

MECHANICAL ENGINEERING

— ABET ACCREDITATION CRITERIA APPLY —

The undergraduate program in Mechanical Engineering at Stanford exposes each student to intellectual and practical experiences, and provides an environment that allows for the accumulation of knowledge and self discovery. Ultimately each graduate will acquire the ability to apply this knowledge to a variety of societal needs. Graduates have many options, from entry-level work as mechanical engineers to graduate studies in either an engineering discipline or in another field where a broad engineering background is useful. Regardless of the ultimate career choice, graduates leave the program with a solid grounding in the principals and practice of mechanical engineering, equipped to embark upon a lifetime of learning, while employing new concepts, technologies and methodologies.

STANFORD UNIVERSITY/ÉCOLE CENTRALE PARIS JUNIOR YEAR ABROAD PROGRAM

Although not formally part of the Overseas Studies Program, Stanford mechanical engineering undergraduates can receive credit for study abroad at École Centrale Paris. École Centrale Paris is one of the best known science and engineering schools in France and Europe. Stanford students are enrolled in engineering program classes with French and International students. Instruction is mostly in French. For more information, see the “Overseas Studies” section of this handbook or contact Prof. Mark Cappelli, Bldg. 520-520J, or at cap@stanford.edu.

RESEARCH EXPERIENCE FOR UNDERGRADUATES

The Mechanical Engineering department offers a Summer Undergraduate Research Institute (http://me.stanford.edu/current/ug/ug_research.html). The 2009 program will include student research training in team settings (e.g., students working together on larger projects directed by staff and faculty), and in individually-directed research settings (e.g., the student will work closely with a faculty advisor or senior graduate student).

The program is open only to Stanford Undergraduate students who will be in their senior year (or earlier) in the fall quarter following the summer research experience. Students do not necessarily have to be declared ME majors. There is no formal application for participation in the ME SURI.

Students who are interested in participating in the ME program should seek out research opportunities directly with affiliated ME faculty and secure a commitment/position for the summer by the end of May. Sponsoring faculty will contact the program administrator once a commitment to a student is made. Students can also contact the program administrator, Prof. Mark Cappelli (cap@stanford.edu, or (650) 725-2020), directly for more information.

PROFESSIONAL LICENSING

Professional licensing is an important aspect of professional responsibility. Although civil engineers may find professional registration more important in securing employment, mechanical engineers should seriously consider pursuing licensing as well. A professional license can be important if you work as a consultant or at a small start-up. An engineer working for a start-up or small technical company must fill a much wider spectrum of professional roles than would be the case working for a larger company. Those roles would typically include certifying drawings and other technical materials that require a license as a professional engineer.

In addition to certifying the accuracy of technical materials produced by yourself or your company, a professional license is important if you have to testify as an expert witness or perform other functions related to the legal system. In many states, including California, you cannot legally use the title “engineer” unless you are a licensed Professional Engineer. In fact the California law requires that “...only a person appropriately licensed with the Board may practice or offer to practice mechanical engineering.”

To attain a professional license you must take the Fundamentals of Engineering (F.E.) examination administered by the California Board for Professional Engineers and Land Surveyors (<http://www.dca.ca.gov/pels/>) or equivalent body in the state in which you plan to practice. The examination may be taken at any time, but most people find it easier to pass when completing their undergraduate work and more difficult later on. After passing the F.E. examination you will be eligible to receive an Engineer in Training (E.I.T.) certificate. At least two more years of practical experience and a further examination are required for a full license.

OBJECTIVES AND OUTCOMES FOR MECHANICAL ENGINEERING

Objectives:

1. Understand basic principles, mathematics and science, and mechanical systems with an ability to analyze, model, synthesize, ideate, iterate, prototype, and implement engineering solutions in a broad range of fields.
2. Understand product development and manufacturing with the capability to work effectively in multidisciplinary teams, provide leadership and technical expertise, and be effective communicators.
3. Prepare for graduate study in engineering or other professional fields.
4. Develop an ethical approach to engineering with concern for society and the environment, and the ability to provide understandable technical expertise to non-technical individuals.

Outcomes:

- (a) An ability to apply knowledge of mathematics, science, and engineering
- (b) An ability to design and conduct experiments, as well as to analyze and interpret data
- (c) An ability to design a system, component, or process to meet desired needs
- (d) An ability to function on multi-disciplinary teams
- (e) An ability to identify, formulate, and solve engineering problems
- (f) An understanding of professional and ethical responsibility
- (g) An ability to communicate effectively
- (h) The broad education necessary to understand the impact of engineering solutions in a global and societal context
- (i) A recognition of the need for and an ability to engage in life-long learning
- (j) A knowledge of contemporary issues
- (k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- (l) The ability to apply advanced mathematics through multivariate calculus and differential equations
- (m) The ability to work professionally in both thermal and mechanical systems areas including the design and realization of such systems

REQUIREMENTS

Mathematics and Science

The program requires a minimum 45 units of Math and Science combined. A minimum of 24 units of mathematics are required, which **must** include a course in Differential Equations (e.g., CME102/ENGR 155A or MATH 53 is required). In addition a course in statistics (CME 106, STATS 110 or STATS 116) is **required**. A minimum of 21 units of science are required, which must include both chemistry and physics, with a depth in at least one (a **depth** is defined as three courses). Although CHEM 31X is equivalent to taking CHEM 31A and CHEM 31B, we recommend ME students take CHEM 31X. Students who choose to take CHEM31A/B should note that these two courses combined are considered 1 quarter worth of chemistry. See the Mathematics and Science Requirement section of this handbook for details.

