

MANUFACTURING ENGINEERING UNDERGRADUATE MAJOR (BS, HBS)

The Bachelor of Science and Honors Bachelor of Science degrees in Manufacturing Engineering are accredited by the Engineering Accreditation Commission of ABET, <http://www.ABET.org>.

The curriculum in Manufacturing Engineering supports a range of career paths in the areas of manufacturing process development, manufacturing systems analysis, and new product development, among others. The degree prepares students for industry, graduate study, or other career paths, specializing or broadening further their knowledge and skills.

Program Educational Objectives—Manufacturing Engineering

Note: The Bachelor of Science and Honors Bachelor of Science degrees in Manufacturing Engineering are accredited by the Engineering Accreditation Commission of ABET, <http://www.ABET.org>, which requires stated program educational objectives and student outcomes to support these.

OSU Manufacturing Engineering graduates receive an innovative education, and within 3 to 5 years of graduation will have:

1. Created value to organizations through the analysis, evaluation, and improvement of engineered systems and processes using appropriate manufacturing engineering methods and tools.
2. Communicated effectively across disciplines and cultures to manage and/or lead activities in support of organizational goals and objectives.
3. Innovated systems and processes, in response to organizational challenges, though the application of structured and unstructured manufacturing engineering methodologies, including engineering design and problem solving.

Major Code: 317

- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- Communicate effectively with a range of audiences.
- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- Acquire and apply new knowledge as needed, using appropriate learning strategies.

- Design products and the equipment, tooling, and environment necessary for their manufacture.
- Create competitive advantage through manufacturing planning, strategy, quality, and control.
- Analyze, synthesize, and control manufacturing operations using statistical methods.
- Measure manufacturing process variables and develop technical inferences about the process.

First Year		Credits
CH 201	CHEMISTRY FOR ENGINEERING MAJORS	3
CH 202	CHEMISTRY FOR ENGINEERING MAJORS ¹	3
CH 205	LABORATORY FOR CH 202	1
COMM 111 or COMM 114	*PUBLIC SPEAKING or *ARGUMENT AND CRITICAL DISCOURSE	3
ENGR 112	INTRODUCTION TO ENGINEERING COMPUTING	3
ENGR 248	ENGINEERING GRAPHICS AND 3-D MODELING ¹	3
HHS 231	*LIFETIME FITNESS FOR HEALTH	2
HHS 241	*LIFETIME FITNESS (or any PAC course)	1-2
MIME 101	INTRODUCTION TO MIME	3
MTH 251	*DIFFERENTIAL CALCULUS	4
MTH 252	INTEGRAL CALCULUS	4
MTH 254	VECTOR CALCULUS I	4
PH 211	*GENERAL PHYSICS WITH CALCULUS	4
WR 121	*ENGLISH COMPOSITION	3
*Perspectives ²		6
Credits		47-48
Second Year		
ENGR 211	STATICS	3
ENGR 212	DYNAMICS	3
ENGR 213	STRENGTH OF MATERIALS	3
ME 250	INTRODUCTION TO MANUFACTURING PROCESSES	1
MTH 256	APPLIED DIFFERENTIAL EQUATIONS	4
MTH 341	LINEAR ALGEBRA I	3
PH 212 & PH 213	*GENERAL PHYSICS WITH CALCULUS and *GENERAL PHYSICS WITH CALCULUS	8
ST 314	INTRODUCTION TO STATISTICS FOR ENGINEERS ¹	3
WR 327	*TECHNICAL WRITING	3
*Difference, Power, and Discrimination ²		3
Restricted Electives ^{1,3}		9
Credits		43
Third Year		
ENGR 201	ELECTRICAL FUNDAMENTALS I	3
MATS 321	INTRODUCTION TO MATERIALS SCIENCE	4
ME 311/NSE 311	INTRODUCTION TO THERMAL-FLUID SCIENCES	4
MFGE 336	PRODUCTION ENGINEERING	4
Restricted Electives ^{1,3}		22
*Perspectives ²		6
Credits		43
Fourth Year		
ME 382	INTRODUCTION TO DESIGN	4
ME 413		4
MFGE 337	MATERIALS AND MANUFACTURING PROCESSES	4
MFGE 436	LEAN MANUFACTURING SYSTEMS ENGINEERING	4
MFGE 437	COMPUTER CONTROL OF MANUFACTURING PROCESSES	4
MIME 497	*MIME CAPSTONE DESIGN	4
MIME 498	*MIME CAPSTONE DESIGN	4
Biological Science Elective ²		4
Restricted Electives ^{1,3}		9

