
Accreditation and Assessment .....	2
Employment Opportunities for Mechanical Engineering Graduates.....	2
Academic Advising.....	3
Transfer Procedures .....	4
Additional Advising Resources.....	4
Career Counseling .....	5
Graduation Requirements .....	5
Biomedical, Environmental Tracks and Professionalism Requirement.....	6
Additional Educational Opportunities .....	7
Independent Study and Undergraduate Research.....	7
Concurrent BS/MS Program .....	7
Discovery Learning Apprenticeships .....	7
Double Degrees .....	7
Minors .....	8
Study Abroad .....	8
Student Societies.....	8
MCEN Policy on Academic Integrity .....	8
MCEN Curriculum and Block Diagrams.....	9
MCEN Options .....	10-11
MCEN Blue Verision.....	12
MCEN Yellow Version .....	13

## Introduction and Mission of the Department

---

**The purpose of this guide** is to assist undergraduate students majoring in Mechanical Engineering (MCEN) to fulfill the curriculum requirements for the Bachelor of Science (BS) degree. These requirements are structured to comply with College of Engineering and Applied Science rules and to maintain our accreditation, in compliance with the rules of the Engineering Accreditation Commission of ABET ([www.abet.org](http://www.abet.org)).

**Our mission** is “to provide the excellent education, research, and service necessary to train the engineer of the new century, to advance the state of the art of engineering science and technology, and to provide advice and counsel to the state, region, nation, and the world.”

Through incorporating mathematics, physical science, engineering science, design and manufacturing, and systems engineering with the humanities and social sciences, you will learn how to lead, innovate, understand and interpret the complex world around you.

**The student is responsible** for adherence to the MCEN curriculum rules and requirements and should be aware that deviation from the planned sequence of courses may result in delayed graduation.

Copies of the curriculum, a course checklist, and a graphical flow chart are contained in this document. Alternatively, you may elect to follow a personalized revision to the curriculum in its entirety. If you decide to follow a revised or customized curriculum, you must inform your academic advisor first.

## Departmental Educational Objectives and Student Outcomes

---

The educational objective of the undergraduate program in Mechanical Engineering is to prepare graduates so that, within three years of graduation, they will have successfully established themselves in professional careers and/or obtained a graduate degree, and will have begun to generate new knowledge or exercise leadership in their positions to the benefit of society.

When you graduate from the ME department, you will be able to:

- Apply knowledge of mathematics, science, and engineering
- Identify, formulate, and solve engineering problems
- Use computers to solve engineering problems
- Use modern instrumentation
- Design and conduct experiments using probability and statistics.
- Analyze and interpret data
- Design thermal or mechanical systems, components, or processes
- Know and assess the processes used to manufacture products
- Be aware of contemporary issues in mechanical engineering
- Make expert oral presentations
- Write clearly and effectively
- Function on multi-disciplinary teams in a productive manner
- Understand professional and ethical responsibility
- Understand the impact of engineering in a global and societal context
- Engage in life-long learning

## Accreditation and Assessment

---

The MCEN curriculum is accredited by the Engineering Accreditation Commission of ABET. Accreditation involves a process of continuous improvement using a series of assessment tools that measure how well the program is achieving its stated outcomes and objectives. As a student, you can expect to take part in the following evaluations during (and after) your academic career at CU:

- **Faculty Course Questionnaire (FCQ)** – You will evaluate and provide feedback in every course you take at CU at the end of every semester.
- **Fundamentals of Engineering (FE) Exam** – This national exam is the first step toward professional registration as an engineer and all MCEN students are required to take the exam prior to graduation. Most students take it in their last semester at CU.
  - Approved substitutes for the FE are the GRE, LSAT, MCAT or other professional exam
- **Senior Exit Survey** – In your last semester, you will be asked to fill out a survey administered by the College that asks how well the outcomes listed above were met, and your overall satisfaction with the program, department, faculty, etc.
- **Alumni Survey** – We will send you a survey five years after graduation to evaluate if we met the program educational objectives.

## Employment Opportunities for Mechanical Engineering Graduates

---

Mechanical engineers use the principles of mechanics and energy conservation to design, manufacture and test mechanical devices. We develop power-producing and power-using machines as well as new materials and manufacturing processes. We work in other diverse areas such as medicine, law, management, and sales.