Physics Depth: Students without advanced placement in Physics take PHYSICS 41, 43, & 45. Students with advanced placement should refer to the chart below for placement details. Note that only AP Physics C, not AP Physics B, will place a student out of a 40-series class requirement.

Score of 4 or 5 in Light & Heat (AP Physics C)	Take Physics 41 & 43
Score of 4 or 5 in Mechanics (AP Physics C)	Take Physics 43 & 45
Score of 4 or 5 in Electricity & Magnetism (AP Physics C)	Take Physics 41 & 45
Score of 4 or 5 for both Mechanics & Electricity & Magnetism (AP Physics C)	Take Physics 45

Engineering Fundamentals: Three courses required (Fr, So, Jr)

- ENGR 40: Introduction to Electronics (required)
- ENGR 70A (same as CS 106A): Programming Methodology (required)
- Other Fundamental course (see Figure 3-4, Engineering Fundamentals for a list of SoE approved courses and for applicable Engineering Science and Design units.)

Technology in Society (TIS): One course required from approved list:

ME	190	Ethical Issues in Mechanical Engineering (RECOMMENDED)
STS	101	Science, Technology & Contemporary Society
STS	110	Ethics and Public Policy
STS	115	Ethical Issues in Engineering
POLISCI	114S	International Security in a Changing World (formerly STS 138)
CS	181	Computers, Ethics, and Public Policy (formerly CS 201)

Note: Although the SoE states that students taking part in the Stanford Center for Technology and Innovation (SCTI) program may waive the TIS requirement, this option is not open to ME majors who must take one of the courses listed above.

Mechanical Engineering Depth Requirements (55-56 units from the following list)

Note: A minimum of 68 units consisting of a combination of Engineering Science and Engineering Design units from ME Depth and Engineering Fundamentals courses, and 8 or more Experimentation units, must be taken in order to satisfy ABET and SoE graduation requirements.

Course	Title	Engr. Sci	Engr. Dsgn.	Expr.	Total	Qtr	Year
ENGR 14	Applied Mechanics: Statics	2	1	-	3	AWS	Fr,So
ENGR 15	Dynamics	2	1	-	3	AS	So, Jr
ENGR 30	Engineering Thermodynamics	3	-	-	3	AW	So,Jr
ME70	Introductory Fluids Engineering	4	-	1	4	WS	So,Jr
ME101	Visual Thinking	-	3	-	3	AWS	So,Jr
ENGR102M*	Tech/Professional Writing for ME	-	-	-	1	AW	So,Jr
ME103D	Engineering Drawing	-	1	-	1	AW	So,Jr
ME80	Strength of Materials	2	2	1	4	AS	Jr,Sr
ME112	Mechanical Engineering Design	1	3	-	4	W	Jr,Sr
ME113	Mechanical Engineering Design	-	4	-	4	S	Jr,Sr
ME131A/B	Heat Transfer & Fluid Mechanics	4/4	-/-	2/1	8	AW	Jr,Sr
ME140	Advanced Thermal Systems	4	1	2	5	S	Jr,Sr

Course	Title	Engr. Sci	Engr. Dsgn.	Expr.	Total	Qtr	Year
ME161	Dynamic Systems	3	1	-	4	A	
ME203*	Manufacturing & Design	-	4	1	4	AW	Jr,Sr

Options to complete the ME Degree: Select two courses from the MS depth/breadth options listed in the Mechanical Engineering Graduate Student Handbook. You may pick up a copy from the ME Student Services Office, or download it here: http://me.stanford.edu/current/ms/grad_handbook.html?id=1

