

# MANUFACTURING TECHNOLOGY MAJOR, DFM OPTION, BACHELOR OF SCIENCE (BS)

The design for manufacturability option prepares the graduate for placement in the world of manufacturing. A student graduating with this option should have mastered the basic skills appropriate for the design, development, manufacturing, and sale of consumer products. Students should enter the labor force at the middle-management level. The breadth of preparation in the design option provides a broad foundation from which to build and progress.

Note: Including university requirements, the above program requires a minimum of 180 credits, an average of 15 credits per quarter for a 12 quarter, four-year program. The 180 credits are based upon the following assumptions:

- Students have had one year of high school drafting. If this assumption is not true, then the student will have to take METC 102;
- Students will have satisfied university proficiencies. If this assumption is not true, then the student will have to complete up to six more classes. (See Undergraduate Degree Requirements (<http://catalog.ewu.edu/undergraduate-degree/>.)

**Grade Requirements:** In order to graduate, students majoring in the department must earn an average GPA  $\geq 2.5$  in all courses required for this major (all courses in the list below).

## Required Supporting Outside Department Courses

CHEM 121 or CHEM 171 & 171L	CHEMISTRY AND ITS ROLE IN SOCIETY GENERAL CHEMISTRY I and GENERAL CHEMISTRY LABORATORY I	5
MATH 142 or MATH 161 or HONS 161	PRECALCULUS MATH II CALCULUS I CALCULUS I	5
PHYS 131 or PHYS 151	INTRODUCTORY PHYSICS I GENERAL PHYSICS I	4
PHYS 132 or PHYS 152	INTRODUCTORY PHYSICS II GENERAL PHYSICS II	4
PHYS 161	MECHANICS LABORATORY	1
PHYS 162	HEAT AND OPTICS LABORATORY	1

## Required Departmental Courses

METC 110	ENGINEERING GRAPHICS	5
MENG 217	3D PARAMETRIC COMPUTER AIDED DESIGN	4
TECH 330	TECHNOLOGY PROBLEM ANALYSIS AND DESIGN I	4
TECH 331	TECHNOLOGY PROBLEM ANALYSIS AND DESIGN II	4
TECH/HONS 393	TECHNOLOGY WORLD CIVILIZATION	4
TECH 403	COMPUTER-AIDED DESIGN AND PROJECT MANAGEMENT	4
TECH 452	ENGINEERING ECONOMICS	4
TECH 454	ENVIRONMENTAL ENGINEERING	4
TECH 456	ENGINEERING ETHICS, CONTRACTS AND PATENTS	4
TECH 458	QUALITY ASSURANCE	4
TECH 462	INDUSTRIAL SAFETY ENGINEERING	4

## Required Design Technology Courses

MENG 353	INDUSTRIAL MATERIALS	5
METC 340	STATICS	5
METC 341	STRENGTH OF MATERIALS	4
MNTC 208	SURVEY OF ELECTRICITY	4
MNTC 301	METALLIC PROCESSES	5
MNTC 320	NON-METALLIC PROCESSES	5
MNTC 402	MACHINE TOOL I	5

## Required Senior Capstone Series

DNTC/APTC/CMTC/TECH/MNTC 490	SENIOR CAPSTONE: PRODUCTION LAB	4
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DNTC/APTC/CMTC/TECH/MNTC 491	SENIOR PROJECT	4-6
DNTC/MNTC/TECH 495 or MNTC 439	INTERNSHIP TOPICS IN MANUFACTURING	1-15
<b>Total Credits</b>		<b>107-123</b>

## Plan of Study

The following plan of study is for a student with zero credits. Individual students may have different factors such as: credit through transfer work, Advanced Placement, Running Start, or any other type of college-level coursework that requires an individual plan.

Courses may be offered in different terms and not all courses are offered every term, checking the academic schedule is paramount in keeping an individual plan current. There may be some courses that have required prerequisites not listed in the plan, review the course descriptions for information. **Students should connect with an advisor to ensure they are on track to graduate.**

All Undergraduate students are required to meet the Undergraduate Degree Requirements (<http://catalog.ewu.edu/undergraduate-degree/>).

