2023-2024 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

OR

      COMP_SCI 111-0

OR

  __ NICO 101-0   and   __ 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, and MATH 218-3 OR 220-2.*

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. *Prerequisites: BIOL_SCI 202-0, BIOL_SCI 203-0, and BIOL_SCI 234-0.*

BIOL_SCI 354-0   **Quantitative Analysis of Biology** - Random genetic processes, gene expression, cell adaptation, cell cycle, developmental morphogens, phylgenomics. *Prereqs: BIOL_SCI 201-0 and BIOL_SCI 202-0.*

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 201-0 and BIOL_SCI 202-0, OR BIOL_SCI 354-0.*

BIOL_SCI 378-0   **Functional Genomics** - Patterns of gene expression and their causes. *Prereqs: BIOL_SCI 202-0 and BIOL_SCI 203-0.*

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.