

Biological Data Sciences (BDS)
 Department of Botany and Plant Pathology
 Oregon State University
 Version 2 (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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Computational Biology (CB: 34-36 option elective credits; 45-48 general elective credits)

Students in the Computational Biology Option take classes in computer science, bioinformatics, statistics, and mathematical biology.

<p>Mathematics 3 classes; 11 credits</p>	<p>MTH 231. Discrete Math (4) MTH 256. Applied Differential Equations (4), MTH 427. Introduction to Mathematical Biology (3)</p>
<p>Genome Biology 1 class: 3 credits</p>	<p>BDS 474. Intro to Genome Biology (3)</p>
<p>Biology/Biocomputing and Statistics Choose at least 3 classes with at least one from Biology/Bioinformatics and one from Statistics; 9-10 credits</p>	<p>BDS 472. Adv. Comp for Biol Data Analysis (3) BDS 475. Comparative Genomics (4) BDS 477. Pop. Genomics (3) BDS 478. Functional Genomics (3) BI 454. Evolutionary Genomics (3) BI 456. Phylogenetics (4) MB 420. Microbial Genomes, Biochemistry & Diversity (3) BB 485. Applied Bioinformatics (3) OR BDS/CS 446. Networks in Computational Biology (3), AND one of the following: ST 413. Methods of Data Analysis (4), ST 415. Design and analysis of planned experiments (3), OR ST 431. Sampling Methods (3), OR other class with advisor approval</p>
<p>Computer Science 2 classes; 8 credits</p>	<p>CS 162. Intro to Comp. Sci. (4); has prerequisite(s) that are not part of the option requirement CS 261. Data structures (4)</p>
<p>Advanced Computer Science Choose at least 1 class (3-4 credits)</p>	<p>CS 325. Analysis of Algorithms (4) CS 331. Introduction to Artificial Intelligence (4) CS 361. Software Engineering I (4), CS 362. Software Engineering II (4), CS 420. Graph Theory (3), CS 434. Machine Learning (4), CS 458. Intro Info. Visual (4), CS 475. Intro Parallel Program (4), OR other class with advisor approval</p>