Many mechanical engineers work in various fields of design, research and manufacturing such as, aerospace and automotive industries, design and consulting firms, manufacturing and plant operations, power generation, alternative energy and conservation firms, bioengineering firms, petroleum industry and transportation firms.

With advanced degrees, mechanical engineers can pursue careers in academics, engineering consulting, research laboratories, and technology development in a wide range of engineering disciplines.

Recent employers of CU ME graduates:

- Covidien
- Goodyear Tire
- Hewlett Packard
- Honda
- Ball Aerospace & Technologies
- ABSL Space Products
- Lockheed Martin
- Schlumberger
- National Renewable Energy Laboratory
- National Institute for Standards and Technology

## Academic Advising

---

- A) Advising Office Hours: **1pm-4pm on weekdays** will be reserved for walk-ins. Other times are available by appointment, so please contact your advisor to set those individually.
- a. Walk-in and appointment hours are subject to change and advisors will either notify students via email, or post on their doors any changes to this schedule.
- B) The Advisors in mechanical engineering are here to support you and have a true commitment to helping you navigate the department and curriculum to help you succeed. However, you the student are ultimately responsible for ensuring that all graduation requirements have been satisfied, and for seeking out the advice and help you need. We do not know if there is an issue or question if you do not let us know.
- C) **E-mail Policy: E-mails will be sent to your @colorado.edu email account. This is the official form of communication for the university. PLEASE check your CU email frequently.**
- D) Petitions: Any exceptions or waivers to departmental or College rules must have prior approval by petition. This petition must be completed and submitted to your advisor for departmental approval and then it will be forwarded to the Dean's Office for approval. Petitions can be used for the following, but not limited to:
- \* taking less than 12 cr for any semester
  - \* enrolling in a course without proper prerequisites
  - \* to ensure that courses taken elsewhere will count towards degree requirements
  - \* to waive a required course
- E) There are a number of decisions to be made concerning choice of elective courses. If you have any questions or would like to discuss elective choices, you should consult your academic advisor
- F) Block diagrams and graduation planners for each program, as well as the Environmental and Biomedical options, are included in this guide. Each student is responsible for keeping his or her graduation planner up-to-date.
- G) Holds: If you have a hold on your account, you need to have that resolved before we can enroll you in a class, or before you can enroll yourself. We currently only place advising holds on student records in response to academic probation or suspension issues.
- H) Most, but not all courses are offered every semester. Those that are only offered once per year are marked on the block diagrams with an "F" or "Sp" to denote the Fall and/or Spring sequencing.
- I) The minimum course load for full time enrollment is 12 credit hours. The maximum course load is 19 credit hours. Variation must be requested by petition to the college. After 18 credit hours, a tuition surcharge is applied.

For more information about departmental policies and procedures, please visit your academic advisor:

- [Chris Anderson](#) - ECME 112d
- [Kat McConnell](#) - ECME 112a
- [Sharon Anderson](#) – ECME 112b

## Transfer Procedures and Advising

---

The University and College of Engineering have established procedures for admission of transfer students and evaluation of transfer credits. These policies are described on the undergraduate admissions website: <http://admissions.colorado.edu/undergraduate/apply/transfer>. However, once a student is admitted and transfer credits have been evaluated by the University, the MCEN Department is responsible for the final evaluation of the application of transfer credits to degree requirements and not all credits that transfer to the university are transferrable into the MCEN degree.

The following recommendations are offered:

- A) It is the student's responsibility to ensure that transfer credits have been evaluated and approved by the Office of Admissions as well as the MCEN department.
- B) Newly admitted transfer students should make an appointment with their respective MCEN academic advisor as soon as possible to obtain final approval of transfer credits. If there is additional information needed, the student will need to follow the department petition process to evaluate individual transfer credits that did not initially apply to his/her degree and supply the appropriate documentation for the petition process in a timely manner.
- C) Transfer credit issues can also arise for current students who take one or more courses at other institutions during their academic career, e.g., study abroad programs or summer school at a local community college. Current students who are planning to take courses at another institution should seek preliminary approval of the transfer credits before taking the courses, as the petition and approval process can take a few weeks to fully complete.

