

BIOENERGY OPTION

This option is offered within the following major(s):

- Bioresource Research - College of Agricultural Sciences (<http://catalog.oregonstate.edu/college-departments/agricultural-sciences/other-degrees-programs/bioresource-research-bs-hbs>)

Bioenergy is renewable energy (e.g., fuel ethanol, hydrogen and biodiesel) derived from biomass, including byproducts, residues, woody waste products, and crops and microbes which are grown specifically for fuel. Development and production of bioenergy could contribute to long-term environmental and economic sustainability. Bioenergy research creates new uses for agricultural and other materials by developing new biochemical processes for the production of sustainable fuels. This area of research involves both science and engineering. Students completing this option will be ready for challenging careers in industry, governmental agencies, consulting companies, and novel start-up companies, or for graduate programs.

Substituted Courses

BRR 350 INTRODUCTION TO REGIONAL BIOENERGY for BRR 100 GREAT EXPERIMENTS IN BIORESOURCE SCIENCES and BRR 409 PRACTICUM: TEACHING AND PEER MENTORING

BRR 450 INTERDISCIPLINARY RESEARCH: BIOENERGY FOCUS for BRR 200 DEVELOPING A RESEARCH PROPOSAL: THEORY AND PRACTICE

Required Courses

Code	Title	Hours
1. Background Course		
Select one of the following:		3
CROP 330	*WORLD FOOD CROPS	
FOR 111	INTRODUCTION TO FORESTRY	
MB 302	GENERAL MICROBIOLOGY	
2. Upper-Division Lab Course		
Select one course from the following:		2-3
BB 493	BIOCHEMISTRY LABORATORY MOLECULAR TECHNIQUES 1	
BB 494	BIOCHEMISTRY LABORATORY MOLECULAR TECHNIQUES 2	
BOT 332	LABORATORY TECHNIQUES IN PLANT BIOLOGY	
MB 303	GENERAL MICROBIOLOGY LABORATORY	
3. Engineering Course		
Select course from the following or another appropriate upper-division course in the area of process or ecological engineering, genomics/bioinformatics, or genetic engineering, approved by research mentor		3-4
BEE 102	ECOLOGICAL ENGINEERING II	
BEE 320	BIOSYSTEMS ANALYSIS AND MODELING	
BOT 475	COMPARATIVE GENOMICS	
4. Specialization and Breadth Courses		
WSE 473	BIOENERGY AND ENVIRONMENTAL IMPACT	3
Select additional courses from above or below, or other upper-division courses approved by research mentor to total 29 credits		13-15
AEC 351	*NATURAL RESOURCE ECONOMICS AND POLICY	

AEC 352	*ENVIRONMENTAL ECONOMICS AND POLICY or ECON 352*ENVIRONMENTAL ECONOMICS AND POLICY
BB 314	CELL AND MOLECULAR BIOLOGY
BEE 221	FUNDAMENTALS OF ECOLOGICAL ENGINEERING ¹
BEE 499	SPECIAL TOPICS
ECON 201	*INTRODUCTION TO MICROECONOMICS
ENGR 231	
ENGR 350	*SUSTAINABLE ENGINEERING
ENGR 363	*ENERGY MATTERS
FES 435	*GENES AND CHEMICALS IN AGRICULTURE: VALUE AND RISK
or TOX 435	*GENES AND CHEMICALS IN AGRICULTURE: VALUE AND RISK
FOR 330	FOREST RESOURCE ECONOMICS I
FOR 331	FOREST RESOURCE ECONOMICS II
MB 310	BACTERIAL MOLECULAR GENETICS
MB 312	BACTERIAL PHYSIOLOGY AND METABOLISM
MB 456	MICROBIAL GENETICS AND BIOTECHNOLOGY
MB 479	FERMENTATION MICROBIOLOGY
or FST 479	FERMENTATION MICROBIOLOGY
MTH 254	VECTOR CALCULUS I
MTH 256	APPLIED DIFFERENTIAL EQUATIONS
PHAR 537	BIOORGANIC CHEMISTRY
WR 201	*WRITING FOR MEDIA
WR 214	*WRITING IN BUSINESS
WSE 210	*RENEWABLE MATERIALS TECHNOLOGY AND UTILIZATION
WSE 321	CHEMISTRY OF RENEWABLE MATERIALS
WSE 322	PHYSICAL AND MECHANICAL PROPERTIES OF RENEWABLE MATERIALS
WSE 324	RENEWABLE MATERIALS LABORATORY
WSE 453	*FOREST PRODUCTS BUSINESS
WSE 535	POLYMER SYNTHESIS AND STRUCTURE
WSE 573	BIOENERGY AND ENVIRONMENTAL IMPACT
Total Hours	24-28

¹ Note: Students choosing BEE 221 FUNDAMENTALS OF ECOLOGICAL ENGINEERING may substitute it for BEE 102 ECOLOGICAL ENGINEERING II.

* Baccalaureate Core Course (BCC)

^ Writing Intensive Course (WIC)

Option Code: 767