RENEWABLE ENERGY ENGINEERING TRANSFER, AS
OIT ADVISING GUIDE

Prerequisites and Course Availability per Term

(for complete information, see 2016-2017 UCC Catalog) **REVISED 10/26/16**

	UCC Course No.	UCC Course Name	Term Offered F	W	S	S	Credits	Prerequisites/Notes		OIT Course No.	Credits
Term 1	CH 221	General Chemistry I /Lec/Lab/Rec	x				5	MTH 111		CH 201 / CH 204	4
	ENGR 111	Engineering Orientation I	x				3	MTH 65		UCC ENGR 111 + ENGR 112 = OIT ENGR 101+ ENGR 102	4
	MTH 251	Calculus I	x	x			5	MTH 112		MTH 251	4
	Humanities	HumanitieElective	x	x	x	x	3			Humanities Elective	3
									16		
Term 2	ENGR 112	Engineering Orientation II		x			3	ENGR 111		UCC ENGR 111 + ENGR 112 = OIT ENGR 101+ ENGR 102. See note above for ENGR 111	0
	CH 222	General Chemistry II /Lec/Lab/Rec		x			5	CH 221		CH 202/CH 205	4
	MTH 252	Calculus II		x	x		4	MTH 251		MTH 252	4
	Social Science	Social Science Elective	x	x	x	x	3			Social Science Elective	3
									15		
Term 3											
	ECON 201 or ECON 202	Principles of Economics: Micro or Macro	x	x	x		3			ECON 201 or ECON 202	3
	SP 111	Public Speaking	x	x	x		4	WR 095		SPE 111	3
	WR 121	English Composition: Intro to Argument	x	x	x	x	4	WR 115 or Placement Test		WR 121	3
	Humanities	HumanitieElective	x	x	x	x	3			Humanities Elective	3
									14		
Summer											
Term 4	ENGR 211	Statics	x				4	MTH 251 Co-requisite		ENGR 211	4
	ENGR 201	Electrical Fundamentals I	x				4	MTH 251 Co-requisite		EE 221	4
	MTH 254	Vector Calculus I	x				4	MTH 252		MTH 254N	4
	PH 211	Physics I w/Calculus	x				5	MTH 251 Co-requisite		PH 221	4
									17		
Term 5											
	ENGR 202	Electrical Fundamentals II		x			4	ENGR 201		EE 223	4
	MTH 256	Differential Equations		x			4	MTH 252		MTH 256	4
	PH 212	Physics II w/Calculus		x			5	PH 211		PH 222	4
	WR 122	English Composition: Style & Argument	x	x	x	x	4	WR 121	17	WR 122	3
Term 6											
	ENGR 203	Electrical Fundamentals III		x			4	ENGR 202		EE 225	4
	MTH 265	Statistics for Engineers & Scientists					4	MTH 251		MTH 361 Statistical Methods I	4
	PH 213	Physics III w/Calculus			x		5	PH 212		PH 223	4
	WR 227	Technical Report Writing	x	x	x	x	4	WR 121	17	WR 227	3
TOTAL DEGREE CREDITS							96				84

*A grade of "C" or better is required in all courses.

Program Advisor:

NOTES:

1. Three Humanities Electives and Two Social Science Electives can be taken at UCC. One Humanities Elective must study literature. See UCC/OIT Articulation Agreement
2. See UCC/OIT Articulation Agreement for other courses that can be taken at UCC and for courses that will be taken at OIT

Umpqua Community College
Engineering Transfer Program

to

Oregon Institute of Technology
Bachelor of Science in Renewable Energy 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) (BREE) Bachelor of Science in Renewable Energy Engineering 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 _____.

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. 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. Students must enroll at Oregon Tech within three years of this approval.

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_____
Cristina Crespo, Chair
Renewable Energy Engineering and
Renewable Energy Engineering
Oregon Institute of Technology

Courses Required for Oregon Tech's Renewable Energy Engineering Degree to be taken at UCC.

