

# Manufacturing Engineering (MfgE)

Undergraduate Curriculum Guide Effective Fall 2024~ North Dakota State University

STUDENT \_\_\_\_\_

ID # \_\_\_\_\_

Advisor \_\_\_\_\_

	Fall				Spring			
	Course	Crs	Sem	Grade	Course	Crs	Sem	Grade
Freshman (<27 crs)	CHEM 121	General Chemistry I	3		IME 111	Introduction to IME	3	
	CHEM 121L	General Chem Lab I	1		MATH 166	Calculus II	4	
	[C] ENGL 110	College Composition I	3		ME 212	Fund of Visual Comm	3	
	ENGL 120	College Composition II	3		ME 221	Engr Mechanics I	3	
	MATH 165	Calculus I	4		CHEM 122	General Chemistry II	3	
	Comp Sci Elect	(see side bar)	3					
		<b>17</b>				<b>16</b>		
Sophomore (27-59 crs)	COMM 110	Fund of Public Speaking	3		IME 311	Work/Station Design	3	
	IME 330	Mfg Processes	3		MATH 266	Differential Equations	3	
	MATH 128	Intro to Linear Algebra	1		PHYS 252	University Physics II	4	
	MATH 259	Multivariate Calculus	3		PHYS 252L	University Physics II Lab	1	
	ME 222	Engr Mechanics II	3		ME 331	Materials Science & Eng	4	
	ME 223	Mechanics of Materials	3		CE 309	Fluid Mechanics	3	
		<b>16</b>				<b>18</b>		
Junior (60 - 89 crs)	IME 380	CAD/CAM for Mfg	3		IME 431	Production Engr	3	
	IME 430	Process Engr	3		IME 461	Quality Assurance & Cntrl	3	
	IME 460	Evaluation of Engr Data	3		IME 440	Engr Economy	3	
	ENGL 321	Writing in Tech Profession	3		ME 350	Thermodynamics/Heat Trsf	3	
	IME 456	Program & Project Mgmt	3		Gen Ed Elect	(see side bar)	3	
	Wellness Elect	(see side bar)	2					
		<b>17</b>				<b>15</b>		
Senior (90 + crs)	ENGR 327	Ethics, Engr & Technology	3		IME 489	Indl & Mfg Engr Capstone	3	
	IME 480	Production & Inventory Cntrl	3		Engr Sci Elect	(see side bar)	3	
	IME 482	Automated Mfg Systems	3		Gen Ed Elect	(see side bar)	3	
	Gen Ed Elect	(see side bar)	3		Technical Elect	(see side bar)	3	
	Technical Elect	(see side bar)	3		Technical Elect	(see side bar)	3	
			<b>15</b>				<b>15</b>	
						<b>15</b>		

**TOTAL CREDITS     129**

**KEY**

- "T" indicates requirement satisfied with transfer credits.
- \* See reverse side for elective information.
- Grades less than "C" will not be accepted for CHEM, MATH, and PHYS.

[C] First Year students with an ACT score of 18 or higher in English may register for ENGL 120. A passing grade will be awarded for ENGL 110 by completing ENGL 120 with a "C" or better.

General Education Electives			
<i>See Registration Schedule for approved courses.</i>			
Humanities/Fine Arts [A]	Crs	Semester	Grade
ENGR 327	3		
*	3		
Social/Behavioral Sciences [B]			
*	3		
*	3		
W- Wellness	2		
	<b>14</b>		
<i>Check off once completed</i>			
D - Cultural Diversity: double up with [A] or [B]			
G - Global Perspectives: double up with [A] or [B]			

MfgE Electives			
<i>Approved electives are listed on the back of this page.</i>			
	Crs	Semester	Grade
<b>Computer Science Elective</b>	<b>3</b>		
Take ONE of the following 5 courses:			
CSCI 122, ECE 173, CSCI 159, CSCI 160, or CSCI 227			
<b>Engineering Science</b>	<b>12</b>		
CE 309, ME 223, & ME 350	9		
Choose ONE of the following 3 courses below:			
ECE 275 or ECE 301 or EE 206	3-4		
<b>Technical Electives</b>	<b>9</b>		
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*			
*			

## MfgE Approved Electives/Requirements

Computer Science Electives (3 credits)			
CSCI	122	Visual BASIC	3
ECE	173	Introduction to Computing	4
CSCI	159	Computer Science Problem Solving	3
CSCI	160	Computer Science I	4
CSCI	227	Computing Fundamentals in Python	3

Engineering Science Requirement (12 credits)			
CE	309	Fluid Mechanics	3
ME	223	Mechanics of Materials	3
ME	350	Thermodynamics/Heat Trsf	3
<b>Take 1 of the following 3 courses:</b>			
EE	206	Circuit Analysis I	4
ECE	275	Digital Systems I	4
ECE	301	Electrical Engineering I	3

Technical Electives (9 credits)					
Approved Courses			Credits	Pre-requisites	*Offered
IME	335	Welding Technology	3		s (even yrs)
IME	411	Human Factors Engr	3	IME 311, IME 460	f (odd yrs)
IME	427	Packaging for Electronics	3	Jr standing	f (even yrs)
IME	432	Composite Materials Mfg	3	IME 330, ME 331	See ME 474 below
IME	433	Additive Manufacturing	3	MATH 166, IME 330, co-req IME 430	s (odd yrs)
IME	435	Plastics & Polymer Processing	3	MATH 166 & MATH 266	f (even yrs)
IME	437	Methods for Precision Mfg	3	IME 430 ME 331	s (even yrs)
IME	450	Systems Engr & Mgmt	3	Junior standing	s
IME	451	Logistics Engr & Mgmt	3	IME 470, co-requisite IME 450	See AGECE 378 below
IME	453	Hospital Management Eng	3		s (odd yrs)
IME	462	Total Quality in Indl Mgmt	3		f (odd yrs)
IME	463	Reliability Engineering	3	IME 460	f (even yrs)
IME	464	Reliability Analysis	3	IME 460, IME 463	s (even yrs)
IME	465	Intro to Machine Learning	3		See CSCI 425 below
IME	470	Operations Research 1	3	Math 129, co-requisite IME 460	s
IME	472	Simulation Bus & Indl Sys	3	IME 460, Comp Sci elect.	s
IME	485	Indl & Mfg Facility Design	3	Senior standing	f
AGECE	378	Intro to Transportation & Logistics	3	Econ 201	f
CSCI	425	Machine Learning	3		f
ME	474	Mechanics of Composite Material	3	ME 331	s
<b>Maximum of 1 of the following 5 courses may be counted as technical electives.</b>					
^	BUSN	340	International Business	3	
^	MGMT	320	Foundations of Mgmt	3	
^	MIS	320	Mngt Information Systems	3	
^	MRKT	320	Foundations Marketing	3	
^	BUSN	431	Business Law I	3	

Not currently offered

Not currently offered

Not currently offered

Subst. for IME 451

Subst. for IME 465

Subst. for IME 432

^ 300-400 level BUSN courses require at least Junior standing and a minimum 2.50 cumulative GPA.

\* Tech elective course schedules may change based on faculty availability and course enrollment.

**Note:** Students may request approval for other 300-400 level engineering or related courses to be approved as technical electives. To request approval, a student should submit a memo to the IME dept indicating the course of interest and why the course should be approved. This memo will be reviewed by the IME department Chair and advisor for approval. Two of the three technical electives must be IME courses.