

BilDS Trainee Requirements

The BilDS trainee requirements are outlined below and correlate to an applicant accepted into the Graduate College receiving a Ph.D. within the matriculation parameters set by their academic units.

- 1) First year trainees participate in orientation and first-year DEI (Diversity, Equity, and Inclusion) trainings and community building activities; this aspect of the traineeship aims to facilitate cohort bonding and collaborative learning/research.
- 2) Enroll in four courses, these count as credits towards BilDS program graduation:
 - a. **Foundations of Quant Reasoning” (3 credits):** This is a graduate level course that explores the foundations of quantitative reasoning (statistics, modeling, and informatics) and the foundational principles of evolution and ecology and how these disciplines are merging to better understand environmental and global health challenges through an interdisciplinary, case-based approach.
 - b. **"Data Lab" or “Data Science I” (3 credits):** Flipped data lab with an expert data scientist as the lead instructor.
 - c. **BilDS Seminar (1 credit/semester for 2 semesters):** enroll and participate in a co-generative course, meet weekly during the first fall and winter semester upon acceptance and then monthly (or 4 attendances every semester) during the rest of the program period. The BilDS seminar includes professional development workshops including science communication, research discussions, and diversity, equity, and inclusion training.
 - d. **Quantitative & Evolution/Ecology/Epidemiology Elective Courses (earn 6 – 8 credits)** from the list attached below. Courses should align with the requirements of trainees' programs within their academic departments. Trainees can request approval for any qualified electives not listed below.
- 3) Participate in ongoing diversity and inclusion training during the traineeship, which includes participating faculty and BilDS leadership team.
- 4) Utilize the BilDS collaborative space in 356 Jeffords Hall, 63 Carrigan Dr., particularly during the first year as a BilDS trainee.
- 5) Participate in program assessments throughout the program period.
- 6) (Optional, variable credits) Elect to participate in the Applied Internship program, which allows students to gain experience with biological data science questions outside of the university.

Table I BilDS Program Requirements

Course Number	BilDS Program Requirements	Credits
BIOL 6990 OR CS/CSYS 6020	Foundations of Quantitative Reasoning OR Modeling Complex Systems	3
BIOL 6990	BilDS Seminar	1
CS 375 OR CS/CSYS/STAT 3870/5870	BilDS Data Lab OR Data Science I - Pinnacle (<i>Spring Semester Version Only</i>)	3
SINT 390X	Internship (summer enrollment only) (Optional)	1-18
See Table II*	Quantitative Electives*	6 – 8
	Total	13 – 15

***Note:** Requirements above are subject to change. Please contact BilDS.Program@uvm.edu for any questions.

Table II * Quantitative & Evolution/Ecology/Epidemiology Elective Courses

Course Number	Description	Credits
BIOL 6020	Foundations in Eco & Evo.	1
BIOL 6100	Computational Biology	4
BIOL 6200/PBIO 6800	Ecological Genomics	4
CS/STAT/CSYS 5870; CS/STAT 3870	Data Science I - Experience	3
CS/CSYS 6020	Modeling Complex Systems	3
CSYS/BIOL/CS 6520	Evolutionary Computation	3
CSYS/MATH 6701	Principles of Complex Systems	3
CSYS/STAT/CE 7980	Applied Geostatistics	3
CS 5040	Gr Database Systems	3
CS 5737	Gr Intro to Numerical Anyl	3
CS 5990	Advanced Algorithm Design	3
MMG 5990/MMG 3330	Adv. Genetics and Genomics	3
MMG 5990	Adv. Bacterial Genetics	3
MMG 6990	Biomedical Data Analysis	2
NR 5460	Geospatial Computation	3
NR 6990	Intro to R for Biologists	2
NR 6990	Data Science for Ecologists	3
NR 6990	Ecological Modeling	3
NR 6990	Essential Climate Science	3
STAT 5870	Data Science I - Experience	3
STAT 5210	Advanced Stat Methods & Theory	3
STAT 5010	Gr Applied Data Analysis	3
PBIO 5940/3990	Ecological Modeling	3
PBIO 6800/BIOL 6200	Ecological Genomics	4

***Note:** Course codes listed above are subject to change. Some courses listed above are offered periodically at intervals that may exceed four years.

UVM BIOLOGICAL DATA SCIENCE PROGRAM

A Graduate Training Program Focused on Diversity, Communication and Applied Internships

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