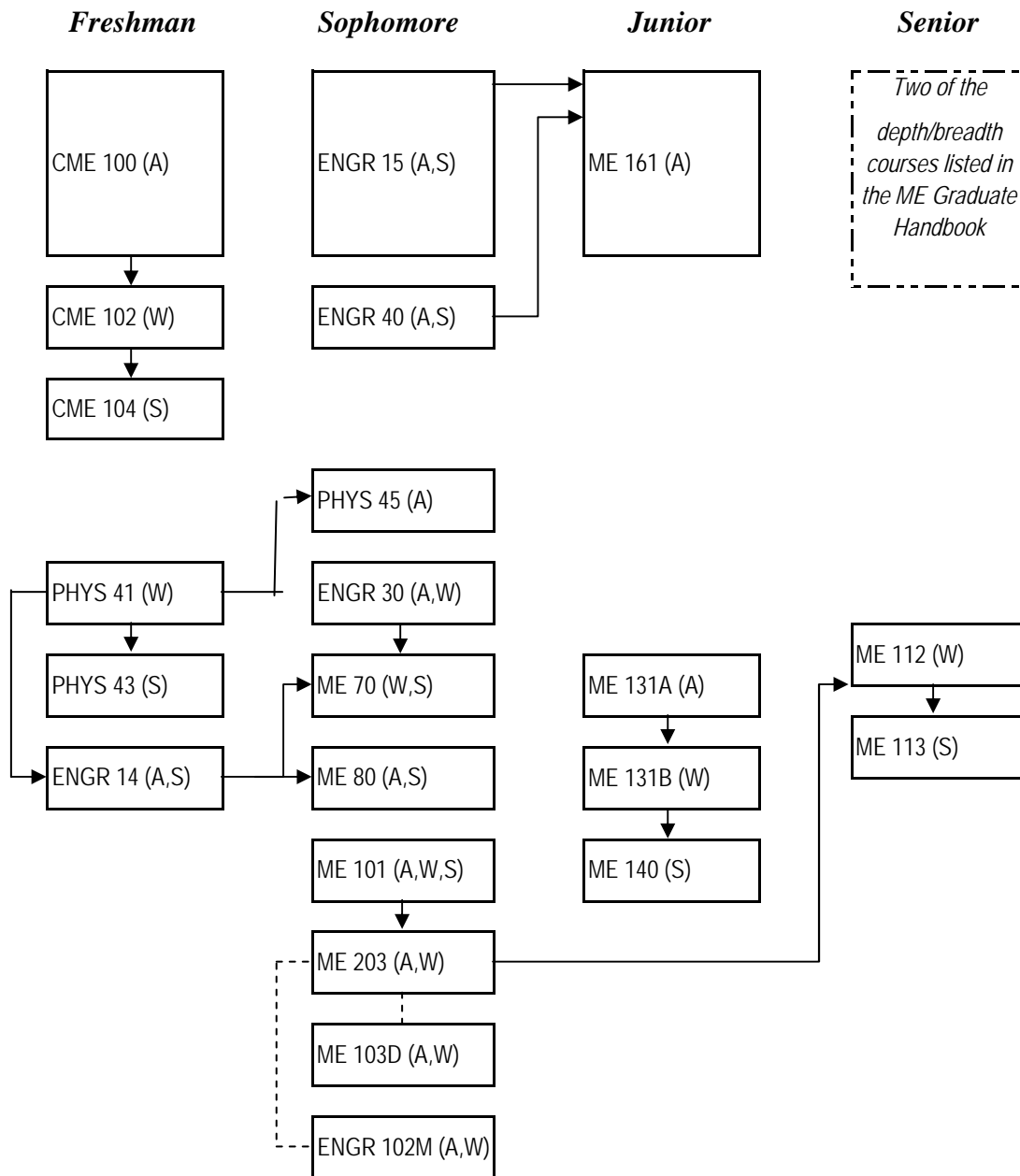
*ME 203 and ENGR 102M must be taken concurrently to fulfill the "Writing in the Major" requirement.

NOTES:

1. The Committee on Departmental Petitions of the Department of Mechanical Engineering Student Services Office must approve any deviation from the Engineering Depth (ME) requirement. Such petitions must be prepared on the School of Engineering petition forms (see the forms section at ughb.stanford.edu or in this handbook), approved by the advisor, and submitted by **the third week of the quarter before the expected graduation quarter**. For example, for a June graduation, a student must submit the petition by the third week of Winter quarter.
2. Courses listed in the Depth requirements may not be used to satisfy the engineering fundamentals requirement.
3. It is recommended that students review prerequisites for all courses before planning their course sequence
4. Petitions to deviate from School of Engineering requirements (i.e., math, science, Engineering Fundamentals, TIS) must be approved by the Dean's office in 201 Terman.

Mechanical Engineering

Typical Sequence of Courses



- * Solid arrows represent direct prerequisites.
- * Dashed lines represent co-requisites.
- * Dashed-line boxes enclose alternates. These may indicate alternate years in which to take a given course, or alternate courses that may be taken at a given time.

