UNIVERSITY OF ST. THOMAS HOUSTON

2023-2024 Catalog

Computational Biology

Bachelor of Science
Academic Department
Biology

Computational Biology is an interdisciplinary field that uses mathematics, bioinformatics and computational applications to analyze and store the vast amounts of information. Computational biology spans a wide range of fields within biology including genomics/genetics, cell biology, biophysics, proteomics and evolution. In a unique combination, the major, housed in the Biology Department, comprises a concentration of courses in biology (BIOL), chemistry (CHEM), mathematics (MATH), computer science (COMSC), and physics (PHYS). Majors will become solidly grounded in the biologically relevant areas of genetics, molecular, and cell biology, and will be trained in both the theoretical and practical aspects behind data manipulation. Graduates will be prepared to enter professional or graduate school in bioinformatics or for entry–level positions in biotechnology firms, genome projects, or the pharmaceutical industry.

**Note: All biology students must complete a Major Field Test prior to graduation. **

Total Credits 74-76

Biology

Complete all of the listed courses and any 3000 or 4000 level biology course not already included in this plan.

Item #	Course Title		Credits
☐ BIOL 1351	Introduction to Population Biology and Evolution	BIOL 1351 Corequisite: BIOL 1151	3
☐ BIOL 1151	Introduction to Biology Practicum	BIOL 1151 Corequisite: BIOL 1351	1
☐ BIOL 1352	Introduction to Cell and Molecular Biology	BIOL 1352 Corequisite: BIOL 1152	3
☐ BIOL 1152	Basic Lab Techiques in Biology	BIOL 1152 Corequisite: BIOL 1352	1
☐ BIOL 3321	Genetics	Prerequisites (with a grade of 'C' or better): BIOL 1351/1151, 1352/1152 and CHEM 1341/1141.	3
☐ BIOL 3121	Genetics and Molecular Biology Laboratory	Prerequisites (with a grade of 'C' or better): BIOL 1351/1151, 1352/1152 and CHEM 1341/1141, 1342/1142; Corequisite: BIOL 3321	1
☐ BIOL 3351	Molecular Biology	BIOL 3351 Prerequisites (With Grade of 'C' or Better): BIOL 3321, CHEM 2343	3
☐ BIOL 3151	Advanced Molecular Biology Laboratory	BIOL 3151 Prerequisties: BIOL 3321, 3121	1
☐ BIOL 3461	Cell Biology	BIOL Upper-Division Prerequisite (with a 'C' or better): BIOL 3321	4
☐ BIOL 4332	Evolution	BIOL 4332 Prerequisites (With Grade of 'C' or Better): BIOL 3321 and Senior Standing.	3

Computational Biology

Item #	Course Title		Credits
☐ BIOL 3163	Introduction to Computational Biology Internship	BIOL 3163 Prerequisite: BIOL 1315/ 1151 and BIOL 1352/1152	1
☐ BIOL 3363	Computational Biology Internship	BIOL 3363 Prerequisities: BIOL 3163, BIOL 3321, and BIOL 3351	3

Chemistry

Must take in order:

Item #	Course Title		Credits
☐ CHEM 1341	General Chemistry I	CHEM 1341 Corequisite: CHEM 1141	3
☐ CHEM 1141	General Chemistry I Laboratory	CHEM 1141 Corequisite: CHEM 1341	1
☐ CHEM 1342	General Chemistry II	CHEM 1342 Prerequisite (C or better): CHEM 1341/1141. Corequisite: CHEM 1142	3
☐ CHEM 1142	General Chemistry II Laboratory	CHEM 1142 Corequisite: CHEM 1342	1
☐ CHEM 2343	Organic Chemistry I	CHEM 2343 Prerequisite: CHEM 1342/1142; Corequisite: CHEM 2143.	3
☐ CHEM 2143	Organic Chemistry I Laboratory	CHEM 2143 Corequisite: CHEM 2343	1

Mathematics

Item #	Course Title		Credits
☐ MATH 1431	Calculus I	MATH 1431 Prerequisite: MATH 1430 or department consent.	4
☐ MATH 1432	Calculus II	MATH 1432 Prerequisite: Grade of 'C' or Better in MATH 1431	4
☐ MATH 3360	Discrete Mathematics	MATH 3360 Prerequisite: MATH 1431	3
☐ MATH 3450	Biostatistics I		4

Computer Science

COMSC 1451 may be replaced with COMSC 1351 depending on when the course is taken.

Item #	Course Title		Credits
☐ COMSC 1450	Introduction to Programming and Computer Science		4
☐ COMSC 1451	Object Oriented Programming	COMSC 1451 Prerequisite: COMSC 1450	4

☐ COMSC 2351	Data Structures	COMSC 2351 Prerequisite: COMSC 1451	3
☐ COMSC 3375	Database Systems	COMSC 3375 Prerequisites: COMSC 1451	3

Physics

Choose one of the following pairs:

Item #	Course Title		Credits
☐ PHYS 1331	General Physics I	PHYS 1331 Prerequisite: MATH 1430.	3
☐ PHYS 1111	General Physics I Laboratory	PHYS 1111 Corequisite: PHYS 1331	1
☐ PHYS 2333	University Physics I	PHYS 2333 Corequisites: PHYS 2111, MATH 1431	3
☐ PHYS 2111	University Physics I Laboratory	PHYS 2111 Corequisite: PHYS 2333	1