

**ABT 720 Experimental Design and Analysis in Biotechnology\*****3**

Principles of descriptive and inferential statistics with applications in biotechnology including experimental design, quantitative data analysis, and bioinformatic evaluation of complex molecular and biological data sets.

**Credits**

[ABT 720 course syllabus](#)

**ABT 730 Python for Bioinformatics****3**

Learn diverse strategies for computational analysis of macromolecular data using Python, including sequence alignment, genome annotation, data retrieval, phylogenetic analysis, and molecular evolution. Experiential learning is emphasized; confidence in practical skills is developed through persistent application of course content to projects focused on current problems in bioinformatic research.

**Credits**

[ABT 730 course syllabus](#)

**ABT 780 Bioinformatic Inquiry****3**

Develop competencies that promote efficient analysis of biological data. Learn how to match a research problem with the most effective tools for its completion, balancing the use of existing software and de novo software development. Advanced aspects of Python and R, algorithmics, machine learning, simulations, and effective communication of results are emphasized.

**Credits**

*Prerequisites: ABT 720, ABT 730*

[ABT 780 course syllabus](#)

**ABT 785 Applications of Bioinformatics****3**

Explore and apply existing bioinformatic tools, including implementation of pre-coded solutions to data acquisition, wrangling, analysis, visualization, and structural modeling problems. Students will complete a final project that generates a multi-system workflow to solve bioinformatic problems.

**Credits**

*Prerequisites: ABT 720, ABT 730*

[ABT 785 course syllabus](#)