Oregon Institute of Technology - Portland Metro
Bachelor of Science - Renewable Energy Engineering
Curriculum Map according to Catalog Year 2021-22

Any deviations from courses listed below must be approved by academic advisor, deptartment chair, and Registrar's office. Substitution is not official until shown in official student records.

Course Notes	Prefix	No.	Course Title	Credits	Pre- and Co-requisites (+Corequisite *Pre- or corequisite ^Grade ≥ C not reqd)	FR F	FR W	FR S	SO F	SO W	SO S	JR F	JR W	JR S	SR F	SR W	SR S
Communications				**18**													
	SPE	111	Public Speaking	4				4									
	SPE	321	Small Group & Team Communication	3	SPE 111 ^							3					
	WRI	121	English Composition	4	SAT/ACT or writing sample	4											
	WRI	227	Technical Report Writing	4	WRI 122, SPE 111*		4										
1	WRI	3XX/4XX	Upper Division Writing Elective	3	WRI 227 ^				3								
Math/Science				**48**													
	MATH	251	Differential Calculus	4	MATH 112	4											
	MATH	252	Integral Calculus	4	MATH 251		4										
	MATH	254N	Vector Calculus I	4	MATH 252			4									
	MATH	321	Appl. Differential Equations I	4	MATH 252						4						
2	MATH	341	Linear Algebra I	4	MATH 252					4							
3	MATH	361	Statistical Methods I	4	MATH 111 or instructor consent				4								
	CHE	201	General Chemistry I	3	CHE101/104, MATH 111*, CHE 204*	3											
	CHE	204	General Chemistry I Laboratory	1	CHE 201*	1											
	CHE	202	General Chemistry II	3	CHE 201, CHE 204, CHE 205*		3										
	CHE	205	General Chemistry II Laboratory	1	CHE 202*		1										
	CHE	260	Electrochemistry for RE applications	4	CHE 202, CHE 205			4									
	PHY	221	General Physics w/ Calculus	4	MATH 251, MATH 252*				4								
	PHY	222	General Physics w/ Calculus	4	MATH 252, PHY 221					4							
	PHY	223	General Physics w/ Calculus	4	PHY 222						4						
General Education				**21**													
	ECO	20x	Principle of Economics, Macro or Micro	3	MATH 100 or higher ^		3										
	HIST	35X	HIST 356 or 357	3	WRI 123^ or WRI 227^								3				
See Catalog for more info.			Social Science elective	3	Per catalog			3									
			Social Science elective	3	Per catalog									3			
			Humanities elective	3	Per catalog								3				
			Humanities elective	3	Per catalog											3	
			Humanities elective	3	Per catalog												3
Electrical Engineering				**25**													
	EE	221	Circuits I	4	MATH 252*				4								
	EE	223	Circuits II	4	EE 221, MATH 252					4							
	EE	225	Circuits III	4	EE 223, MATH 321*						4						
	EE	321	Electronics I	5	EE 223, MATH 252, EE225*							5					
	EE	461	Control System Engineering	4	EE225, EE 267, MATH 321									4			
	EE	419	Power Electronics	4	EE 321											4	
General and Mechanical Engineering				**17**													
	ENGR	211	Engineering Mechanics: Statics	4	PHY 221, MATH 252*							4					
	ENGR	267	Engineering Programming	3	MATH 251					3							
	ENGR	355	Thermodynamics	3	MATH 252, PHY 222							3					
	MECH	318	Fluid Mechanics I	4	ENGR 211, MATH 252								4				
	MECH	323	Heat Transfer I	3	MECH 318, ENGR 355, MATH 321									3			
Renewable Energy Engineering				**34**													
	REE	201	Introduction to Renewable Energy	3	MATH 111	3											
	REE	243	Electric Power	4	EE 223, MATH 252, PHY 222						4						
	REE	253	Electromechanical Energy Conversion	3	EE 223, MATH 252, PHY 222									3			
4	REE	33X	REE 331, 333 or 335	3	CHE 260. If X = 1, PHY 222							3					
	REE	337	Materials for RE Applications	3	CHE 202/205, PHY 223							3					
	REE	412	Photovoltaic Systems	3	EE 321, PHY 223								3				
	REE	413	Electric Power Conversion Systems	3	EE 419												3
	REE	463	Energy Systems Instrumentation	3	EE 321								3				
Select one			**Senior Sequence I: Either**														
	MECH	433	HVAC or	3	MECH 323										3		
	REE	453	Power System Analysis		REE 243										3		
Follow seq.			**Senior Sequence II: Either**														
	REE	439	Building Energy Auditing & Management *or*	3	MECH 323											3	
	REE	454	Power System Protection and Control		REE 453											3	
Follow seq.			**Senior Sequence III: Either**														
	REE	455	Energy-Efficient Building Design *or*	3	MECH 323												3
	REE	469	Grid Integration of RE		REE453												3
Senior Project and Technical Electives				**21**													
	ENGR	465	Capstone Project	2	Junior standing & consent										2		
	ENGR	465	Capstone Project	2	Junior standing & consent											2	
	ENGR	465	Capstone Project	2	Junior standing & consent												2
See back	REE	42X	Global Energy Issues Elective	3	Per catalog									3			
	REE	XXX	Thermal Energy Elective	3	Per catalog								3				
	REE	3XX/4XX	REE Technical Elective	3	Per catalog								3				
	REE	3XX/4XX	REE Technical Elective	3	Per catalog											3	
	REE	3XX	Hydro Energy Elective	3	Per catalog												3
			Total Required Credits	**184**		15	15	15	15	15	16	18	16	16	14	15	14

BSREE Senior Sequences

Students in the BSREE program are required to complete a minimum of one senior sequence (all three courses) from the list below:

Green Building:
MECH 433 Heating, Ventilation & Air Conditioning
REE 339 Building Energy Auditing and Management
REE455 Energy-Efficient Building Design

Power Systems:
REE 453 Power System Analysis
REE 454 Power System Protection & Control
REE 469 Grid Integration of Renewable Energy

Renewable Energy Engineering Technical Electives

Students in the BSREE program are required to complete 15 credits of technical electives classes. At least 3 of these classes must be REE 300-level or above and up to two courses from the following list: 300- or 400-level EE courses (except for EE320), ENGR420, ENGR 421, SEM421, and SEM422. No more than three 1-credit courses are allowed.

