

# MECHANICAL ENGINEERING TRANSFER, AS OIT ADVISING GUIDE

Prerequisites and Course Availability per Term  
(for complete information, see 2016-2017 UCC Catalog)

REVISED 01/02/17

	UCC Course No. and Course Name	Term Offered				Credits	Prerequisites/Notes		
		F	W	S	S				
Term 1	CH 221	General Chemistry I /Lec/Lab/Rec	x				5	MTH 111	16
	ENGR 111	Engineering Orientation I	x				3	MTH 65	
	MTH 251	Calculus I	x	x			5	MTH 112	
	DRF 112	CAD I	x				3		
Term 2	CH 222	General Chemistry II		x			5	CH 221	19
	ENGR 112	Engineering Orientation II		x			3	ENGR 111	
	MTH 252	Calculus II		x	x		4	MTH 251	
	WR 121	English Composition: Intro to Argument	x	x	x	x	4	WR 115 or Placement Test	
	DRF 113	CAD II		x			3		
Term 3	WR 122	English Composition: Style & Argument	x	x	x	x	4	WR 121	17
	Arts & Letters <sup>1</sup>	General Ed Req - See Advisor	x	x	x	x	3		
	Social Science <sup>1</sup>	General Ed Req - See Advisor	x	x	x	x	3		
	ECON 201	Economics	x		x		3	WR 121-123 & MTH 111	
	SP 111	Fundamentals of Public Speaking	x	x	x		4	WR 095	
Term 4	ENGR 201	Electrical Fundamentals I	x				4	MTH 251 Co-requisite	17
	ENGR 211	Statics	x				4	MTH 112	
	MTH 254	Vector Calculus I	x				4	MTH 252	
	PH 211	Physics I w/Calculus	x				5	MTH 251 Co-requisite	
Term 5	ENGR 202	Electrical Fundamentals II		x			4		17
	ENGR 212	Dynamics		x			4	ENGR 211	
	MTH 256	Differential Equations		x			4	MTH 252	
	PH 212	Physics II w/Calculus		x			5	PH 211	
Term 6	ENGR 213	Strength of Materials			x		4	ENGR 211	17
	MTH 265	Statistics for Engineers & Scientists			x		4	MTH 251	
	PH 213	Physics III w/Calculus			x		5	PH 212	
	WR 227	Technical Report Writing	x	x	x	x	4	WR 121	
<b>TOTAL DEGREE CREDITS</b>							103		

OIT Course No.	Credits
CHE 201/204 General Chemistry and Lab	4
ENGR 111 MMET Orientation	2
MTH 251	4
MTE 241 CAD for Mechanical Design I	2
CHE 202/205 General Chemistry and Lab	4
ENGR 266 Computer Programming for Engineers	3
MTH 252	4
WR 121	3
MTE 242 CAD for Mechanical Design II	2
WR 122	3
Humanities Elective	3
Social Science Elective - See Advisor	3
Economics Elective	3
SPE 111 Public Speaking	3
UCC ENGR 201+202 = ENGR 236	3
ENGR 211	4
MTH 254	4
PH 221	4
See note above for OIT ENGR 236	0
ENGR 212	3
MTH 256	4
PH 222	4
ENGR 213	4
MATH 361 Statistical Methods I	4
PH 223	4
WR 227	3
<b>TOTAL OIT CREDITS</b>	<b>84</b>

Program Advisor:

NOTES: 1. One of the Arts & Letters or Social Science electives must also meet the UCC Cultural Literacy requirements

### ADDITIONAL CLASSES THAT CAN BE TAKEN AT UCC

UCC Course No. and Course Name	Term Offered				Credits	Prerequisites/Notes	
	F	W	S	S			
MFG 111	Machine Shop Practices I	x				3	Instructor Approval
MFG 112	Machine Shop Practices II		x			3	Instructor Approval
PHL 202	Ethics		x			3	
WLD 101	Welding Processes & Applications	x				4	
SP 219	Small Group Discussion		x	x		3	
<b>ADDITIONAL CREDITS</b>						16	
<b>TOTAL ARTICULATED CREDITS</b>						<b>119</b>	

OIT Course No.	Credits
UCC MFG 111 + 112 = OIT MFG 120	4
See note above on OIT MFG 120	0
PHIL 331	3
Math Elective	3
SPE 321	3
<b>TOTAL OIT CREDITS</b>	<b>13</b>
<b>TOTAL OIT CREDITS</b>	<b>97</b>

**Umpqua Community College  
Engineering Transfer Program**

to

**Oregon Institute of Technology  
Bachelor of Science in Mechanical Engineering**

**Articulation Agreement  
2016 - 2017 Catalog**

It is agreed that students transferring from Umpqua Community College's (UCC) Engineering Transfer program to Oregon Institute of Technology's (Oregon Tech) Bachelor of Science in Mechanical Engineering (BSME) degree program will be given credit for courses as specified below. This agreement is based on the evaluation of the rigor and content of the general education and technical courses at both UCC and Oregon Tech and is subject to a yearly reevaluation by both schools for continuance. This agreement is dated November 8, 2016.

