

## Elective Focus Area in Mechanical Engineering

### Manufacturing and Materials Processing

Manufacturing and materials processing represents one of the largest industrial sectors in the U.S., especially in the Midwest. Examples include vehicle and equipment manufacturing (GM, Ford, Chrysler, John Deere, Caterpillar, HON, Maytag, etc.) and metal, polymer, ceramic and glass processing (Alcoa, IPSCO, PMX, etc.). The Elective Focus Area (EFA) in Manufacturing and Materials Processing (MMP) builds on the regular courses required for a B.S. in Mechanical Engineering (ME) and provides students with advanced education in production systems (design and operation of manufacturing systems; equipment selection; plant layout; process and production planning; concurrent engineering; intelligent systems) and process engineering (manufacturing and material process selection, modeling, design and control; tooling design; quality control; material behavior; robotics).

Semester	Course	Session	SH	Pre-/Co-Requisites
4 (Spring)	22S:030 Statistical Methods and Computing, <i>or</i> 22M:072 Elementary Numerical Analysis, <i>or</i> 58:111 Numerical Calculations	S F, S S	3 3 3	22M:002 or equival. 22M:032 22M:034
5 (Fall)	56:171 Operations Research	F	3	22M:033/22S:039
6 (Spring)	58:131 Manufacturing Systems	S	3	58:032, 56:171
7 (Fall)	Elective		3	
7 (Fall)	Elective		3	
8 (Spring)	58:146 Modeling of Materials Processing	S	3	58:045
8 (Spring)	Elective		3	

Electives	Session	SH	Pre-/Co-Requisites
Flexible Elective – Choose one from: (i) engineering courses that are required in another (non-ME) program, (ii) engineering courses at the 100-level, (iii) mathematics, physics or chemistry courses at a more advanced level than those required in the ME curriculum, or (iv) independent investigation in a mechanical engineering subject area	Any	3	
56:054 Engineering Economy	S	3	Soph. stand./22S:039
56:134 Process Engineering	F	4	56:171
56:150 Information Systems Design	S	3	57:017
56:162 Quality Control	F	3	22S:030 or 22S:039
56:164 Six Sigma	Su	3	/22S:030 or 22S:039
56:166 Stochastic Modeling	F	3	22S:039/56:171
57:017 Computers in Engineering	All	3	59:006, Soph. stand.
58:110 Computer Aided Engineering	S	3	57:019, 58:052
58:158 Fatigue/Durability in Design	S	3	58:055 or 58:150
58:159 Fracture Mechanics	S	3	58:055 or 58:150
58:186 Enhanced Design Experience	S	3	58:086

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