Syllabus for ABT 730
Python for Bioinformatics

NOTE: This syllabus document contains the basic information of this course. The most current syllabus is available in the full course.

Course Description

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.

Prerequisite(s)

None.

Course Outcomes

Upon completing this course, you will be able to do the following:
- Analyze the syntax and semantics of diverse coding elements of a Python program
- Select an appropriate problem-solving algorithm for a given bioinformatic problem
- Select an appropriate data structure to store and efficiently manipulate data
- Implement problem-solving algorithms efficiently in the Python programming language
- Evaluate the rationale behind these problem-solving algorithms
- Evaluate published research that employs algorithmic problem-solving strategies

Course Requirements/Components

Discussions
You will interact with your peers in a series of discussions surrounding the use of programming and biotechnology topics.

Programming Exercise Sets
You will work through provided programming examples to familiarize yourself with key concepts regarding coding.

Unit-end Coding Problems

You will complete unit-end coding problems that will encapsulate all topics and skills from the unit.

Exams
Take-home exams will be completed throughout the course that encompasses several modules worth of skills.

Grading

The following grading scale will be used to evaluate all course requirements and to determine your final grade:

Grade	Percentage Range
A	93% - 100%
A-	90% - 92.9%
B+	86% - 89.9%
B	83% - 85.9%
B-	80% - 82.9%
C+	76% - 79.9%
C	73% - 75.9%
C-	70% - 72.9%
F	0 – 69.9%

Assignment	Points
Discussions: 5 @ 10 points	50
Programming Exercise Sets: 11 @ 10 points	110
Unit-end Coding Problems: 3 @ 40 points	120
Take-home Midterm Exam	100
Take-home Final Exam	200
Total Points	**580**