Baccalaureate students must complete a minimum of 60 credits of upper-division courses before a degree will be awarded. Upper-division is defined as 300 and 400-level courses at a bachelor's degree granting institution. Baccalaureate students at Oregon Tech must complete 45 credits from Oregon Tech before a degree will be awarded.

Students are responsible for notifying the Oregon Tech Admissions' and Registrar's Office when operating under an articulation agreement to ensure their credits transfer as outlined in this agreement. In order to utilize this agreement students must be attending Umpqua Community College during the above catalog year, and they must enroll at Oregon Tech within three years of the agreement date.

By \_\_\_\_\_  
Clay Baumgartner  
Department Chair  
Umpqua Community College

By \_\_\_\_\_  
Marla R. Edge  
Director, Academic Agreements  
Oregon Institute of Technology

By \_\_\_\_\_  
Jesse Morrow  
Dean, Career and Technology Education  
Umpqua Community College

By \_\_\_\_\_  
Wendy Ivie  
University Registrar  
Oregon Institute of Technology

By \_\_\_\_\_  
David Farrington  
Director of Enrollment Services/Registrar  
Umpqua Community College

By \_\_\_\_\_  
Jeffrey Hayen, Department Chair  
Mechanical and Manufacturing  
Engineering and Technology  
Oregon Institute of Technology

**Courses Required for Oregon Tech's Mechanical Engineering Degree  
to be taken at UCC.**

<b>Umpqua Community College Course Number &amp; Title</b>	<b>Qtr. Units</b>	<b>Oregon Tech Course Number &amp; Title</b>	<b>Qtr. Units</b>
CH 221 General Chemistry	5	CHE 201/204 General Chemistry and Lab	4
CH 222 General Chemistry	5	CHE 202/205 General Chemistry and Lab	4
DRF 112 CAD I (Must be AutoCAD based)	3	MET 241 CAD for Mechanical Design I	2
DRF 113 CAD II (Must be AutoCAD based)	3	MET 242 CAD for Mechanical Design II	2
ECON 201 Economics (Micro) <sup>1</sup>	3	Economics Elective <sup>1</sup>	3
ENGR 111 Engineering Orientation	3	ENGR 111 MMET Orientation	2
ENGR 112 Problem Solving & Technology	3	ENGR 266 Engineering Computation	3
ENGR 201 Electrical Fundamentals I and ENGR 202 Electrical Fundamentals II	4 4	ENGR 236 Fundamentals of Electric Circuits	3
ENGR 211 Statics	4	ENGR 211 Engineering Mechanics: Statics	4
ENGR 212 Dynamics	4	ENGR 212 Engineering Mechanics: Dynamics	3
ENGR 213 Strength of Materials	4	ENGR 213 Engineering Mechanics: Strength of Materials	4
Humanities electives <sup>2</sup>	3	Humanities electives <sup>2</sup>	3
Social Science electives <sup>1</sup>	3	Social Science electives <sup>1</sup>	3
MTH 251 Calculus I	5	MATH 251 Differential Calculus	4
MTH 252 Calculus II	4	MATH 252 Integral Calculus	4
MTH 254 Vector Calculus I	4	MATH 254N Vector Calculus I	4
MTH 256 Differential Equations <sup>3</sup>	4	MATH 321 Applied Differential Equations I <sup>3</sup>	4
MTH 265 Statistics for Engineers & Scient. <sup>3</sup>	4	MATH 361 Statistical Methods I <sup>3</sup>	4
PH 211 General Physics w/Calculus	5	PHY 221 General Physics with Calculus	4
PH 212 General Physics w/Calculus	5	PHY 222 General Physics with Calculus	4
PH 213 General Physics w/Calculus	5	PH 223 General Physics w/Calculus	4
SP 111 Fundamentals of Public Speaking	4	SPE 111 Public Speaking	3
WR 121 English Composition: Intro to Argument	4	WRI 121 English Composition	3
WR 122 English Composition: Style and Argument	4	WRI 122 Argumentative Writing	3
WR 227 Technical Report Writing	4	WRI 227 Technical Report Writing	3
<b>Total UCC Credits <sup>4</sup></b>	<b>103</b>	<b>Total Articulated Degree Credits</b>	<b>84</b>

