UNDERGRADUATE EMBEDDED CERTIFICATE IN COMPUTATIONAL AND QUANTITATIVE BIOLOGY

Certificates are available in the following areas of concentration:

- **Biomedical Science**
- **Biomolecular Technology**
- **Bio-Inspired Design**
- **Computational & Quantitative Biology**
- **Environmental Science**
- **Marine Science**
- **Integrative Biology**
- Applied Physiology

For more information about Biological Sciences certificates, click here.

Program of Study

Certificate programs in Biology and Physiology are available to students from any major. For Biology majors, the Certificate program is a way of customizing your Biology Electives to focus on a particular concentration in biology. For other majors, a Biology or Physiology certificate is a way of enhancing your degree to include an emphasis in biological concepts. Each certificate requires 12 credit hours of approved courses from that certificate's list, at least 9 of which must be at the 3000 level or higher. All courses counting toward the certificate must be taken on a letter-grade basis. Major electives can be counted toward certificates, but courses required by name and number in a student's major program of study will not be counted toward certificates. While students may complete more than one certificate, they may not double-count courses towards more than one certificate or minor. Non-Biology majors are required to include at least 9 credits of BIOS coursework for their certificate, except in the case of the Physiology certificate. Further information is available from **School of Biological Sciences advisors**.

For non-Biology majors:
Additional courses that can count towards any Biological Sciences certificate (*with the exception of the Physiology certificate*):
BIOS 1107/BIOS 1107L, BIOS 2300, BIOS 2310, BIOS 2600, BIOS 2601, BIOS 3450, BIOS 3451 (as long as these courses are not required for the major program of study, and only up to 3 credits of courses at the 1xxx-2xxx level can count). At least 9 credits of BIOS coursework are required for each certificate.

New special topics courses may be added to relevant biology certificates with approval from the School of Biological Sciences. Contact a Biology advisor to request approval.

Code	Title	Credit Hours
Twelve (12) hours from the following:		**12**
BIOS 2400	Math Models in Biology	
BIOS 4150	Genomics and Applied Bioinformatics	
BIOS 4225	Molecular Evolution	
BIOS 4401	Experimental Design and Statistical Methods in Biological Sciences	
BIOS 4410	Microbial Ecology	
BIOS 4428	Population Dynamics	
BIOS 4530	Human Evolutionary Genomics	
BIOS 4545	Genetics of Complex Human Traits and Diseases	
BMED 4477	Biological Networks and Genomics	
CS 4400	Introduction to Database Systems	
CS 4710	Introduction to Computing Concepts for Bioinformatics	
MATH 3012	Applied Combinatorics	
MATH 3215	Introduction to Probability and Statistics	
MATH 4022	Introduction to Graph Theory	
CEE/ISYE 3770/ MATH 3670	Statistics and Applications	