

## MANUFACTURING ENGINEERING CURRICULUM 2004-2005

### 128 Total Hours Required for the Degree

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

**English (9 hours) 6.6%**

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

**Mathematics & Statistics (16 hours) 11.7%**

MTH 151 Calculus I  
MTH 251 Calculus II  
MTH 245 Differential Equations for Engineers  
STA 368 Introduction to Statistics

**Fine Arts, Humanities & Social Science (12 hours) 8.8%**

**U.S. & World Cultures (6 hours) 4.4%**

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) 13.1%**

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) 6.6%**

Liberal Education sequence outside your major  
focused around a theme.

**Manufacturing Engineering courses (67 hours) 48.9%**

**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. Manufacturing Engineering Core (36 hours)**

These courses give the student an in-depth study in methods to design and manufacture quality products at a competitive cost. (There are total of 8.5 hours of design incorporated in courses marked \*.)

EAS 101 Computing, Engineering & Society	1
EAS 102 Problem Solving & Design	3
MME 143 Engineer Design/Computer Graphics*	3
MME 231 Manufacturing Processes*	3
MME/ECE 303 Computer Aided Experimentation*	4
MME 334 Quality Planning and Control*	3

MME/PSE 341 Engineering Economics	3
MME 411 Machine and Tool Design*	4
MME 434 Advanced Manufacturing*	3
MME 435 Manufacturing Topics*	3
MME/ECE 436 Control of Dynamic Systems*	3
MME 437 Computer-Integrated Mfg Systems*	3

### 3. Senior Capstone Engineering Design (4 hrs)

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

This is a year-long 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, Manufacturing Core, and Senior Capstone. Design is integrated into the curriculum through six unified threads among the engineering science, manufacturing courses, and capstone courses. Since MME 211 is utilized in two different sequences the total design content in the curriculum is 15.0 hours.*

T1: MME 143, 211, 311 (1.5 hrs)

T2: MME 223, 231, 334, 434, 437 (3.5 hrs)

T3: MME 211, 312, 411 (3 hrs)

T4: ECE 205, MME/ECE 303, 436 (2.5 hrs)

T5: MME/PSE 313, 314 (0.5 hrs)

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

### 4. Technical Electives (6 hours)

Select two courses from the following courses:

ECE 304	Electronics
ECE 287	Digital Systems Design
ECE 306	Signals and Systems
MME 431	Engineering Cost Analysis
IES 431	Principles & Applications of Environmental Science
IES 450	Environmental Law
PHY 286	Introduction to Computational Physics
PSE 403	Heat Transfer
PSE 440	Solid & Hazardous Waste Management
PSE 482	Process Control
PSY 453	Human Factors
PSY 461	Fitting the Environ to the Human Body
PSY 462	Work Space & Work Organization
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 411
ECE 205	MME 434
MME 143	MME 436
MME/ECE 303	MME 437
MME 341	MME/ECE 448, 449

**SAMPLE CURRICULUM  
MANUFACTURING ENGINEERING  
SCHOOL OF ENGINEERING & APPLIED SCIENCE - MIAMI UNIVERSITY  
2004-2005**

**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 & 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
MME 231	Manufacturing Processes	3
MME 311	Dynamic Modeling of Mechanical Systems	3
MME/PSE 313	Fluid Mechanics	3
ENG 313	Intro to Technical Writing	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 334	Quality Planning and Control	3
MME/PSE 341	Engineering Economics	3
Miami Plan Thematic Sequence (MPT)*		<u>3</u>
		16

**Senior Year**

First Semester

MME 411	Machine and Tool Design	4
MME 434	Advanced Manufacturing	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 435	Manufacturing Topics	3
MME 437	Computer-Integrated Manufacturing Systems	3
MME/ECE 449	Senior Design Project (MPC)	2
Technical Elective (see below)		3
Miami Plan Thematic Sequence (MPT)*		3
Miami Plan World Cultures Course (MPF IIIB)+		<u>3</u>
		17

**128 Total Hours required for degree**

+The School of Engineering & Applied Science and its external 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 lists the 9-hour thematic sequence requirement. It is possible to fulfill the Thematic Sequence with MTH 2, which utilizes MTH 151 and STA 368.

**Technical Electives - Select two courses from the courses listed below**

ECE 287	Digital Systems Design	PSY 461	Fitting the Environment to the Human Body
ECE 304	Electronics	PSY 462	Work Space & Work Organization
ECE 306	Signals & Systems	CSA 174	Fundamentals of Programming and Problem Solving
MME 431	Engineering Cost Analysis	CSA 271	Object-Oriented Programming
IES 431	Principles & Applications of Environmental Science	CSA 273	Analysis of Deterministic Systems
IES 450	Environmental Law	CSA 283*	Data Communication and Networks
PHY 286	Introduction to Computational Physics	CSA 285	Client Server Systems
PSE 403	Heat Transfer	CSA 471	Simulation
PSE 440	Solid & Hazardous Waste Management	CSA 484	Analysis of Manufacturing Systems
PSE 482	Process Control		
PSY 453	Human Factors		

\*Prerequisite: CSA 174

