

MASTERS OF SCIENCE IN COMPUTER SCIENCE (Bioinformatics Concentration – Degree Requirements)

1. Foundation Coursework

If any of the following foundation courses in Computer Science or Mathematics has not been taken in another program, these must be completed at the earliest. 4000-level foundation courses must be taken as their 6000-level counterparts by graduate students.

- (a) Foundation coursework in computer science with a grade of at least a “B” in each.
 - i. Data Structures (CSc 3410)
 - ii. Computer Architecture (CSc 4210)
 - iii. Operating Systems (CSc 4320)
 - iv. Programming Languages (CSc 4330)
 - v. Software Engineering (CSc 4350)
 - vi. Automata (CSc 4510)
 - vii. Design and Analysis of Algorithms (CSc 4520)
 - viii. Introduction to Bioinformatics (CSc 4630)
- (b) Foundation coursework in mathematics that includes a standard elementary calculus sequence and Discrete Mathematics (Math 2420), with at least a “B” in each.

2. Graduate Coursework (26 hours)

selected in consultation with an academic advisor, and approved by the Director of Graduate Studies, with a grade of at least a “B” in each course.

- (a) Computer Science (12 hours): Twelve hours of coursework at the 8000-level (exclusive of Research and Thesis Research courses and inclusive of CSc 8630, Bioinformatics) in the Department of Computer Science.
- (b) Biology (8 hours):
 - i. Biol 7800 Molecular Cell Biology (3)
 - ii. Biol 7810 Molecular Cell Biology Laboratory (2)
 - iii. Biol 7900 Genetics (3)or approved substitutes. Alternative to Biol 7900: Biol 6564 Advanced Genetics (4).
- (c) Chemistry (3 hours): Chem 6150 Introduction to Biophysical Chemistry (3). Alternatives to Chem 6150 include Chem 6110 or 6120, or 6600 or 8900-O
- (d) Mathematics/Statistics (3 hours): Math 6544 Biostatistics (3)

3. Thesis/Project (6-8 hours)

- (a) **Thesis Option:** Six hours of Thesis Research (CSc 8999).

A thesis committee must be setup no later than two semesters after completing any foundation courses. This work should culminate in the writing of a thesis. The thesis must be defended successfully in a oral examination. This examination will pertain to, but is not limited to, the subject matter of the thesis.

- (b) **Project Option:** Four hours of CSc 8950 (in which the student completes a project) and an additional course in Computer Science (3 hours or more) at the 6000-level or above exclusive of Foundation, Research, Thesis Research and Independent Study courses. The project must be supervised by a CS graduate faculty advisor. The student must write a report on the project, and pass an oral final examination given by an ad hoc faculty committee headed by the project advisor. This examination will pertain to, but is not limited to, the subject matter of the project.