Umpqua Community College Course Number & Title	Qtr. Units	Oregon Institute of Technology Course Number & Title	Qtr. Units
CH 221 General Chemistry I	5	CHE 201/204 General Chemistry and Lab	4
CH 222 General Chemistry II	5	CHE 202/205 General Chemistry and Lab	4
ENGR 111 Engineering Orientation I ENGR 112 Engineering Orientation I	3 3	ENGR 101 Introduction to Engineering I ENGR 102 Introduction to Engineering II	2 2
ENGR 201 Electrical Fundamentals I	4	EE 221 Circuits I	4
ENGR 202 Electrical Fundamentals II	4	EE 223 Circuits II	4
ENGR 203 Electrical Fundamentals III	4	EE 225 Circuits III	4
ENGR 211 Statics	4	ENGR 211 Engineering Mechanics: Statics	4
Humanities elective [3]	6	Humanities elective [3]	6
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	4	MATH 321 Applied Differential Equations I [2]	4
MTH 265 Statistics for Engineers & Scientists	4	MTH 361 Statistical Methods I	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	PHY 223 General Physics with Calculus	4
Social Science elective [4]	3	Social Science elective [4]	
Social Science elective [4] ECON 201 Economics (Micro) or ECON 202 Economics (Macro)	3 3	Social Science elective [4] ECO 201 Principles of Economics (Micro) or ECO 202 Principles of Economics (Macro)	3 3
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: Intro to Argument	4	WR 122 English Composition: Intro to Argument	3
WR 227 Technical Report Writing	4	WRI 227 Technical Report Writing	3
Total UCC Credits [1]	**96**	**Total Articulated Degree Credits**	**84**

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

Umpqua Community College Course Number & Title	Qtr. Units	Oregon Institute of Technology Course Number & Title	Qtr. Units
Humanities elective	3	Humanities elective	3
Social Science elective	3	Social Science elective	3
SP 219 Small Group Discussion	3	SPE 321 Small Group and Team Communication [2]	3
Additional UCC Credits [1]	**9**	**Additional Oregon Tech Credits**	**9**
Total Articulated Credits [1]	**105**	**Total Articulated Degree Credits**	**93**

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

Oregon Institute of Technology Course Number & Title	Qtr. Units
CHE 260 Electrochemistry for RE	4
EE 321 Electronics I	5
EE 355 Control System Design	4
EE 419 Power Electronics	4
ENGR 267 Advanced Engineering Programming	3
ENGR 355 Thermodynamics	3
ENGR 465 Capstone Project	6
HIST 356 A History of Energy **OR** HIST 357 History of Electrical Grid	3
MATH 341 Linear Algebra	4
MECH 318 Fluid Mechanics I **OR** ENGR 318 Engineering Mechanics: Fluids	4
MECH 323 Heat Transfer I	3
REE 243 Electrical Power	4
REE 253 Electromechanical Energy Conversion	3
REE 331 Fuel Cells	3
REE 337 Materials for RE Applications **OR** EE 343 Solid-State Electronic Devices	3
REE 412 Photovoltaic Systems	3

REE 413 Electric Power Conversion Systems	3
REE 463 Energy Systems Instrumentation	3
REE 4XX Senior Sequence I, II, III	3-3-3
Renewable Energy Engineering Elective	15
Writing Elective and choose from the following: WRI 327 Advanced Technical Writing WRI 350 Documentation Development WRI 410 Proposal and Grant Writing	3
Additional Oregon Tech Credits [5]	**92**
Total Degree Credits [6]	**185**

1. Excess credits will transfer to Oregon Tech as general elective credit; these credits will not be used toward the Bachelor of Science in Renewable Energy Engineering Degree.
2. Does not count toward 60 upper-division credit requirement.
3. 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.
4. In addition to ECO 201 or ECO 202, HIST 356 or HIST 357, 6 credits of 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.
5. 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.
6. Oregon Tech's Bachelor of Science in Renewable Engineering requires 185 total credits.

Student Preparation

High school students should be prepared to start their college academic work with at least college calculus and Freshman English composition. Typically, this means the successful new student has completed:

1. Four years of high school mathematics including algebra I and II, geometry and trigonometry
2. Four years of English composition/ writing
3. Four years of science including physics and chemistry

Students entering the program by transfer are requested to contact the program director for evaluation of REE-related transfer courses.

Accreditation

The Renewable Energy Engineering baccalaureate program is accredited by the Engineering Accreditation Commission (EAC) of ABET, Inc., http://www.abet.org. ABET is a specialized accrediting board recognized by the Council for Higher Education and/ or the Secretary of the U.S. Department of Education.