## Additional Advising Resources

---

There are many advising resources available at CU-Boulder, but students frequently do not know they exist or hesitate to take advantage of them:

### College of Engineering Advising Guides

The College publishes a comprehensive set of advising guides to provide students with timely and accurate information. These guides are not intended as a substitute for personal interaction between student and advisor, but can be a great way to get answers to many common questions and concerns.

The following College and University policies can also be found on the College website at [www.colorado.edu/engineering/academics/policies](http://www.colorado.edu/engineering/academics/policies):

- Academic Honesty
- Academic Policies
- Academic Probation and Suspension
- Classroom and Course-Related Behavior
- Confirming Your Major
- Four-Year Graduation Guarantee
- Grading Policies Grade
- Appeal Policy
- Graduation Requirements
- Humanities & Social Sciences/Writing
- Student Conduct Code Policy
- Student Honor Code Policy

## ***Additional Advising Resources cont...***

### **Career Counseling**

Career Services can help students and alumni clarify career interests, values and work-related skills; explore potential careers and employers; and refine job seeking, interviewing, and resume preparation skills. They host Career Fairs and Internship Fairs, sponsor resume writing workshops, and hold mock interview sessions. Career Services is located in the Center for Community (C4C) Room N352, (303) 492-6541, or you may visit their website: <http://careerservices.colorado.edu>.

### **Graduation Requirements**

---

Failure to complete the requirements listed below will postpone graduation. Any exceptions will require authorization from the MCEN Department and the Dean's Office. Students should meet with their MCEN academic advisor at least each of the last two semesters prior to their planned graduation to review their records. It is the student's responsibility to be certain that all degree requirements have been met, to fill out the on-line diploma card, and to keep their advisor and the Dean's Office informed of any change in graduation plans.

To be eligible to graduate, students must meet the following minimum requirements:

1. The satisfactory completion of the prescribed and elective work in the MCEN BS curriculum. A student must complete a minimum number of 128 semester hours, of which the last 45 shall be earned after admission to the College of Engineering and Applied Science.
2. Maintain minimum cumulative grade point average set by the college for all courses attempted and for all courses that count toward graduation requirements, excluding P grades for courses taken Pass/Fail. **(Pass/Fail courses do not count for graduation credit.)**
3. Successful completion of all Minimum Academic Preparation Standards (MAPS) requirements.
5. Take the Fundamentals of Engineering (FE) Examination (or aforementioned alternate professional exam - pg 4), fall or spring of the student's senior year is required. Graduation is not contingent upon passing. However, it is beneficial for your career to do so because this exam is the first step toward professional registration.
6. Submission of a completed Application for Diploma Form, on-line.

Note: Double degree students must obtain approval of **both** designated departments and colleges. The University normally requires that a minimum of an additional 30 semester credit hours be earned for the second degree outside of engineering or 15 credits for a second degree within engineering. However, BOTH degree requirements must be completed. Minor students must provide Engineering Dean's Office with a Minor Completion form to verify minor requirements have been completed.

### **ME & Technical Elective Requirements**

A technical elective is generally a course in engineering or science with technical content, selected in consultation with an advisor or using the approved courses list at the upper (3000+) level. Consult the departmental website for a complete list of eligible courses for the ME program.

## **Biomedical Option** – detailed courses on pg 12

---

Biomedical Engineering is the application of engineering technology to medical research and equipment. Contributions to this important and growing area by mechanical engineers include the design and manufacture of biomedical devices ranging from prostheses to micromechanical blood flow sensors and artificial heart valves. Application of mechanical engineering fundamentals to questions in biophysics also contributes to improvements in medical diagnosis and treatment.

The Biomedical Engineering Option consists of the normal requirements for an M.E. bachelor's degree, with the four Technical Electives focused in biomedical engineering. Students interested in pursuing the Biomedical Option must submit a "Change of Major" form detailing their request and will receive a notation on their transcript upon completing the program. Courses not listed on the approved course sheet (detailed further in this document) may be approved by Professor Ginger Ferguson.

## **Environmental Option** – detailed courses on pg 13

---

The Environmental Option within the Department of Mechanical Engineering focuses on topic areas including pollution detection/control/prevention and environmental aspects of energy conversion. Potential applications of a degree that emphasizes both Environmental and Mechanical Engineering include designing detection equipment, devising clean-up strategies, and improving manufacturing processes.

