

MANUFACTURING ENGINEERING CURRICULUM 2007-2008

128 Total Hours Required for the Degree

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

All required engineering, chemistry, physics, mathematics, statistics, computer science, English, and business courses must be taken for a grade

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/PCE 313 Fluid Mechanics*	3
MME/PCE 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 213 Computational Methods in Engineering	3
MME 231 Manufacturing Processes*	3
MME/ECE 303 Computer Aided Experimentation*	4
MME 334 Quality Planning and Control*	3
MME/PCE 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 213, 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/PCE 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 287	Digital Systems Design
ECE 304	Electronics
ECE 305	Electrical Circuit Analysis II
ECE 306	Signals and Systems
MME 315	Mechanical Vibrations
MME 412	Advanced Mechanics
MME 414	Engineering Thermodynamics II
MME 431	Cost Estimating for Engineers
PHY 286	Introduction to Computational Physics
PCE 403	Heat Transfer
PCE 482	Process Control
CSA 174	Fundamentals of Programming & Problem Solving
CSA 271	Object-Oriented Programming
CSA 273	Analysis of Deterministic Systems
CSA 278	Computer Architecture
CSA 372	Analysis of Stochastic Systems
CSA 484	Manufacturing Planning Systems

Note: Computing is integrated into the curriculum through:

EAS 102	MME 411
ECE 205	MME 434
MME 213	MME 436
MME/ECE 303	MME 437
MME 341	MME/ECE 448, 449

**SAMPLE CURRICULUM
MANUFACTURING ENGINEERING
SCHOOL OF ENGINEERING & APPLIED SCIENCE - MIAMI UNIVERSITY
2007-2008**

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

Freshman Year

<u>First Semester</u>			<u>Second Semester</u>		
EAS 101	Computing, Engineering & Society	1	EAS 102	Problem Solving & Design	3
ENG 111	College Composition (MPF I)	3	ENG 112	Composition and Literature (MPF I)	3
MTH 151	Calculus I (MPF V)	5	MTH 251	Calculus II	4
PHY 181	The Physical World (MPF IVB)	4	PHY 182	The Physical World (MPF IVB)	4
PHY 183	The Physical World Lab (MPF IVB)	1	PHY 184	The Physical World Lab (MPF IVB)	1
Miami Plan for World Cultures Course (MPF IIIB)+		3	Miami Plan Fine Arts Course (MPF IIA)		3
		17			18

Sophomore Year

<u>First Semester</u>			<u>Second Semester</u>		
CHM 141	College Chemistry (MPF IVB)	3	STA 368	Introduction to Statistics	4
CHM 144	College Chemistry Lab (MPF IVB)	2	Miami Plan U.S. Cultures Course (MPF IIIA)		3
ECO 201	Principles of Microeconomics (MPF IIC)	3	Miami Plan Biological Science Course (MPF IVA)		3
MTH 245	Differential Equations for Engineers	3			
	Choose two of the following:			Choose two of the following:	
MME 213	Computational Methods in Engineering	3	MME 213	Computational Methods in Engineering	3
MME 211	Static Modeling of Mechanical Systems	3	MME 211	Static Modeling of Mechanical Systems	3
MME 223	Engineering Materials	3	MME 223	Engineering Materials	3
ECE 205	Electric Circuit Analysis	3	ECE 205	Electric Circuit Analysis	3
		17			16

Junior Year

<u>First Semester</u>			<u>Second Semester</u>		
ENG 313	Introduction to Technical Writing	3	MME/ECE 303	Computer-Aided Experimentation	4
MME 231	Manufacturing Processes	3	MME/PCE 314	Engineering Thermodynamics	3
MME 311	Dynamic Modeling of Mechanical Systems	3	MME 334	Quality Planning & Control	3
MME 312	Mechanics of Materials	3	MME/PCE 341	Engineering Economics	3
MME/PCE 313	Fluid Mechanics	3	Miami Plan Thematic Sequence Course (MPT)*		3
Miami Plan Humanities Course (MPF IIB)		3			16
		18			

Senior Year

<u>First Semester</u>			<u>Second Semester</u>		
MME 411	Machine and Tool Design	4	MME 435	Manufacturing Topics	3
MME 434	Advanced Manufacturing	3	MME 437	Computer-Integrated Manufacturing System	2
MME/ECE 436	Control of Dynamic Systems	3	MME/ECE 449	Senior Design Project (MPC)	3
MME/ECE 448	Senior Design Project (MPC)	2	Technical Elective (see below)		3
Technical Elective (see below)		3	Miami Plan Thematic Sequence Course (MPT)*		3
Miami Plan Thematic Sequence Course (MPT)*		3	Miami Plan Fine Arts, Humanities or Social Science (MPF IIIA,B,C)		3
		18			17

+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, 231 and STA 368.

Technical Electives – Select two courses from the courses listed below

ECE 287	Digital Systems Design	PCE 403	Heat Transfer
ECE 304	Electronics	PCE 482	Process Control
ECE 305	Electric Circuit Analysis II	CSA 174	Fundamentals of Programming & Problem Solving
ECE 306	Signals & Systems	CSA 271	Object-Oriented Programming
MME 315	Mechanical Vibrations	CSA 273	Analysis of Deterministic Systems
MME 412	Advanced Mechanics	CSA 278	Computer Architecture
MME 414	Engineering Thermodynamics II	CSA 372	Analysis of Stochastic Systems
MME 431	Cost Estimating for Engineers	CSA 484	Manufacturing Planning Systems
PHY 286	Introduction to Computational Physics		