**Courses required for Oregon Tech's Bachelor of Science in Mechanical Engineering and can be taken at either UCC or Oregon Tech.**

<b>Umpqua Community College Course Number &amp; Title</b>	<b>Qtr. Units</b>	<b>Oregon Institute of Technology Course Number &amp; Title</b>	<b>Qtr. Units</b>
MFG 111 Machine Shop Practices I MFG 112 Machine Shop Practices II	3 3	MFG 120 Manufacturing Processes I	4
PHIL 202 Ethics <sup>2,3</sup>	3	PHIL 331 Ethics in Professions <sup>2,3</sup>	3
SP 219 Small Group Discussion <sup>3</sup>	3	SPE 321 Small Group and Team Communication <sup>3</sup>	3
WLD 101 Welding Processes and Applications	4	MFG 103 Introductory Welding Processes	3
<b>Additional UCC Credits <sup>4</sup></b>	<b>16</b>	<b>Additional Oregon Tech Credits</b>	<b>13</b>
<b>Total Articulated Credits <sup>4</sup></b>	<b>119</b>	<b>Total Articulated Degree Credits</b>	<b>97</b>

**In addition to the above courses, the courses listed below are also required for the Bachelor of Science in Civil Engineering and are offered only by Oregon Tech.**

<b>Oregon Institute of Technology Course Number &amp; Title</b>	<b>Qtr. Units</b>
ENGR 355 Thermodynamics	3
HUM 125 Introduction to Technology, Society and Values <sup>2</sup>	3
MET 160 Engineering Materials I	3
MECH 313 Thermodynamics II	3
MECH 315 Machine Design I	3
MECH 316 Machine Design II	3
MECH 318 Fluid Mechanics I	4
Fluid Mechanics II Requirement	3
MECH 323 Heat Transfer I	3
MECH 351 Finite Element Analysis	3
MECH 360 Engineering Materials II	3
MECH 363 Engineering Instrumentation	3
MECH 436 Classical Control Systems	3
MECH 437 Heat Transfer II	2
MECH 480 Mechanical Vibrations	3
MECH 490 Senior Projects I	3

MECH 491 Senior Projects II	3
MECH 492 Senior Projects III	3
MECH Elective <sup>5</sup>	12
MET 326 Electric Power Systems	3
MET 375 Solid Modeling	3
MFG 314 Geometric Dimensioning and Tolerancing	3
MGT 345 Engineering Economy	3
MATH 341 Linear Algebra I	4
MATH 451 Numerical Methods I	4
Social Studies Electives, 300 & 400 Level <sup>3</sup>	6
WRI 327 Advanced Technical Writing	3
<b>Additional Oregon Tech Credits <sup>6</sup></b>	<b>95</b>
<b>Total Degree Credits <sup>7</sup></b>	<b>192</b>

1. Six credits of lower division Social Science Electives are required. Choose from ANTH, ECON, HST, PS, PSY, and SOC prefixes or other courses designated as Social Science Electives by the Oregon Tech Registrar's Office. For Mechanical Engineering program, one of the Social Science Electives shall be an ECON course. An additional 6 credits of 300- and 400- level classes (combined total of 12 credits of Social Science Electives) will be taken at Oregon Tech.
2. Students must take 9 credits of Humanities Electives. However, only 3 humanities credits can be studio/performance based Choose from ART, ENG, FA, MUS, PHL, and R prefixes or other courses designated as Humanities Electives by the Oregon Tech Registrar's Office. For the Mechanical Engineering program, one of the electives shall be HUM 125 and one shall be PHIL 331 (6 credits of the 9 credit requirement).
3. Does not count toward 60 upper-division credit requirement.
4. Excess credits will transfer to Oregon Tech as general elective credit; these credits will not be used toward the Bachelor of Science in Mechanical Engineering Degree.
5. Oregon Tech requires a total of at least 12 credits of Mechanical Electives.
6. Baccalaureate students must complete a minimum of 60 credits of upper-division work before a degree will be awarded. Upper-division is defined as 300- and 400-level classes at a bachelor's degree granting institution and 45 credits must be from Oregon Tech.
7. Oregon Tech's Bachelor of Science in Mechanical Engineering requires 192 total credits.

## Degree Requirements

In the curriculum listings appear several courses titled “MECH Elective.” MECH electives allow the student to select and pursue specific career objectives within the mechanical engineering field. MECH electives are upper-division MECH courses, not specifically required for graduation.

Students from other institutions should refer to the sections of this catalog titled “Transfer Students” and “Admission to Baccalaureate Programs.”

The Bachelor of Science in Mechanical Engineering requires 192 credit hours as prescribed in the following curriculum outline.