The Environmental Option consists of the normal requirements for an M.E. bachelor's degree, with Organic Chemistry in place of Physics 3 and the four Technical Electives selected to focus specifically on Environmental Engineering. Students interested in pursuing the Environmental Option must submit a "Change of Major" form detailing their request and will receive a notation on their transcript upon completing the program. Courses not listed below may be approved by Professor Jana Milford.

*\*Note: both of these options are not a mandatory part of the ME curriculum, rather an option to enhance the BS degree in each specialized field.*

## **Professionalism Requirement** (*\*required for graduation*)

---

Initiated in Fall 2009, the Professionalism Institute in the Department of Mechanical Engineering seeks to prepare students to practice engineering as professionals who strive for excellence with integrity and treat others with respect.

The requirements of this program depend on the year when the student was admitted into the College of Engineering:

- For the incoming Freshman class of 2010 or later, students must attend a total of 8 events prior to graduation.
- For the incoming Freshman class of 2009, students must attend a total of 6 events prior to graduation.
- Incoming students from earlier than Fall 2009 are exempt.
- Transfer students must attend a prorated number of events, based on the number of semesters they have left to complete after transferring into the College.

Events sponsored through Career Services may count for up to a maximum of 2 out of the total 8 events.

## **Additional Educational Opportunities**

---

### **Independent Study and Undergraduate Research**

Undergraduates can participate in ongoing research through independent study projects, the Undergraduate Research Opportunities Program (UROP), and as research assistants for sponsored projects. These opportunities promote individual contact with faculty and graduate students, and they provide an educational experience that cannot be obtained in the normal classroom setting.

Up to six (6) semester credit hours of Independent Study is acceptable for Technical Electives.

An Independent Study is normally supervised by a MCEN faculty member. An approved Independent Study supervised by a faculty member outside of the department may also be applied to curriculum requirements as an out-of-department technical elective.

To pursue an independent study, an Independent Study Agreement Form must be completed and signed by both the student and the sponsor of the Independent Study or Undergraduate Research (which includes a written Statement of Work). These forms are available through the College of Engineering Advising Guide <http://engineering.colorado.edu/students/advising.htm> or the MCEN Undergraduate academic advisors.

### **Concurrent BS/MS Program**

Mechanical Engineering students who plan to continue their education to obtain a graduate degree after completing the requirements for their BS will usually find it advantageous to apply for admission to the concurrent BS/MS degree program. This program allows students who qualify (a 3.25 cumulative GPA is required) to plan a graduate program from the beginning of their junior year rather than from their first year of graduate study. Up to six (6) credit hours of appropriate 5000 level technical elective courses may be applied to both the BS and MS degree, subject to GPA restriction. Interested students should discuss this option with their advisor and obtain additional information from the ME Graduate Advisor.

The tuition rate for students in this program will be at the undergraduate rate until the student reaches 145 credit hours. This may convert before or after completing the BS requirements.

### **Discovery Learning Apprenticeships**

As a way to encourage undergraduate students to experience research, the College invites applications annually for a number of a Discovery Learning Apprenticeships. Students can earn an hourly wage while engaging in research with college faculty and graduate students. Positions are announced in April for the following fall term and spring term. Students must apply and selection for positions is competitive. For more information, an application and a list of current discovery learning projects, visit <http://engineering.colorado.edu/activelearning/discovery.htm>.

### **Double Degrees**

It is possible to obtain double degrees in two engineering disciplines or one degree in engineering and a second degree from a department in another college or school of the University. Students must satisfy curricula for both programs and should consult with their respective academic advisor.

In some cases, it may be preferable to pursue an MS degree rather than two undergraduate degrees.

## Minors

Numerous minor opportunities exist that would satisfy humanities/social science electives and/or technical electives. Many require no additional course work beyond the minimum BS requirements. For more information on minor opportunities and requirements, visit:

<http://advising.colorado.edu/students/current-students/majors-and-minors-available-to-as-students> and <http://www.colorado.edu/engineering/academics/degrees-minors-certificates>.