Mechanical Engineering

Plan A (Beginning with Math 40 series)

	<i>Fall</i>			<i>Winter</i>			<i>Spring</i>					
	Math/ Sci.	Engr.	Other	Class	Math/ Sci.	Engr.	Other	Class	Math/ Sci.	Engr.	Other	
<i>Freshman</i>	IHUM		5	IHUM			5	IHUM			5	
	Writing	-	-	3	Writing	-	-	3	Math 51	5	-	-
	MATH 41	5	-	-	MATH 42	5	-	-	PHYSICS 43	4	-	-
	CHEM 31X	4	-	-	PHYSICS 41	4	-	-	ENGR 14	-	3	-
	<i>Subtotals</i>	<i>9</i>	<i>0</i>	<i>8</i>	<i>Subtotals</i>	<i>9</i>	<i>0</i>	<i>8</i>	<i>Subtotals</i>	<i>9</i>	<i>3</i>	<i>5</i>
Total	17			Total	17			Total	17			
<i>Sophomore</i>	ME 101	-	3	-	ME 203	-	4	-	Elective	-	-	5
	ME80	-	4	-	ME 103D	-	1	-	ENGR 15	-	3	-
	ENGR 40	-	5	-	ENGR 102M	-	1	-	CME 104	5	-	-
	PHYSICS 45	4	-	-	ME 70	-	4	-	GER	-	-	4
	ENGR 30	-	3	-	CME 102	5	-	-	<i>Subtotals</i>	<i>5</i>	<i>3</i>	<i>9</i>
	<i>Subtotals</i>	<i>4</i>	<i>15</i>	<i>0</i>	<i>Subtotals</i>	<i>5</i>	<i>10</i>	<i>0</i>	<i>Subtotals</i>	<i>5</i>	<i>3</i>	<i>9</i>
Total	19			Total	18			Total	17			
<i>Junior</i>	ME 131A	-	4	-	ME 131B	-	3	-	ME 140	-	5	-
	ME 161	-	4	-	ENGR 70A	-	5	-	Engr. Fund.	-	3	-
	Language	-	-	5	Language	-	-	5	Language	-	-	5
	Sci. Elective	3	-	-	GER	-	-	4	GER	-	-	4
	<i>Subtotals</i>	<i>3</i>	<i>8</i>	<i>5</i>	<i>Subtotals</i>	<i>0</i>	<i>8</i>	<i>9</i>	Depth Course	-	3	-
Total	16			Total	17			Total	20			
<i>Senior</i>	Elective	-	3	-	ME 112	-	4	-	ME 113	-	4	-
	Depth Course	-	3	-	Depth course	-	3	-	Sci. Elective	3	-	-
	GER	-	-	5	TIS course	-	-	5	GER	-	-	5
	Depth Course	-	3	-	GER	-	-	4	GER	-	-	5
	<i>Subtotals</i>	<i>0</i>	<i>9</i>	<i>5</i>	<i>Subtotals</i>	<i>0</i>	<i>7</i>	<i>9</i>	<i>Subtotals</i>	<i>3</i>	<i>4</i>	<i>10</i>
Total	14			Total	16			Total	17			

Total Math & Science Units:	47
Total Engineering Units:	78
Total Other Units:	77
Total Units:	202

Notes:

- * ME 203 must be taken concurrently with ENGR 102M to fulfill the "Writing in the Major" requirement.
- * Students who test out of the language requirement should replace language units with technical electives.
- * Students without AP math/science credit should add math units to this program (24 math units and 21 science units are required).
- * Students with AP Physics consult the chart under "ME Requirements".
- * Students may take CME100 in Fall (Sophomore Yr) instead of MATH 51 in Spring (Freshman Yr)
- * CME 100, 102, 104 are also listed as ENGR 154, 155A, and 155B.
- * ENGR 30 may be taken in Winter and ME70 in Spring.
- * ENGR 15 may be taken in Spring.

Mechanical Engineering

Plan B (Beginning with CME 100 Series)

