2020-2021 Computational and Systems Biology Concentration Worksheet

Major in Biological Sciences

To complete this concentration, Biological Sciences Majors must complete 1 coding sequence requirement and any 3 additional concentration courses from the list below:

Coding Requirement

☐ COMP_SCI 110-0 ☐ COMP_SCI 111-0

OR

☐ NICO 101-0 ☐ NICO 102-0

Biological Sciences and Related Courses

☐ **BIOL_SCI 323-0** **Bioinformatics: Sequence and Structure Analysis** - Use of informational and modeling techniques to explore evolutionary and other problems related to the genome. *Prereq: BIOL_SCI 241-0 OR BIOL_SCI 301-0.*

☐ **BIOL_SCI 337-0** **Biostatistics** - Approaches, methods, and techniques for analyzing datasets in ecology and conservation biology. *Prereqs: BIOL_SCI 203-0 OR 215-0 OR ENVR_SCI 202-0; a course in statistics.*

☐ **BIOL_SCI 345-0** **Topics in Biology: Principle's & Methods in Systems Biology** - This course uses current and classical literature to teach students about the major principles of systems biology. P*rerequisites: BIOL_SCI 201-0 or BIOL_SCI 215-0; BIOL_SCI 202-0 or BIOL_SCI 219-0; and BIOL_SCI 234-0 or BIOL_SCI 222-0.*

☐ **BIOL_SCI 354-0** **Quantitative Analysis of Biology** - Random genetic processes, gene expression, cell adaptation, cell cycle, developmental morphogens, phylgenomics. *Prereqs: BIOL_SCI 203-0 or BIOL_SCI 215-0.*

☐ **BIOL_SCI 359-0** **Quantitative Experimentation in Biology** - Laboratory in experimental methods in quantitative biology. Random genetic processes, gene expression, cell cycle, developmental morphogens, genome sequencing. *Prereq: BIOL_SCI 203-0 OR 215-0 OR 354-0.*

☐ **BIOL_SCI 378-0** **Functional Genomics** - Patterns of gene expression and their causes. *Prereqs: BIOL_SCI 203-0 OR 215-0, BIOL_SCI 202-0 OR 219-0.*

☐ **CHEM_ENG 379-0** **Computational Biology: Principles & Applications** - Introduction to the development and application of data-analytical and theoretical methods, mathematical modeling, and computational simulation techniques to the study of biological systems.

☐ **ES_APPM 495-0** **Topic: Introduction to the Analysis of RNA Sequencing Data -** This course will give an introduction to the theory and practice of analyzing high-throughput RNA sequencing through lectures and hands-on exercises.