2 Manufacturing Engineering Undergraduate Major (BS, HBS)

*Synthesis Courses ⁴	6
Credits	47
Total Credits	180-181

*
Baccalaureate Core Course (BCC)

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Writing Intensive Course (WIC)

1
Prerequisite for several upper-division courses

2
Must be selected to satisfy baccalaureate core requirements

3
Must be selected to satisfy the requirements of an approved manufacturing keystone option

Major Code: 317

First Year		Credits
Fall		
CH 201	CHEMISTRY FOR ENGINEERING MAJORS	3
MIME 101	INTRODUCTION TO MIME	3
MTH 251	*DIFFERENTIAL CALCULUS	4
WR 121	*ENGLISH COMPOSITION	3
*Western Culture Perspective		3
Credits		16

Winter		
CH 202	CHEMISTRY FOR ENGINEERING MAJORS	3
CH 205	LABORATORY FOR CH 202	1
ENGR 248	ENGINEERING GRAPHICS AND 3-D MODELING	3
HHS 231	*LIFETIME FITNESS FOR HEALTH	2
MTH 252	INTEGRAL CALCULUS	4
*Cultural Diversity Perspective		3
Credits		16

Spring		
COMM 111 or COMM 114	*PUBLIC SPEAKING or *ARGUMENT AND CRITICAL DISCOURSE	3
ENGR 112	INTRODUCTION TO ENGINEERING COMPUTING	3
HHS 241	*LIFETIME FITNESS (or any PAC course)	1
MTH 254	VECTOR CALCULUS I	4
PH 211	*GENERAL PHYSICS WITH CALCULUS	4
Credits		15

Second Year		Credits
Fall		
ENGR 211	STATICS	3
IE 112	SPREADSHEET SKILLS FOR INDUSTRIAL & MANUFACTURING ENGINEERS	1
MFGE 285/IE 285	INTRODUCTION TO INDUSTRIAL AND MANUFACTURING ENGINEERING	3
MTH 256	APPLIED DIFFERENTIAL EQUATIONS	4
PH 212	*GENERAL PHYSICS WITH CALCULUS	4
Credits		15

Winter		
ENGR 213	STRENGTH OF MATERIALS	3
IE 212	COMPUTATIONAL METHODS FOR INDUSTRIAL ENGINEERING	4
MTH 341	LINEAR ALGEBRA I	3
PH 213	*GENERAL PHYSICS WITH CALCULUS	4
Credits		14

Spring		
ENGR 212	DYNAMICS	3

ENGR 390	ENGINEERING ECONOMY	3
ME 250	INTRODUCTION TO MANUFACTURING PROCESSES	1
ST 314	INTRODUCTION TO STATISTICS FOR ENGINEERS	3
WR 327	*TECHNICAL WRITING	3
*Social Processes and Institutions Perspective		3
Credits		16

Third Year		Credits
Fall		
IE 355	STATISTICAL QUALITY CONTROL	4
IE 367	PRODUCTION PLANNING AND CONTROL	4
MATS 321	INTRODUCTION TO MATERIALS SCIENCE	4
ME 311	INTRODUCTION TO THERMAL-FLUID SCIENCES	4
Credits		16

Winter		
IE 356	EXPERIMENTAL DESIGN FOR INDUSTRIAL PROCESSES	4
IE 366	WORK SYSTEMS ENGINEERING	4
IE 368	FACILITY DESIGN AND OPERATIONS MANAGEMENT	4
MFGE 336	PRODUCTION ENGINEERING	4
Credits		16

Spring		
ENGR 201	ELECTRICAL FUNDAMENTALS I	3
ME 382	INTRODUCTION TO DESIGN	4
*Literature and Arts Perspective		3
*Biological Science and Lab Perspective		4
Credits		14

Fourth Year		Credits
Fall		
MIME 497	*MIME CAPSTONE DESIGN	4
ME 413		
MFGE 436	LEAN MANUFACTURING SYSTEMS ENGINEERING	4
Restricted Elective		3
Credits		11

Winter		
MIME 498	*MIME CAPSTONE DESIGN	4
MFGE 337	MATERIALS AND MANUFACTURING PROCESSES	4
MFGE 437	COMPUTER CONTROL OF MANUFACTURING PROCESSES	4
Restricted Elective		3
Credits		15

Spring		
Restricted Elective		3
*Difference, Power and Discrimination		3
*Contemporary Global Issues Synthesis		3
*Science, Technology and Society Synthesis		3
Credits		12

Total Credits		176
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