	<i>Fall</i>			<i>Winter</i>			<i>Spring</i>					
	Math/ Sci.	Engr.	Other	Class	Math/ Sci.	Engr.	Other	Class	Math/ Sci.	Engr.	Other	
<i>Freshman</i>	IHUM		5	IHUM			5	IHUM			5	
	Writing	-	-	3	Writing	-	-	3	CME 104	5	-	-
	CME 100	5	-	-	CME 102	5	-	-	PHYS 43	4	-	-
	CHEM 31X	4			PHYS 41	4	-	-	ENGR 14	-	3	-
	<i>Subtotals</i>	<i>9</i>	<i>0</i>	<i>8</i>	<i>Subtotals</i>	<i>9</i>	<i>0</i>	<i>8</i>	<i>Subtotals</i>	<i>9</i>	<i>3</i>	<i>5</i>
Total			17	Total			17	Total			17	
<i>Sophomore</i>	ME 101	-	3	-	ME 203	-	4	-	ME 70	-	4	-
	ENGR 15	-	3	-	ME 103D	-	1	-	ENGR 40	-	5	-
	ENGR 30	-	3	-	ENGR 102M	-	1	-	Elective	-	-	5
	ME80	-	4	-	Elective	-	-	3	Elective	-	-	3
	PHYS 45	4	-		GER	-	-	4				
<i>Subtotals</i>	<i>4</i>	<i>13</i>	<i>0</i>	<i>Subtotals</i>	<i>0</i>	<i>6</i>	<i>7</i>	<i>Subtotals</i>	<i>0</i>	<i>9</i>	<i>8</i>	
Total			17	Total			13	Total			17	
<i>Junior</i>	ME 131A	-	4	-	ME 131B	-	3	-	ME 140	-	5	-
	ME 161	-	4	-	ENGR 70A	-	5	-	Engr.Fund	-	3	-
	Language	-	-	5	Language	-	-	5	Language	-	-	5
	Sci. Elective	3	-	-	GER	-	-	4	GER	-	-	4
	<i>Subtotals</i>	<i>3</i>	<i>8</i>	<i>5</i>	<i>Subtotals</i>	<i>0</i>	<i>8</i>	<i>9</i>	Depth Course	-	3	-
Total			16	Total			17	Total			20	
<i>Senior</i>	Elective	-	4	-	ME 112	-	4	-	ME 113	-	4	-
	Depth Course	-	3	-	Depth Course	-	3	-	Sci. Elct	3	-	-
	Elective	-	-	3	TIS course	-	-	5	GER	-	-	4
	GER	-	-	5	GER	-	-	4	GER	-	-	5
	<i>Subtotals</i>	<i>0</i>	<i>7</i>	<i>8</i>	<i>Subtotals</i>	<i>0</i>	<i>7</i>	<i>9</i>	<i>Subtotals</i>	<i>3</i>	<i>4</i>	<i>9</i>
Total			15	Total			16	Total			16	

Total Math & Science Units: 37

Total Engineering Units: 76

Total Other Units: 85

Total Units: 198

Notes:

- * ME 203 must be taken concurrently with ENGR 102M to fulfill the "Writing in the Major" requirement.
- * ENGR 30 may be taken one quarter earlier.
- * Students who test out of the language requirement should replace language units with technical electives.
- * Students without AP math credit should add math units to this program (24 units total are required).
- * Students with AP Physics consult the chart under "ME Requirements".
- * ENGR 15 may be taken in Spring.
- * Students may elect to take Math 51, 52, 53 instead of CME 100, 102, 104.
- * CME 100, 102, 104 are also listed as ENGR 154, 155A, and 155B.

Mechanical Engineering

Plan C (Tough, since both 113 and 140 are taken senior year)

	<i>Fall</i>			<i>Winter</i>			<i>Spring</i>					
	Math/ Sci.	Engr.	Other	Class	Math/ Sci.	Engr.	Other	Class	Math/ Sci.	Engr.	Other	
<i>Freshman</i>	IHUM			5	IHUM			5	IHUM			5
	Writing	-	-	3	Writing	-	-	3	CME 104	5	-	-
	CME 100	5	-	-	CME 102	5	-	-	PHYSICS 43	4	-	-
	CHEM 31X	4	-	-	PHYSICS 41	4	-	-	ENGR 14	-	3	-
	<i>Subtotals</i>	<i>9</i>	<i>0</i>	<i>8</i>	<i>Subtotals</i>	<i>9</i>	<i>0</i>	<i>8</i>	<i>Subtotals</i>	<i>9</i>	<i>3</i>	<i>5</i>
Total	17			Total	17			Total	17			
<i>Sophomore</i>	ENGR 15	-	3	-	ME 203	-	4	-	GER	-	-	4
	ENGR 30	-	3	-	ME 103D	-	1	-	ME 70	-	4	-
	ME 101	-	3	-	ENGR 102M	-	1	-	ENGR 40	-	5	-
	ME 80	-	4	-	Elective	-	-	3	Elective	-	-	3
	PHYSICS 45	4	-	-	Sci Elec	3	-	-	<i>Subtotals</i>	<i>0</i>	<i>9</i>	<i>7</i>
	<i>Subtotals</i>	<i>4</i>	<i>13</i>	<i>0</i>	<i>Subtotals</i>	<i>3</i>	<i>6</i>	<i>3</i>	<i>Subtotals</i>	<i>0</i>	<i>9</i>	<i>7</i>
Total	17			Total	12			Total	16			
<i>Junior</i>	ENGR 70A	-	5	-	Sci. Elective	3	-	-	Sci. Elective	3	-	-
	ME 161	-	4	-	Elective	-	-	4	Engr. Fund.	-	3	-
	Language	-	-	5	Language	-	-	5	Language	-	-	5
	Depth course	-	3	-	GER	-	-	4	GER	-	-	4
	<i>Subtotals</i>	<i>0</i>	<i>12</i>	<i>5</i>	<i>Subtotals</i>	<i>3</i>	<i>0</i>	<i>13</i>	<i>Subtotals</i>	<i>3</i>	<i>3</i>	<i>9</i>
Total	17			Total	16			Total	15			
<i>Senior</i>	Depth course	-	3	-	ME 112	-	4	-	ME 113	-	4	-
	ME 131A	-	4	-	ME 131B	-	3	-	ME 140	-	5	-
	Elective	-	-	3	TIS course	-	-	5	Elective	-	-	3
	GER	-	-	5	Depth Course	-	3	-	GER	-	-	5
	<i>Subtotals</i>	<i>0</i>	<i>7</i>	<i>8</i>	<i>Subtotals</i>	<i>0</i>	<i>10</i>	<i>5</i>	<i>Subtotals</i>	<i>0</i>	<i>9</i>	<i>8</i>
Total	15			Total	15			Total	17			