Not all the elective courses listed are offered every year. Students should refer to annual course planner to determine annual course offerings. Examples of acceptable elective courses are:

REE 331	Fuel Cells	3	REE 439	Building Energy Audit. and Mgmt.	3
REE 333	Batteries	3	REE 451	Geothermal, G-SHP	3*
REE 335	Hydrogen	3	REE 453	Power Systems Analysis	3
REE 337	Materials for RE Applications	3	REE 454	Power System Protection/Control	3
REE 344	Nuclear Energy	3	REE 455	Energy Efficient Building Design	3
REE 345	Wind Power	3	REE 465	RE Transportation Systems	3
REE 346	Biofuels and Biomass	3	REE 469	Grid Integration of RE	3
REE 347	Hydroelectric Power	3	EE 341	Electr. and Mag. with Trans. Lines	4
REE 348	Solar Thermal Energy Systems	3*	EE 347	Digital Logic	4
REE 307/407	Indep. Study/Special Topics/Seminar	3	EE 343	Solid State Devices	3
REE 425	Electricty Markets and Modeling	3**	EE 448	Geometric Optics	3
REE 427	Greenhouse Gas Accounting	3**	EE 449	Radiometry and Optical Detection	3
	*Thermal Energy Elective	**Global Energy Issues Elective	MECH 433	HVAC	3

Graduation

- Students must file an Application for Degree at least two tems prior to the term of Graduation.
- Students need to complete a minimum of 45 credits at Oregon Tech.
- Baccalaureate students must complete 60 credits of upper-division work before a degree is awarded.
- Students must earn a final grade of "C" or better in all courses with MATH, CHE, PHY, EE, ENGR, MECH, and REE prefixes.

Minors

Oregon Tech offers several Minors, including Applied Mathematics, Business, and others. Students should refer to the catalog (www.oit.edu/catalog) for a list of available Minors and corresponding course requirements. A minimum of 18 credits in the subject field outside the student's major are required.

Concurrent Degree in Electrical Engineering

The EERE Department provides the opportunity for interested and motivated students to earn two Bachelor of Science degrees concurrently; a BS in Renewable Energy Engineering and BS in Electrical Engineering. The purpose of this dual degree is to provide the top students with a challenging academic program that will prepare them for career opportunities in the electronics, electrical engineering, power, and energy industries. The students receive a BS degree in a classical engineering discipline (Electrical Engineering), as well as an emerging high growth discipline (Renewable Energy Engineering). The degree program will take an additional year beyond the BSREE degree program (or 4.5 years total by taking courses in Summer term). To obtain both degrees (BSREE and BSEE) students must complete all of the courses required for the BSREE degree and the following BSEE courses. Consult with your advisor details.

MATH 253N	Sequences and Series	4	EE 341	Elec. and Mag. with Trans. Lines [2]	4
MATH 465	Mathematical Statistics [1]	4	EE 343	Solid State Electronic Devices [3]	3
CST 116	C++ Programming	4	EE 347	Digital Logic [4]	4
EE 323	Electronics II	5	EE 430	Linear Systems & DSP	5
EE 331	Digital System Design w/HDL	4	EE XXX	EE Elective [5]	4
EE 333	Microcontroller Eng.	4	MGT 345	Engineering Economy	3

[1] Students should substitute MATH465 for MATH361 in BS REE curriculum
[2] EE341 can be used as a REE elective
[3] Can be used to meet BSREE degree requirements instead of REE337
[4] Students can substitute EE131/133 sequence
[5] Students can select between EE325, EE335, or an advisor-approved upper-division EE elective

Note: Students must complete a minimum of 36 credit hours in addition to the BSEE degree requirements in order to get a second degree.

Concurrent BS/MSREE Program

Students may earn both BSREE and MSREE degrees, awarded simultaneously upon completion of this curriculum. Students enrolled in the BSREE program who have a proven record of academic excellence have the option of completing the MSREE with one additional year of coursework. Students pursuing this option follow the standard BSREE curriculum map during the first three years, start their graduate-level courses in the senior year, and complete the MSREE requirements during their fifth (graduate) year.

To be eligible for this option, students must have a cumulative GPA of 3.0, and must contact the MSREE Program Director for admission into the graduate program by the end of Spring term of their junior year. Students will receive both their BSREE and MSREE degrees at the end of their fifth year. REE 599 requirement must be met by a design project supervised and approved by an REE advisor. Students should contact their academic advisors for details.

Concurrent accelerated BSREE/MSE Program Format

Candidates interested in earning a bachelor of science in electrical or renewable energy engineering may apply to the accelerated BS/MS program. Both degrees are awarded simultaneously at the completion of the program.

- Undergraduate students earning a first bachelor's degree - Students enrolled in undergraduate BSEE program can usually complete both degrees within five years.

- Post-baccalaureate students - Students who are interested in the MSE but do not have undergraduate degrees in engineering may wish to consider this accelerated program. Coursework from a first bachelor's degree can often be used to meet BSEE requirements, allowing students to focus on the upper-division technical courses that will prepare them for master's-level engineering work.

To apply for the accelerated MSE program, a student must be admitted to the undergraduate BSREE program at Oregon Tech.

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