Again, as a note, please discuss any major/minor changes with your academic advisor

## Study Abroad

Study abroad, usually taken the sophomore year (usually summer), can be an enriching experience. Information about this unique opportunity can be obtained from the University Study Abroad Office, Center for Community (C4C) Suite S355, 303-492-7741. In order to guarantee that the courses taken abroad will count toward the CU degree, the student must get the planned program approved by their MCEN advisor to avoid credits from not being transferred or accepted correctly.

## Student Societies

Students have excellent opportunities to become involved in discipline-related activities outside of the classroom. The department has active chapters in a number of major student societies including American Society of Mechanical Engineers (ASME) and Engineers without Borders (EWB-CU).

## Academic Integrity

---

The Mechanical Engineering Department follows the expectations that are in accordance with the University of Colorado Boulder Honor Code (<http://www.colorado.edu/honorcode/>), but this policy is intended to provide more specific guidelines for all undergraduate and graduate students in MCEN. All incidents of academic misconduct will be reported to the Honor Code Council. Non-academic sanctions are the purview of the Honor Code Council.

Any activity that could give you an unfair advantage over other students may be cheating. Specific examples of actions that are considered to be cheating and therefore violations of academic integrity:

- Plagiarizing a homework, lab report, or problem set. On assignments that require you to use supplemental materials, you must properly document the sources of information that you used. If you are uncertain about allowable reference materials or how to document your sources, ask your instructor in advance. Specific examples of plagiarism include:
  - copying from a solution manual
  - copying from Internet sites
  - copying directly from classmates
  - copying lab data that you yourself did not participate in collecting
- Plagiarizing content in a paper, report, thesis, or dissertation, by copying material from a published sources or the internet, without appropriate citation format and attribution
- Using unapproved information during a closed-book test or quiz (such as a reference sheet, information stored in a calculator, iPhone, information written on your skin)
- Copying from another student during a quiz, exam, or test
- Working in groups on web based quizzes, exams, or tests
- Working in groups on take-home quizzes, exams, or tests
- The list above is not exhaustive; other violations are possible

## Academic Plan and Curriculum Details

---

### Mechanical Engineering 2013-2014 Curriculum – 128 Credits

<b>Freshman Year</b>		Credits	Credits
<b>Fall Semester</b>		<b>16</b>	<b>Spring Semester</b>
MCEN 1025 Computer-Aided Design	4	APPM 1360 Calculus for Engineers 2	4
APPM 1350 Calculus for Engineers 1	4	PHYS 1110 General Physics 1	4
MCEN 1208 Chemistry for ME/MatE	4	GEEN 1300 Intro to Engr Computing	3
GEEN 1500 Introduction to Engr.	1	HSS Elective*	3
GEEN 1400 Engineering Projects	3		
<b>Sophomore Year</b>		Credits	Credits
<b>Fall Semester</b>		<b>16</b>	<b>Spring Semester</b>
APPM 2350 Calculus for Engineers 3	4	MCEN 2024 Materials Science	3
PHYS 1120 General Physics 2	4	PHYS 2130 General Physics 3	3
PHYS 1140 Experimental Physics	1	APPM 2360 Diff Eqns with Lin. Alg.	4
HSS Elective*	3	MCEN 2023 Statics and Structures	3
MCEN 2000 Professionalism Sem.	1	HSS Elective*	3
Free Elective	3		
<b>Junior Year</b>		Credits	Credits
<b>Fall Semester</b>		<b>15</b>	<b>Spring Semester</b>
MCEN 3012 Thermodynamics	3	MCEN 3022 Heat Transfer	3
MCEN 3021 Fluid Mechanics	3	MCEN 3025 Component Design	3
ECEN 3010 Circuits & Electronics	3	MCEN 3037 Data Analysis	2
MCEN 2063 Mechanics of Solids	3	MCEN 3030 Computational Methods	3
MCEN 2043 Dynamics	3	MCEN 3032 Thermodynamics 2	3
		Writing Course (WRTG 3030)	3
<b>Senior Year</b>		Credits	Credits
<b>Fall Semester</b>		<b>17</b>	<b>Spring Semester</b>
MCEN 4026 Mfg Processes & Sys.	3	MCEN 4047 Measurements 2	2
MCEN 4037 Measurements Lab	2	MCEN 4085 ME Design Project II	3
MCEN 4043 System Dynamics	3	MCEN Technical Elective	3
MCEN 4045 ME Design Project I	3	General Technical Elective	3
MCEN Technical Elective	3	General Technical Elective	3
Upper Division HSS Elective*	3	Upper Division HSS Elective*	3