## Bachelor of Science in Mechanical Engineering Curriculum

Required courses and recommended terms during which they should be taken:

Freshman Year		Fall	Junior Year		Winter
CHE 201	General Chemistry I	3	ENGR 212	Engineering Mechanics: Dynamics	3
CHE 204	General Chemistry I Laboratory	1	ENGR 355	Thermodynamics	3
ENGR 111	MMET Orientation	2	MECH 315	Machine Design I	3
WRI 121	English Composition	3	MECH 360	Engineering Materials II	3
	Humanities/Social Science Elective <sup>1</sup>	3	MET 326	Electric Power Systems	3
	College Algebra (if suggested by advisor) <sup>2</sup>	3	SPE 321	Small Group and Team Communication <sup>3</sup>	3
<b>Total</b>		<b>12</b>	<b>Total</b>		<b>18</b>
Freshman Year		Winter	Junior Year		Spring
CHE 202	General Chemistry II	3	HUM 125	Introduction to Technology, Society and Values	3
CHE 205	General Chemistry II Laboratory	1	MATH 451	Numerical Methods I	4
MFG 103	Introductory Welding Processes	3	MECH 313	Thermodynamics II	3
WRI 122	Argumentative Writing	3	MECH 316	Machine Design II	3
	Humanities/Social Science Elective <sup>1</sup>	3		MECH Elective <sup>4</sup>	3
	Trigonometry (if suggested by advisor) <sup>2</sup>	3	<b>Total</b>		<b>16</b>
<b>Total</b>		<b>13</b>			
Freshman Year		Spring	Senior Year		Fall
MATH 251	Differential Calculus	4	MECH 323	Heat Transfer I	3
MFG 120	Manufacturing Processes I	4	MECH 351	Finite Element Analysis	4
MET 160	Engineering Materials I	3	MECH 490	Senior Projects I	3
MET 241	CAD for Mechanical Design I	2	WRI 327	Advanced Technical Writing	3
SPE 111	Public Speaking	3		Fluid Mechanics II Requirement <sup>5</sup>	3
<b>Total</b>		<b>16</b>		MECH Elective <sup>4</sup>	3
			<b>Total</b>		<b>18</b>
Sophomore Year		Fall	Senior Year		Winter
MATH 252	Integral Calculus	4	MECH 437	Heat Transfer II	2
MET 242	CAD for Mechanical Design II	2	MECH 480	Mechanical Vibrations	3
PHY 221	General Physics with Calculus	4	MECH 491	Senior Projects II	3
WRI 227	Technical Report Writing	3	PHIL 331	Ethics in the Professions	3
	Economics Elective	3		Humanities/Social Science Elective <sup>1</sup>	3
<b>Total</b>		<b>16</b>		MECH Elective <sup>4</sup>	3
			<b>Total</b>		<b>17</b>
Sophomore Year		Winter	Senior Year		Spring
ENGR 211	Engineering Mechanics: Statics <sup>6</sup>	4	MGT 345	Engineering Economy	3
MATH 254N	Vector Calculus I	4	MECH 436	Classical Control Systems	3
	Statistics Requirement <sup>7</sup>	4	MECH 492	Senior Projects III	3
PHY 222	General Physics with Calculus	4		Humanities/Social Science Elective <sup>1</sup>	3
<b>Total</b>		<b>16</b>		MECH Elective <sup>4</sup>	3
			<b>Total</b>		<b>15</b>
Sophomore Year		Spring			
ENGR 213	Engineering Mechanics: Strength of Materials <sup>6</sup>	4			
ENGR 236	Fundamentals of Electric Circuits	3			
ENGR 266	Engineering Computation	3			
MATH 321	Applied Differential Equations I	4			
PHY 223	General Physics with Calculus	4			
<b>Total</b>		<b>18</b>			
Junior Year		Fall			
MATH 341	Linear Algebra I	4			
MECH 318	Fluid Mechanics I	4			
MECH 363	Engineering Instrumentation	3			
MET 375	Solid Modeling	3			
MFG 314	Geometric Dimensioning and Tolerancing	3			
<b>Total</b>		<b>17</b>			

### Total Credits Required for B.S. in Mechanical Engineering: 192

- 1 – Along with HUM 125, PHIL 331, and an Economics course, another 3 credits of Humanities courses and 9 credits of Social Science courses. Furthermore, activity or performance-based Humanities courses are not accepted.
- 2 – MATH 111 (College Algebra) and MATH 112 (Trigonometry) should be taken if needed to adequately prepare for MATH 251. Any credits earned from these courses do not apply to the degree program. Consult with an academic advisor for further guidance.