

Approved MaDE Technical Electives and Areas of Specialization

Effective Fall 2013

Course Number	Course Title	Prerequisites
Design		
Any Dept. Senior Design		see specific department
DSGN 320	Introduction to Industrial Design Methods	
DSGN 305	Human Centered Service Design	
DSGN 308	Human Centered Product Design	
DSGN 350	Innovation and Invention	
DSGN 370	Engineering Design Portfolio and	
Mech Eng 341	Computational Methods for Engineering	
DSGN 245, 246	CAD I and CAD II	
DSGN 345, 348	CAM and Rapid Prototyping	
Manufacturing Processes		
Mat Sci 340	Ceramic Processing	MAT SCI 316-1
Mat Sci 391	Process Design	MAT SCI 201
Mech Eng 359	Reliability Engineering	GEN ENG 205-4
Manufacturing Management		
Civ Eng 302	Engineering Law	Jr. Standing
IEMS 342	Organizational Behavior	Work experience
IEMS 325	Engineering Entrepreneurship	Accounting course
Manufacturing Logistics		
Civ Eng 371	Introduction to Transportation Planning	Jr. Standing
IEMS 381	Supply Chain Modeling and Analysis	IEMS 310 or 313
IEMS 317	Discrete-Event Systems Simulation	EECS 230; IEMS 303 and 315
Microelectronic Systems		
Chem Eng 307	Kinetics and Reactor Engineering	CHEM 343; CHEM ENG 210
EECS 308	Advanced Electromagnetics and	EECS 224
EECS 381	Electronic Properties of Materials	EECS 223 and 224
EECS 384	Solid-State Electronic Devices	EECS 381
EECS 388	Microelectronic Technology	Concurrently in EECS 381
Mechanical Systems		
Mech Eng 202	Mechanics II	GEN ENG 205-4
Mech Eng 241	Fluid Mechanics	GEN ENG 205-4
Mech Eng 314	Theory of Machines: Dynamics	MECH ENG 202
Mech Eng 315	Theory of Machines: Design of Elements	CIV ENG 216 or MECH ENG 240
Mech Eng 346	Intro. To Tribology	---
Mech Eng 362	Stress Analysis	CIV ENG 216 or MECH ENG 262
Mech Eng 363	Mechanical Vibrations	GEN ENG 205-4 and MECH ENG 202
Mech Eng 390	Introduction to Dynamic Systems	GEN ENG 205-4
Mech Eng 391	Fundamentals of Control Systems I	MECH ENG 390
Computer-Aided Design		
Mech Eng 224	Experimental Engineering I	EECS 270; MECH ENG 220, 241; MECH ENG 262 or CIV ENG 216
EECS 351	Intro. To Computer Graphics	EECS 311
Mech Eng 365	Finite Elements for Stress Analysis	CIV ENG 216
Mech Eng 366	Finite Elements for Design and	MECH ENG 365 and Sr. Standing
Mech Eng 341	Computational Methods for Engineering	

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Materials Engineering		
Mat Sci 316-1,2	Microstructural Dynamics	MAT SCI 315
Mat Sci 331	Physical Properties of Polymers	MAT SCI 201 and 314
Mat Sci 351-1	Introductory Physics of Materials	GEN ENG 205-4; PHYSICS 135-2,3
Mat Sci 355	Electronic Materials	MAT SCI 351-1; EECS 381
Environmental Issues		
Civ Eng 363	Environmental Engineering Applications: Air & Land	Jr. Standing
Civ Eng 364	Environmental Engineering Applications: Water	MECH ENG 241; CIV ENG 340 recommended
Civ Eng 369	The Industrial Ecology of Materials of Products	Jr. Standing
Civ Eng 370	Environmental Engineering Design	CIV ENG 364
Automation Systems		
EECS 230	Programming for Computer Engineers	GEN ENG 205-4
EECS 311	Data Structures	EECS 211
EECS 332	Digital Image Analysis	EECS 230
Mech Eng 390	Introduction to Dynamic Systems	Math 221
Mech Eng 391	Control I	MECH ENG 390
EECS 328	Numerical Methods for Engineers	GEN ENG 205-1,2,3 & Math 214-1,2,3
EECS 358	Introduction to Parallel Computing	EECS 361 and 230 or 211
EECS 362	Computer Architecture Project	EECS 361
Mech. Eng 340-3	Computer Integrated Manufacturing	Mech. Eng. 340-2
Information Systems		
EECS 311	Data Structures and Data Management Data Management and Information	EECS 211 or 230
EECS 317	Processing Telecommunication Networks for	EECS 110 or 111
EECS 313	Multimedia	Not open to EECS majors
EECS 333	Introduction to Communication Networks	EECS 302 or IEMS 202
EECS 378	Digital Communications	EECS 302 and 307
EECS 380	Wireless Communications	EECS 378
Transportation		
Civ Eng 371	Introduction to Transportation Planning and Analysis	Jr. Standing
Civ Eng 376	Transportation System Operations	---
Econ 355	Transportation Economics	ECON 281 and 310-1,2
Chemical Process Systems*		
Chem Eng 210	Analysis of Chemical Process Systems	CHEM 103, GEN ENG 205-4
Chem Eng 212	Equilibrium Separations	CHEM ENG 211
Chem Eng 307	Kinetics and Reactor Engineering	CHEM ENG 210, CHEM 343
Chem Eng 321	Fluid Mechanics	GEN ENG 205-4 Sr. Standing;
Chem Eng 341	Process Dynamics and Control	CHEM ENG 307 recommended