

Biological Data Sciences (BDS)
 Department of Botany and Plant Pathology
 Oregon State University
 Version 3 (updated for 2022-2023 academic year)

Major requirements: 180 total credits; 51 BaccCore; 60+ upper division; 36+ in major w/ 24+ upper division)

Core foundational courses (67 credits; 19 count towards Bacc Core requirements)

Discipline	Course Name	Course Number	Cr
Biological Science 5 classes; 19 credits	Introductory Biology	BI 221*, 222*, 223*	12
	Genetics	OR BI 204, 205, 206	
	Evolution	BI 311 BI 445	4 3
Chemistry 1 class + lab; 5 credits	General Chemistry	CH 231*, 261 (lab and lecture)	5
Mathematics 4 classes; 15 credits	Calculus	MTH 251*, 252	8
	Vector Calculus	MTH 254	4
	Linear Algebra I	MTH 341	3
Statistics 3 classes; 12 credits	Intro Stats	ST 351	4
	Methods data analysis	ST 411, 412	8
Biological Data Sciences 6 classes; 16 credits	Critical Thinking	BDS 211	3
	Comp Approaches Biol Data	BDS 311	3
	Special Projects	BDS 420	1
	Case Studies of Biol Data	BDS 411^ (WIC)	3
	Capstone in BDS I	BDS 491	3
	Capstone in BDS II	BDS 492	3
Experiential Learning	Independent projects Equivalent to at least 60 hours work	May be taken for credit as 401 or 403 or for no credit as 003 or 004	

*Bacc Core Course

^ Writing Intensive Course

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Ecological and environmental informatics (EEI; 39-44 option elective credits; 37-42 general elective credits)

Students in the Ecological and Environmental Informatics Option take classes in general population and community ecology as well as courses in categories covering topics in modeling and environmental informatics.

<p>Mathematics/ Statistics 2 classes; 7 credits</p>	<p>MTH 256. Applied Differential Equations (4) AND one of the following: MTH 420. Models and Methods of Applied Mathematics (3), MTH 427. Introduction to Mathematical Biology (3), OR ST 415. Design and Analysis of Planned Experiments (3)</p>
<p>General Ecology 1 class: 3 credits</p>	<p>BI 370. Ecology (3)</p>
<p>Genome Biology 1 class: 3 credits</p>	<p>BDS 474. Intro to Genome Biology (3)</p>
<p>Biological Data Sciences 1 class; 4 credits</p>	<p>BDS 310. Foundations of Biological Data Sciences (4) OR CS 161 (4) OR CS 162 (4)</p>
<p>Population, Community, and Ecosystem Ecology 4 classes; 12-15 credits</p>	<p>BDS 477. Pop. Genomics (3) & 3 classes AND at least one of the following: BI 351. Marine Ecology (3), BI 358. Symbioses and the Environment (3), BI 481. Biogeography (3), BI 495. Disease Ecology (3), BOT 341. Plant Ecology (4), BOT 413. Forest Pathology (3), BOT 440. Field Methods in Plant Ecology (4), FES 341. Forest Ecology (3), FW 321. Applied Community and Ecosystem Ecol (3), FW 360. Origins of F&W Management-Evolution, Genetics, and Ecology (3) FW 370. Conservation Genetics (4) FW 456. Freshwater Ecology and Conservation (5), FW 479. Wetlands and Riparian Ecology (3), MB 436. The Human Microbiome (3) OR MB 448. Microbe-Environment Interactions (3)</p> <p>AND at least one of the following: BI 483. Population Biology (3), BI 454. Evolutionary Genomics (3), BI 456. Phylogenetics (3), BOT 445. Advanced Population Ecology (3) FW 320. Introductory Population Dynamics (4) FW 433. Population Dynamics for Conservation (4) OR other class with advisor approval</p>

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<p>Physical Environmental Sci Choose 1 class; 3-4 credits</p>	<p>CSS 205. Soil Science* (4) ATS 201. Climate Science* (4) GEO 202. Earth Systems Science* (4) OC 201. Oceanography* (4) OC 332. Coastal Oceanography (3) OC 340. Biological Oceanography (4) GEO 221. Environmental Geology (4) OR other class with advisor approval</p>
<p>Environmental Informatics Choose 2 classes; 7-8 credits</p>	<p>GEOG 201. Foundations of Geospatial Science and GIS* (4) FE 209. Forest Photogrammetry and Remote Sensing (4) FE 444. Forest Remote Sensing and Photogrammetry (4) OR FE 257. GIS and Forest Engineering Applications (4) AND one of the following: GEOG 360. GIScience I: Geographic Information Systems and Theory (4) GEOG 380. Remote Sensing I: Principles and Applications (4) FW 303. Survey of Geographic Information Systems in Natural Resources (3) OR CROP/HORT 414. Precision Agriculture (4) OR other class with advisor approval</p>