**BIOINFORMATICS/ COMPUTATIONAL BIOL (BCB)**

**BCB 404 (s) Special Topics**  
Max arranged.

**BCB 500 Master's Research and Thesis**  
Credit arranged.

**BCB 501 (s) Seminar**  
Credit arranged  
Students are required to attend all of the invited speaker presentations in the IBEST/CMCI/BCB seminar series for the semester they are enrolled. Students who miss one or more presentations are expected to attend an alternative seminar approved by the instructor. Additional meetings may be required by the instructor.

**BCB 502 (s) Directed Study**  
Credit arranged.

**BCB 503 (s) Workshop**  
Credit arranged.

**BCB 504 (s) Special Topics**  
Credit arranged.

**BCB 506 Laboratory Experience in the Biological Sciences**  
Credit arranged  
Hands-on activities in an active research laboratory whose central research interests are in the biological or biochemical sciences.  
**Prereq:** Admission to BCB program.

**BCB 507 Laboratory Experience in the Computational Sciences**  
Credit arranged  
Hands-on activities in an active research laboratory whose central research interests are in the computational sciences.  
**Prereq:** Admission to BCB program.

**BCB 508 Laboratory Experience in Mathematics or Statistics**  
Credit arranged  
Hands-on activities in an active research laboratory whose central research interests are in the mathematics or statistics.  
**Prereq:** Admission to BCB program.

**BCB 509 Evolutionary Biology for non-Life Scientists**  
3 credits  
This course is offered by Michigan State University as part of the National Science Foundation BEACON Science and Technology Center on 'evolution in action'. Life-scientists in general, and evolutionary biologists in particular, have a particular way of looking at the world that may seem unfamiliar or unusual to non-biologists. In this class, students learn to 'think' like an evolutionary biologist. This course builds a working understanding of biological evolution, enabling effective collaboration with evolutionary biologists. (Fall only)  
**Prereq:** Graduate Standing.

**BCB 510 Computational Science for Biologists**  
3 credits  
This course is offered by Michigan State University as part of the National Science Foundation BEACON Science and Technology Center on 'evolution in action'. This course develops computational skills and quantitative reasoning abilities, computational thinking, and exposure to computational research in evolutionary and molecular biology. We introduce the Python programming language, scripting and pipelining, simulations, and data analysis. We also introduce the Avida artificial life program as a platform for in silico evolution experimentations. (Fall only)  
**Prereq:** Biol 421 or Instructor Permission.

**BCB 511 Applied Bioinformatics**  
3 credits  
A data driven approach to the computational and statistical understanding required to solve bioinformatics problems encountered in genome scale research. Recommended Preparation: CS 120, STAT 301, or BIOL 456. (Spring, alt/yr)

**BCB 512 Multidisciplinary Approaches to the Study of Evolution**  
3 credits  
This course is offered by Michigan State University as part of the National Science Foundation BEACON Science and Technology Center on 'evolution in action'. This project-based course prepares students for team-based, multi-disciplinary and multi-institutional research into the evolutionary dynamics of biological and computational systems. The course objective is to recognize and overcome challenges such as discipline-specific languages, customs and world views. Students will also learn fundamentals of experimental design and statistical analysis. (Spring only)  
**Prereq:** Graduate Standing.

**BCB 597 (s) Practicum**  
Credit arranged.

**BCB 598 (s) Internship**  
Credit arranged.

**BCB 599 (s) Non-thesis Master's Research**  
Credit arranged.

**BCB 600 Doctoral Research and Dissertation**  
Credit arranged.