

Syllabus for ABT720

Experimental Design and Analysis in Biotechnology

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

Course Description

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.

Prerequisite(s)

None.

Course Outcomes

Upon completing this course, you will be able to do the following:

- Evaluate and apply experimental and statistical methods that are commonly used in biotechnology research;
- Explain the rationale behind experimental and statistical procedures used in biotechnology research;
- Select an appropriate experimental and statistical method for a given research question;
- Implement statistical procedures using software, especially R and RStudio;
- Implement bioinformatic methods using a set of software tools; and
- Communicate statistical findings in biotechnology research to stakeholders

Course Requirements/Components

- All assessments, exercises, and assignments will be posted to the course webpage, in CANVAS, and will be accompanied by due dates and times.
- Assignments will be completed either individually or in small groups (this will be clarified when each in class assignment is posted to the course webpage).
- Completed assessments, exercises, and assignments will be turned in to the appropriate drop-boxes on CANVAS.
- It is expected that work will be completed prior to the posted deadlines.
- A late penalty will be assessed for work completed after the due date (initially 20%, but increasing by 20% per day from the due date and time).

- Make-up assignments will be given only with proper written justification and prior consent of the instructor.
- Careful review of all assigned videos is required.
- Thoughtful completion of all assigned reading is required.

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
Online topical discussions (10 x 5pts each)	50
Exercise Sets (16 x 10 pts each)	160
Short Essay Responses (2 x 40 pts each)	80
Critical Commentaries (4 x 40 pts each)	160
Software Practicals (6 x 40)	240
Unit I to V Multiple-choice In-home Exams (5 x 50)	250
Unit VI In-home Essay Exam	100
Total Points	1040