Total Math & Science Units:	40
Total Engineering Units:	72
Total Other Units:	79
Total Units:	191

Notes:

- * ME 203 must be taken concurrently with ENGR 102M to fulfill the "Writing in the Major" requirement.
- * ENGR 30 may be taken one quarter earlier.
- * Students who test out of the language requirement should replace language units with technical electives.
- * Students without AP math credit should add math units to this program (24 units total are required).
- * Students with AP Physics credit consult the chart under "ME Requirements"
- * ME 70 May be taken in Winter or Spring.
- * Students may elect to take Math 51, 52, 53.
- * CME 100, 102, 104 are also listed as ENGR 154, 155A, and 155B.

Mechanical Engineering

Plan D (For those who want to do it all)

	<i>Fall</i>			<i>Winter</i>			<i>Spring</i>					
	Math/ Sci.	Engr.	Other	Class	Math/ Sci.	Engr.	Other	Class	Math/ Sci.	Engr.	Other	
<i>Freshman</i>	IHUM		5	IHUM			5	IHUM			5	
	Writing	-	-	3	Writing	-	-	3	CME 104	5	-	-
	CME 100	5	-	-	CME 102	5	-	-	PHYSICS 43	4	-	-
	CHEM 31X	4	-	-	PHYSICS 41	4	-	-	ENGR 14	-	3	-
	<i>Subtotals</i>	<i>9</i>	<i>0</i>	<i>8</i>	<i>Subtotals</i>	<i>9</i>	<i>0</i>	<i>8</i>	<i>Subtotals</i>	<i>9</i>	<i>3</i>	<i>5</i>
Total	17			Total	17			Total	17			
<i>Sophomore</i>	ENGR 30	-	3	-	ME 203	-	4	-	ME 70	-	4	-
	ENGR 15	-	3	-	ME 103D	-	1	-	ENGR 40	-	5	-
	PHYSICS 45	4	-	-	ENGR 102M	-	1	-	ENGR Fund	-	3	-
	GER	-	-	5	ME 101	-	3	-	Sci Elective	3	-	-
	ME80	-	4	-	GER	-	-	4				
<i>Subtotals</i>	<i>4</i>	<i>10</i>	<i>5</i>	<i>Subtotals</i>	<i>3</i>	<i>9</i>	<i>4</i>	<i>Subtotals</i>	<i>3</i>	<i>12</i>	<i>0</i>	
Total	19			Total	16			Total	15			
<i>Junior</i>	ME 131A	-	4	-	ME 131B	-	3	-	ME 140	-	5	-
	ME 161	-	4	-	CME106	5	-	-	GER	-	-	4
	Language	-	-	5	Language	-	-	5	Language	-	-	5
	ENGR 70A	-	5	-	GER	-	-	4	GER	-	-	4
	<i>Subtotals</i>	<i>0</i>	<i>13</i>	<i>5</i>	<i>Subtotals</i>	<i>5</i>	<i>3</i>	<i>9</i>	<i>Subtotals</i>	<i>0</i>	<i>5</i>	<i>13</i>
Total	18			Total	17			Total	18			
<i>Senior</i>	Sci Elective	3	-	-	ME 112	-	4	-	ME 113	-	4	-
	Elective	-	-	3	Depth course	-	3	-	Sci. Elective	3	-	-
	Depth Course	-	3	-	TIS course	-	-	5	GER	-	-	4
	GER	-	-	5	Elective	-	-	4	GER	-	-	5
	<i>Subtotals</i>	<i>3</i>	<i>3</i>	<i>8</i>	<i>Subtotals</i>	<i>0</i>	<i>7</i>	<i>9</i>	<i>Subtotals</i>	<i>3</i>	<i>7</i>	<i>9</i>
Total	14			Total	16			Total	19			

Total Math & Science Units: 48

Total Engineering Units: 72

Total Other Units: 83

Total Units: 203

Notes:

ME 203 must be taken currently with ENGR 102M to fulfill the "Writing in the Major" requirement.

ENGR 30 may be taken one quarter earlier.

Students who test out of the language requirement should replace language units with technical electives.

Students without AP math/science credit should add math/science units to this program (24 math & 21 science are required).

Students with AP credit in Physics consult the chart under "ME Requirements".

