

MECHANICAL ENGINEERING CURRICULUM 2004-2005

131 Total Hours Required for the degree

(131 hours minimum – depending on selection of thematic sequence and computer course)

English (9 hours) 6.4%

ENG 111 College Composition
ENG 112 Composition and Literature
ENG 313 Intro to Technical Writing

Mathematics & Statistics (19 hours) 13.6%

MTH 151 Calculus I
MTH 251 Calculus II
MTH 231 Elements of Discrete Math
MTH 245 Differential Equations for Engineers
STA 368 Introduction to Statistics

Fine Arts, Humanities & Social Science (12 hours) 8.6%

U.S. & World Cultures (6 hours) 4.3%

ECO 201 Principles of Microeconomics
Miami Plan Humanities
Miami Plan Fine Arts
Miami Plan Fine Arts, Humanities or Social Science
Miami Plan U.S. Cultures
Miami Plan for World Cultures

Natural Science (18 hours) 12.9%

PHY 181, 183 The Physical World and Lab
PHY 182, 184 The Physical World and Lab
CHM 141,144 College Chemistry and Lab
Miami Plan Biological Science

Thematic Sequence (9 hours) 6.4%

Liberal Education sequence outside your major
focused around a theme.

Mechanical Engineering courses (67 hours) 47.8%

1. Engineering-Science (21 hours)

These courses are fundamental to all ABET accredited engineering programs and disciplines. (There are total of 3 hours of design incorporated in courses marked *.)

ECE 205 Electric Circuit Analysis*	3
MME 211 Static Modeling of Mechanical Systems*	3
MME 223 Engineering Materials*	3
MME 311 Dynamic Modeling of Mech Systems*	3
MME 312 Mechanics of Materials*	3
MME/PSE 313 Fluid Mechanics*	3
MME/PSE 314 Engineering Thermodynamics*	3

2. Mechanical Engineering Core (36 hours)

These courses give the student an in-depth study in methods to analyze and design of products and mechanical components of machines and systems. (There are total of 6.25 hours of design incorporated in courses marked *.)

EAS 101 Computing, Engineering & Society	1
EAS 102 Problem Solving & Design	3
MME 143 Engineering Design/Computer Graphics*	3
MME 231 Manufacturing Processes*	3
MME/ECE 303 Computer Aided Experimentation*	4
MME 315 Mechanical Vibration*	3
MME/PSE 341 Engineering Economics	3
PSE 403 Heat Transfer*	3
MME 411 Machine and Tool Design*	4

MME 412 Advanced Mechanics of Materials*	3
MME 414 Engineering Thermodynamics II*	3
MME/ECE 436 Control of Dynamic Systems*	3

3. Senior Capstone Engineering Design (4 hrs)

MME/ECE 448, 449 Senior Design Project I, II 2, 2

This is a yearlong capstone design experience in which seniors select and complete open-ended projects, many of which involved working with industry.

Engineering Design Threads in Engineering Science, Mechanical Core, and Senior Capstone. Design is integrated into the curriculum through six unified threads among the engineering science, manufacturing, mechanical, electrical courses, and capstone courses. Since MME 211 is utilized in two different sequences the total design content in the curriculum is 13.75 hours.

T1: MME 143, 211, 311, 315 (2 hrs)

T2: MME 223, 231 (1 hrs)

T3: MME 211, 312, 411, 412 (3.5 hrs)

T4: ECE 205, MME/ECE 303, 436 (2 hrs)

T5: MME/PSE 313, 314, PSE 403, MME 414 (1.25 hrs)

T6: MME/ECE 448, 449 (4 hrs)

4. Technical Electives (6 hours)

Select two courses from the following courses:

- ECE 287 Digital Systems Design
 - ECE 304 Electronics
 - ECE 306 Signals & Systems
 - MME 334 Quality Planning & Control
 - MME 431 Engineering Cost Analysis
 - MME 434 Advanced Manufacturing
 - MME 435 Manufacturing Topics
 - MME 437 Computer-Integrated Mfg Systems
 - PSE 440 Solid & Hazardous Waste Management
 - PSE 482 Process Control
 - CSA 174 Fundamentals of Programming & Problem Solving
 - CSA 271 Object-Oriented Programming
 - CSA 273 Analysis of Deterministic Systems
 - CSA 283+ Data Communication & Networks
 - CSA 285 Client Server Systems
 - CSA 471 Simulation
 - CSA 484 Analysis of Manufacturing Systems
- +Prerequisite: CSA 174

Note: Computing is integrated into the curriculum through:

EAS 102	MME 341
ECE 205	MME 411
MME 143	MME 434
MME/ECE 303	MME 436
MME 315	MME/ECE 448, 449

**SAMPLE CURRICULUM
MECHANICAL ENGINEERING
SCHOOL OF ENGINEERING & APPLIED SCIENCE - MIAMI UNIVERSITY
2004-05**

Please consult your adviser before scheduling classes. Actual course offerings may vary.