Degree Requirements

The Bachelor of Science in Renewable Energy Engineering follows a rigorous curriculum, requiring a minimum of 184/185 credit hours, which takes approximately four years to complete. To be eligible for graduation, students must maintain a 2.0 GPA. In addition, a final grade of "C" or better must be earned in all courses with MATH, CHE, PHY, EE, ENGR, MECH, and REE prefixes. Students must also earn a grade of "C" or better in all courses listed as prerequisites for these courses.

All courses listed in the curriculum map for the catalog year of graduation must be completed to be eligible for graduation. Any deviations from the courses listed in the curriculum map require approval from the academic advisor, the department chair, and the Registrar's office. Approvals are not official until entered in the official student records. When changes are made to the curriculum, students who entered the program under a previous catalog will work with their academic advisors to transition to meet the requirements of the current catalog.

Bachelor of Science in Renewable Energy Engineering

Curriculum – Klamath Falls Campus

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

Freshman Year		Fall
CHE 201	General Chemistry I*	3
CHE 204	General Chemistry I Laboratory*	1
ENGR 101	Introduction to Engineering I**	2
MATH 251	Differential Calculus	4
WRI 121	English Composition	3
Total		**13**

Freshman Year		Winter
CHE 202	General Chemistry II*	3
CHE 205	General Chemistry II Laboratory*	1
ENGR 102	Introduction to Engineering II**	2
MATH 252	Integral Calculus	4
WRI 122	Argumentative Writing	3
	Social Science Elective	3
Total		**16**

Freshman Year		Spring
CHE 260	Electrochemistry for RE	4
ENGR 267	Advanced Eng. Programming	3
MATH 254N	Vector Calculus I	4
SPE 111	Public Speaking	3
WRI 227	Technical Report Writing	3
Total		**17**

Sophomore Year		Fall
ECO 201	Principles of Economics, Microeconomics	3
or		
ECO 202	Principles of Economics, Macroeconomics	
EE 221	Circuits I	4
MATH 321	Applied Differential Equations I	4
PHY 221	General Physics with Calculus	4
Total		**15**

Sophomore Year		Winter
EE 223	Circuits II	4
ENGR 211	Engineering Mechanics: Statics	4
HIST 356	A History of Energy	3
or		
HIST 357	History of Electrical Grid	
PHY 222	General Physics with Calculus	4
Total		**15**

Sophomore Year		Spring
EE 225	Circuits III 4	
MATH 361	Statistical Methods I	4
or		
MATH 465	Mathematical Statistics	
PHY 223	General Physics with Calculus	4
REE 243	Electrical Power	4
Total		**12**

Junior Year		Fall
EE 321	Electronics I	5
MATH 341	Linear Algebra	4
MECH 318	Fluid Mechanics I	4
or		
ENGR 318	Engineering Mechanics: Fluids	
REE 253	Electromechanical Energy Conversion	3
Total		**16**

Junior Year		Winter
REE 337	Materials for RE Applications	3
or		
EE 343	Solid-State Electronic Devices	
EE 355	Control Systems Design	4
ENGR 355	Thermodynamics	3
	Writing Elective***	3
	Renewable Energy Engineering Elective	3
Total		**16**

Junior Year		Spring
EE 419	Power Electronics	4
MECH 323	Heat Transfer I	3
REE 331	Fuel Cells	3
SPE 321	Small Group and Team Communication	3
	Renewable Energy Engineering Elective	3
Total		**16**

Senior Year		Fall
ENGR 465	Capstone Project	2
REE 4XX	Senior Sequence I	3
REE 412	Photovoltaic Systems	3
	Renewable Energy Engineering Elective	3
	Humanities Elective	3
	Social Science Elective	3
Total		**17**

Senior Year		Winter
ENGR 465	Capstone Project	2
REE 4XX	Senior Sequence II	3
REE 413	Electric Power Conversion Systems	3
	Renewable Energy Engineering Elective	3
	Humanities Elective	3
Total		**14**

Senior Year		Spring
ENGR 465	Capstone Project	2
REE 4XX	Senior Sequence III	3
REE 463	Energy Systems Instrumentation	3
	Renewable Energy Engineering Elective	3
	Humanities Elective	3
Total		**14**

Total Credits Required for B.S. in Renewable Energy Engineering: 181

*CHE201/4 and CHE 202/5 can be substituted with CHE 221 and CHE 222 respectively.

**With advisor approval students may take REE 201 in place of ENGR 101 and ENGR 102.

***Choose from WRI327, WRI350, and WRI410.