Students may elect to take Math 51, 52 & 53 instead of CME 100, 102, 104.

CME 100, 102, 104, 106 are also listed as ENGR 154, 155A, 155B, 155C

ME 70 may be taken in Winter or Spring.

Mechanical Engineering: Stanford/Ecole Centrale Paris

Sample Program with Junior Abroad at Ecole Centrale Paris

	<i>Fall</i>			<i>Winter</i>			<i>Spring</i>					
	Math/ Sci.	Engr.	Other	Class	Math/ Sci.	Engr.	Other	Class	Math/ Sci.	Engr.	Other	
<i>Freshman</i>			5	IHUM			5	IHUM			5	
	Math 51	5			Math 52	5		Math 53	5			
	Chem 31X	4			Physics 41	4		Physics 43	4			
	Writing			3	Writing			3	Engr 14		3	
	Subtotals	9	0	8	Subtotals	9	0	8	Subtotals	9	3	5
Total			17	Total			17	Total			17	
<i>Sophomore</i>	French 1			5	French 2			5	French 3			5
	Physics 45	4			ME203		4		Engr 15		3	
	ME80		4		ME103D		1		CME 104	5		
	Engr 40		5		Engr 102M		1		GER			4
	Engr 30		3		CME 102	5			Subtotals	5	3	9
	Subtotals	4	12	5	Subtotals	5	6	5	Subtotals	5	3	9
	Total			21	Total			16	Total			17
<i>*Junior At Ecole</i>	Phys 130	5			ME70		4		ME131A		4	
	ME331A	5			Engr 155C	3			Sci. Elective*	6		
	Math 106	3			Engr 70A		5		Phil 10			3
	Engr 25		3		Soc120/Econ1			4	World Culture			4
	Subtotals	13	3	0	Subtotals	3	9	4	Subtotals	6	4	7
Total			16	Total			16	Total			17	
<i>Senior</i>	ME101		3		ME112		4		ME113		3	
	Depth course		3		Depth Course		3		ME140		5	
	GER			5	TIS course		5		GER			5
	Depth course		3		GER			4	GER			5
	ME161		4		ME131B		3		Subtotals	0	8	10
	Subtotals	0	13	5	Subtotals	0	15	4	Subtotals	0	8	10
	Total			18	Total			19	Total			18

Total Math & Science Units: 63
 Total Engineering Units: 76
 Total Other Units: 70
Total Units: 209

Notes:

- *Stanford equivalent courses taken at Ecole.
- * ME 203 must be taken concurrently with ENGR 102M to fulfill the "Writing in the Major" requirement.
- * Students without AP math/science credit should add math units to this program (24 math units and 21 science units are required).
- * Students with AP Physics consult the chart under "ME Requirements".
- * ENGR 30 may be taken in Winter .
- * ENGR 15 may be taken in Spring.
- * CME 100, 102, 104 are also listed as ENGR 154, 155A, and 155B.

INSTRUCTIONS FOR DECLARING MAJOR IN MECHANICAL ENGINEERING (BS-ME)

1. Print a copy of your transcript from Axess.
2. Download and complete an ME program sheet from the School of Engineering UGHB web site (<http://ughb.stanford.edu>). Please include courses you plan to take as well as those you have already taken. You may pick up a major declaration form from the Mechanical Engineering Student Services Office (Building 530, room 125).
3. Please contact the ME Undergraduate Peer Advisor at mepeeradvisor@lists.stanford.edu for an appointment to go over your program sheet and select an advisor.
4. Discuss the program with your advisor and have him/her approve and sign your completed program sheet and major declaration form.
5. Return all completed documents and transcripts to the Student Services Office, Building 530, room 125.
6. E-mail Christine Crapps (crapps@stanford.edu) to let her know that you have declared your major so that she may approve it.
7. Attend the quarterly ME Declaration lunch to finalize the process. For more information on the lunch, please speak with Christine Crapps.

Note: The online version of the UGHB is considered the definitive and final version of SoE requirements for each major. Since corrections or updates may have been made after this Handbook went to press in August 2008, download the online ME program sheet from ughb.stanford.edu to ensure you are using an accurate major plan.

Stanford University ♦ School of Engineering
Mechanical Engineering
2008–2009 Program Sheet
 — ABET Accreditation Criteria Apply —

Final version of completed and signed program sheet due to the department no later than one month prior to the last quarter of senior year.

Follow all requirements as stated for the year of the program sheet used.