### First Year

Fall Quarter	Credits Winter Quarter	Credits Spring Quarter	Credits
ENGL 101	5 ENGL 201	5 MENG 217	4
MATH 142	5 METC 110	5 Humanities & Arts BACR 2 <sup>1</sup>	5
Humanities & Arts BACR 1 <sup>1</sup>	5 Elective - certificate, minor, or general elective	5 Elective - certificate, minor, or general elective	5
		Elective - certificate, minor, or general elective	3
	<b>15</b>	<b>15</b>	<b>17</b>

### Second Year

Fall Quarter	Credits Winter Quarter	Credits Spring Quarter	Credits
MNTC 301	5 CHEM 121 or 171 <i>and</i> 171L	5 Social Science BACR 1 <sup>1</sup>	5
PHYS 131 & PHYS 161 (Natural Science BACR 1)	5 PHYS 132 & PHYS 162 (Natural Science BACR 2)	5 Elective - certificate, minor, or general elective	5
Elective - certificate, minor, or general elective	5 Elective - certificate, minor, or general elective	5 Elective - certificate, minor, or general elective	5
	<b>15</b>	<b>15</b>	<b>15</b>

### Third Year

Fall Quarter	Credits Winter Quarter	Credits Spring Quarter	Credits
MNTC 208	4 MNTC 402	5 MENG 353	5
TECH 330	4 TECH 331	4 TECH 458	4
TECH 403	4 TECH 393 (Global Studies - graduation requirement)	4 Diversity - graduation requirement <sup>1</sup>	5
Social Science BACR 2 <sup>1</sup>	5 TECH 454	4	
	<b>17</b>	<b>17</b>	<b>14</b>

### Fourth Year

Fall Quarter	Credits Winter Quarter	Credits Spring Quarter	Credits
METC 340	5 DNTC 490 (Senior Capstone - graduation requirement)	4 DNTC 491	4
MNTC 320	5 METC 341	4 DNTC 495	6
TECH 452	4 TECH 462	4 TECH 456	4
	<b>14</b>	<b>12</b>	<b>14</b>

**Total Credits 180**

<sup>1</sup> University Graduation Requirements (UGR) and Breadth Area Course Requirements (BACR) courses may be less than 5 credits and additional credits may be required to reach the required 180 total credits needed to graduate. Students should connect with an advisor to ensure they are on track to graduate.

### University Competencies and Proficiencies

English (<http://catalog.ewu.edu/undergraduate-degree/#newitemtext>)

Quantitative and Symbolic Reasoning (<http://catalog.ewu.edu/undergraduate-degree/#mathcompproficienciestext>)

Placement and Clearance (<http://catalog.ewu.edu/placement/>)

Prior Learning/Sources of Credit AP, CLEP, IB (<http://catalog.ewu.edu/prior-learning/>)

**General Education Requirements (<http://catalog.ewu.edu/undergraduate-degree/#generaleducationrequirementstext>) (GER)**

- Minimum Credits—180 cumulative credit hours
  - 60 upper-division credits (300 level or above)
  - 45 credits in residence (attendance) at Eastern, with at least 15 upper-division credits in major in residence at Eastern
- Minimum Cumulative GPA  $\geq 2.0$

**Breadth Area Core Requirements (BACR)**

Humanities and Arts (<http://catalog.ewu.edu/undergraduate-degree/#humanitiesandfineartsgecrtext>)

Natural Sciences (<http://catalog.ewu.edu/undergraduate-degree/#naturalsciencesgecrtext>)

Social Sciences (<http://catalog.ewu.edu/undergraduate-degree/#socialsciencesgecrtext>)

**University Graduation Requirements (<http://catalog.ewu.edu/undergraduate-degree/#universitygraduationrequirementstext>) (UGR)**

Diversity Course List (<http://catalog.ewu.edu/undergraduate-degree/#cultureandgenderdiversityintheuslisttext>)

World Language (<http://catalog.ewu.edu/undergraduate-degree/#worldlanguagetext>) (for Bachelor of Arts)

Global Studies Course List (<http://catalog.ewu.edu/undergraduate-degree/#internationalstudiesrequirementtext>)

Minor or Certificate (<http://catalog.ewu.edu/undergraduate-degree/#majorminororcertificateugrtext>)

Senior Capstone Course List (<http://catalog.ewu.edu/undergraduate-degree/#capstonecourselisttext>)

Application for Graduation (use EagleNET (<https://inside.ewu.edu/eaglenet/>)) must be made at least two terms in advance of the term you expect to graduate (undergraduate and post-baccalaureate).

Use the Catalog Archives (<http://catalog.ewu.edu/archives/>) to determine *two important catalog years*.

Requirements in Degree Works (<https://inside.ewu.edu/records-and-registration/degree-works/>) are based on these two catalog years:

- The catalog *in effect at the student's first term* of current matriculation is used to determine **BACR** (Breadth Area Credit Requirements) **and UGR** (Undergraduate Graduation Requirements).
- The catalog *in effect at the time the student declares a major or minor* is used to determine the program requirements.

**Students who earn a BS in Manufacturing Technology, DFM from EWU should be able to:**

- communicate effectively;
- develop a commitment to quality, timeliness and continuous improvement;
- develop a recognition of the need for, and the ability to engage in, lifelong learning;
- develop an ability to understand professional, ethical or social responsibilities;
- develop an appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines;
- identify, analyze and solve technical and creative problems.