Freshman Year

First Semester

EAS 101	Computing, Engineering & Society	1
ENG 111	College Composition (MPF I)	3
MTH 151	Calculus I (MPF V)	5
PHY 181	The Physical World (MPF IVB)	4
PHY 183	The Physical World Lab (MPF IVB)	1
Miami Plan Fine Arts, Humanities or Social Science Course (MPF IIA,B,or C)		<u>3</u> 17

Second Semester

EAS 102	Problem Solving and Design	3
ENG 112	Composition and Literature (MPF I)	3
MTH 251	Calculus II	4
PHY 182	The Physical World (MPF IVB)	4
PHY 184	The Physical World Lab (MPF IVB)	1
Miami Plan Fine Arts Course (MPF IIA)		<u>3</u> 18

Sophomore Year

First Semester

CHM 141	College Chemistry (MPF IVB)	3
CHM 144	College Chemistry Lab (MPF IVB)	2
ECO 201	Principles of Microeconomics (MPF IIC)	3
MME 143	Engineering Design & Computer Graphics	3
MME 211	Static Modeling of Mechanical Systems	3
MTH 245	Differential Equations for Engineers	<u>3</u> 17

Second Semester

MME 223	Engineering Materials	3
MME 312	Mechanics of Materials	3
STA 368	Introduction to Statistics	4
Miami Plan Biological Science Course (MPF IVA)		3
Miami Plan U.S. Cultures Course (MPF IIIA)		<u>3</u> 16

Junior Year

First Semester

ECE 205	Electric Circuit Analysis	3
ENG 313	Intro to Technical Writing	3
MME 231	Manufacturing Processes	3
MME 311	Dynamic Modeling of Mechanical Systems	3
MME/PSE 313	Fluid Mechanics	3
Miami Plan Humanities Course (MPF IIB)		<u>3</u> 18

Second Semester

MME/ECE 303	Computer-Aided Experimentation	4
MME/PSE 314	Engineering Thermodynamics	3
MME 315	Mechanical Vibration	3
MME/PSE 341	Engineering Economics	3
MTH 231	Elements of Discrete Math	<u>3</u> 16

Senior Year

First Semester

MME 411	Machine and Tool Design	4
MME 414	Engineering Thermodynamics II	3
MME/ECE 436	Control of Dynamic Systems	3
MME/ECE 448	Senior Design Project (MPC)	2
Technical Elective (see below)		3
Miami Plan Thematic Sequence (MPT)*		<u>3</u> 18

Second Semester

MME 412	Advanced Mechanics of Materials	3
MME/ECE 449	Senior Design Project (MPC)	2
PSE 403	Heat Transfer	3
Technical Elective (see below)		3
Miami Plan Thematic Sequence (MPT)*		3
Miami Plan World Cultures Course (MPF IIIB)+		<u>3</u> 17

131 Total Hours required for degree

+The School of Engineering & Applied Science and its Industrial Advisory Council suggest you consider taking IDS 159, Strength Through Cultural Diversity, to meet the World Cultures (MPF IIIB) requirement.

The Miami Plan for Liberal Education Foundation (MPF) requirement includes 6 hours of English Composition (ENG 111-112 fulfills this requirement); 12 hours in Fine Arts, Humanities, and Social Science (ECO 201 fulfills 3 hours of Social Science) with a minimum of 3 hours in each; 6 hours in U.S. and World Cultures; 9 hours of Natural Science, including one laboratory course with a minimum of 3 hours in Biological Science and 3 hours in Physical Science (PHY 181-182, 183-184 and CHM 141-144 more than fulfills the Physical Science requirement; however, a biological science course is still required); 3 hours of Mathematics, Formal Reasoning or Technology (MTH 151 fulfills this requirement). At least one of these foundation courses must provide a historical perspective (H). The actual order in which you take these courses is up to you. The outline above is just one sample of how the courses might be arranged. You must also complete 12 hours of Focus: Advanced Liberal Learning courses, including 9 hours in an approved Thematic Sequence (MPT) and a 3 hour Senior Capstone Experience (MPC) (MME/ECE 448/449 fulfills the capstone requirement).

*This sample curriculum list 6 hours of the 9-hour thematic sequence requirement. It is assumed that the first 3-hour course was utilized as a foundation requirement.

*This sample curriculum lists the 9-hour thematic sequence requirement. It is possible to fulfill the Thematic Sequence with MTH 2, which utilizes MTH 151, 231 and STA 368.

Technical Electives - Select two courses from the courses listed below

ECE 287	Digital Systems Design	CSA 271	Object-Oriented Programming
ECE 304	Electronics	CSA 273	Analysis of Deterministic Systems
ECE 306	Signals & Systems	CSA 283*	Data Communication and Networks
MME 334	Quality Planning & Control	CSA 285	Client Server Systems
MME 431	Engineering Cost Analysis	CSA 471	Simulation
MME 434	Advanced Manufacturing	CSA 484	Analysis of Manufacturing Systems
MME 435	Manufacturing Topics	PSE 440	Solid & Hazardous Waste Management
MME 437	Computer-Integrated Manufacturing Systems	PSE 482	Process Control
CSA 174	Fundamentals of Programming & Problem Solving		* Prerequisite CSA 174