Name: _____
 Email: _____
 Date: _____

SU ID: _____
 Local Phone: _____
 Date B.S. expected: _____

Mathematics and Science Requirement

Dept	Course	Title	Transfer/AP Approval			Unit Total	Grade	ABET Units		
			✓ if Transfer	Initials	Date			Engr Sci	Engr Des	Experiment
<i>Mathematics (24 units minimum; see note 1)</i>										
<i>Mathematics Unit Total</i>								<i>(24 units minimum)</i>		

Science (21 units minimum; see note 2)

Science Unit Total _____ *(21 units minimum)*
Mathematics and Science Unit Total _____ *(45 units minimum)*

Technology in Society Requirement (1 course required: see note 3 for approved list)

							3-5			
--	--	--	--	--	--	--	-----	--	--	--

NOTES

- * Read all emails from the Office of Student Affairs; this is the SoE's only method of conveying key information to E majors.
 - * Engineering Science, Design, and Experimentation units do not apply to shaded areas.
 - * This form is available as an Excel file at <http://ughb.stanford.edu/>. The printed form must be signed by the advisor and, if required, by the departmental representative. Changes must be initialed in ink.
 - * All courses listed on this form must be taken for a letter grade if offered by the instructor.
 - * Minimum Combined Grade Point Average for all courses in Engineering Topics (Eng Sci and Eng Des courses) is 2.0.
 - * Transfer and AP credits in Math, Science, Funds., & TIS must be approved by the SoE Dean's office. Transfer credits in Mechanical Engineering Depth must be approved by the Advisor. Transfer credit information and petitions are available at <http://ughb.stanford.edu/transfer.html>.
 - * All courses listed on this form must be listed under only one category; no double-counting.
- (1) Must take one Statistics course: CME 106, STATS 110 or STATS 116; Must also take one ODE course: CME 102/ENGR 155A or MATH 53
 - (2) Must include a full year (3 quarters) in either Physics or Chemistry, plus one quarter in the other. CHEM31A/B counts as one quarter. CHEM 31X or ENGR 31 recommended.
 - (3) Must choose TIS course from the following ME-approved courses: ME 190 (recommended) or STS 101, 110, POLISCI 114S, or CS 201.

Mechanical Engineering Program Sheet (continued)

Engineering Topics (Engr Science + Engr Design combined must equal 68 units. See note 4)

Dept	Course	Title	Transfer/AP Approval			Unit Total	Grade	ABET Units		
			✓ if Transfer	Initials	Date			Engr Sci	Engr Des	Experiment
<i>Engineering Fundamentals (3 courses required)</i>										
ENGR	40	Intro Electronics (req'd)				5		3	2	2
ENGR	70A	Programming Methodology (req'd)				5		3	2	0
ENGR		<i>Fundamentals Elective</i>								
<i>Engineering Fundamentals Unit Total</i>										

Engineering Depth (Be advised, no course may be listed twice on the sheet. No double-counting.)

ENGR	14	Applied Mechanics: Statics (req'd)				3		2	1	0
ENGR	15	Dynamics (req'd)				3		2	1	0
ENGR	30	Engineering Thermodynamics (req'd)				3		3	0	0
ME	70	Introductory Fluids Engineering (req'd)				4		4	0	1
ME	101	Visual Thinking (req'd)				3		0	3	0
ME	103D	Engineering Drawing (req'd)				1		0	1	0
ME	80	Strength of Materials (req'd)				4		2	2	1
ME	112	Mechanica Engineering Design (req'd)				4		1	3	0
ME	113	Mechanical Engineering Design (req'd)				4		0	4	0
ME	131A	Heat Transfer (req'd)				4		4	0	2
ME	131B	Fluid Mechanics (req'd)				4		4	0	1
ME	140	Advanced Thermal Systems (req'd)				5		4	1	2
ME	161	Dynamic Systems (req'd)				4		3	1	0
ENGR	102M	Tech/Prof. Writing (req'd) WIM (see note 5)				1		0	0	0
ME	203	Manufacturing & Design (req'd) WIM (see note 5)				4		0	4	1

Options to complete ME-BS degree: See note 6; 6 units minimum

<i>Depth/Engr Science/Engr Design/Experiment Unit Totals</i>										

Program Totals (ABET Requirements)

Mathematics and Science (45 units minimum)
Engineering Topics (Engr Science + Engr Design) (68 units minimum)
Experimentation (8 units minimum)

--	--	--	--	--

Program Approvals

Advisor

Printed Name: _____ Date: _____
 Signature: _____

Departmental

Printed Name: _____ Date: _____
 Signature: _____

School of Engineering (signature not required prior to graduation)

Printed Name: _____ Date: _____
 Signature: _____

NOTES (continued from page 1)

- (4) In order to satisfy ABET requirements for graduation, the ME major must take enough courses so that the combined Engr Science and Design units from Fundamentals and Depth courses add up to a minimum of 68
- (5) Fulfills the "Writing in the Major" requirement. ENGR102M and ME203 must be taken concurrently.
- (6) Select 2 courses from the MS depth/breadth options listed in the Mechanical Engineering Graduate Student Handbook. All courses from this list are assigned ENGR Science units equivalent to the amount of units the course is taken for. Copies available in Bldg 530 Rm125 or download at: http://me.stanford.edu/current/ms/grad_handbook.html?id=1