## **Biomedical Engineering Option**

---

### **ME Technical Elective 1**

MCEN 4117: A&P for Engineers OR MCEN 4228: A&P for Engineers II

### **ME Technical Elective 2**

Choose one from the following list:

- MCEN 4134: Biomechanics
- MCEN 4141: Indoor Air Pollution
- MCEN 4173: Finite Elements Analysis
- MCEN 4183: Mechanics of Composites
- MCEN 5636: Micro-Electro-Mechanical Systems (MEMS 1)
- MCEN 4228: Cardiovascular Bioengineering
- MCEN 4228: Molecular Biology & Micro/Nano-Scale Engineering
- MCEN 4228: Biomedical Instrumentation & Device Design
- MCEN 4228: Mechanical Behavior of Biological Materials
- MCEN 4848: Independent Study w/Biomedical Focus

### **General Technical Electives 1 & 2**

Choose two from the following list:\*

- ASEN 3116: Introduction to Biomedical Engineering
- ECEN 4811 or ASEN 4216: Neural Signals and Functional Brain Imaging
- ECEN 4821 or ASEN 4426: Neural Systems and Physiological Control
- ASEN 5016: Space Life Sciences
- CHEN 3700: Bioenergetics Structure and Function
- CHEN 4710: Molecular Basis of Biological Behavior
- CHEN 4800: Bioprocess Engineering
- CHEN 4820: Biochemical Separations
- CVEN 4484: Introduction to Environmental Microbiology
- ECEN 4001: Engineering in Medicine
- ECEN 4831: Brains, Minds, and Computers
- ECEN 5011: Biologically Engineered Control Systems
- ECEN 5021: Engineering Solutions to Biomedical Problems
- CHEM 3311 and/or 3331: Organic Chemistry 1 & 2
- CHEM 4411 and/or 4431: Physical Chem with Biochemistry Applications 1 & 2
- CHEM 4711 and/or 4731: General Biochemistry 1 & 2
- EBIO 3400: Microbiology
- IPHY 3410: Introduction to Human Anatomy
- IPHY 3430: Human Physiology
- MCDB 3120: Cell Biology
- MCDB 3280: Molecular Cell Physiology
- MCDB 3500: Molecular Biology

## **Environmental Engineering Option**

---

### **Required Substitution**

CHEM 3311-4 / 3321-1: Organic Chemistry 1 w/Lab replaces PHYS 2130: Physics 3

### **ME Technical Electives**

Choose two from the following list:

- MCEN 4131: Air Pollution Control Engineering
- MCEN 4141: Indoor Air Pollution
- MCEN 4228: Energy Conversion and Storage
- MCEN 4228: Wind Energy
- MCEN 4228: Sustainable Energy
- MCEN 4228: Air Quality Measurements
- MCEN 4228: Environmental Modeling
- MCEN 4848: Independent Study w/Environmental Focus

### **General Technical Electives**

Choose two from the following list:

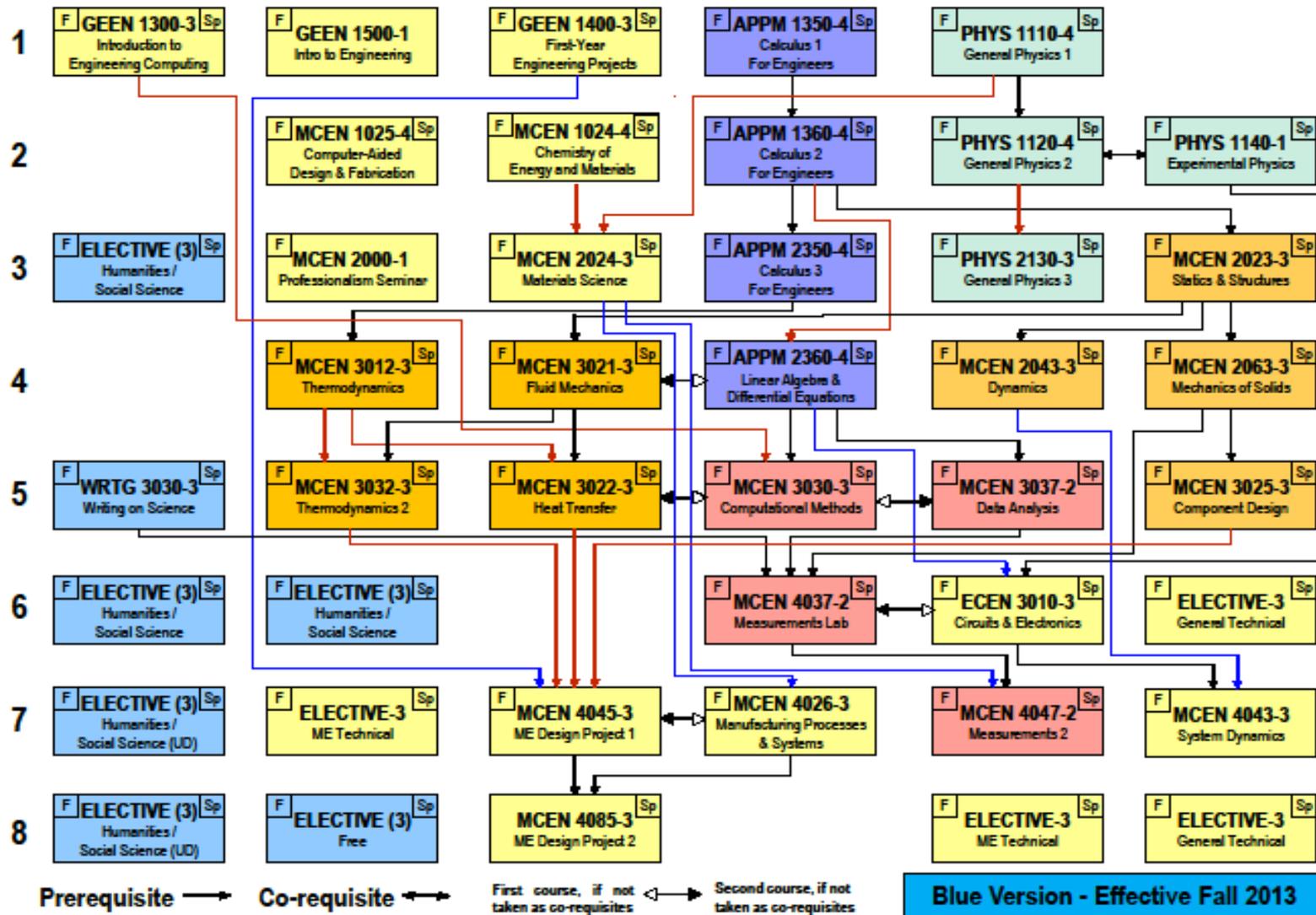
- ATOC 3500 Air Chemistry and Pollution
- ATOC 4720 Introduction to Atmospheric Physics and Dynamics
- CVEN 3414 Introduction to Environmental Engineering
- CVEN 3424 Water and Wastewater Treatment
- CVEN 3454 Water Chemistry
- CVEN 4424 Environmental Organic Chemistry
- CVEN 4474 Hazardous and Industrial Waste Management
- CHEM 3331 Organic Chemistry II
- CHEN 3220 Chemical Engineering Separations and Mass Transfer
- MCEN 4131: Air Pollution Control Engineering
- MCEN 4141: Indoor Air Pollution
- MCEN 4228: Energy Conversion and Storage
- MCEN 4228: Wind Energy
- MCEN 4228: Sustainable Energy
- MCEN 4228: Air Quality Measurements
- MCEN 4228: Environmental Modeling
- MCEN 4848: Independent Study w/Environmental Focus

Please note that many of the classes above have prerequisites that you will need to complete prior to registration. CVEN 3414 is one of the most common prerequisites for the higher level course options and can be taken at any point after General Chemistry 1 and Calculus 2.

# MECHANICAL ENGINEERING CURRICULUM (4-Year Plan)

F Sp = Semester usually taught

4/24/13



# MECHANICAL ENGINEERING CURRICULUM (4-Year Plan)

F Sp = Semester usually taught

4/24/13

