

# Biochemistry

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**ISC 238**

**PHONE 5307,**

**OFFICE HOURS (virtual)**

**M, W, F- 9-10**

**T, R 10-11**

**Textbook: *Essential Biochemistry*,  
Pratt and Cornely, 4th Ed**

FALL 2020



## INTRODUCTION & PREREQUISITES:

Biochemistry examines the molecules that are (generally) unique to biology, their nomenclature, their structure, their interactions with other molecules and their significance to organisms and the processes that are associated with life. The course introduces this vast subject, building upon basic knowledge developed in courses in general biology, general chemistry and organic chemistry. The course treads lightly on biochemical topics covered in other biology courses (e.g. nucleic acid structure, protein synthesis—covered in genetics; protein degradation, cytoskeleton dynamics, molecular trafficking—covered in cell biology). Because students forget what has been covered in earlier courses and because these ‘earlier courses’ may vary substantial in content, it is important that students recognize areas where they need more background and search the abundant available resources (internet, textbooks, faculty) to fill in gaps in their understanding. This is something that any biologist should be able to do. If you are concerned about your background please talk with me about it.

## FORMAT

Up until Thanksgiving Break his course is a traditional ‘face-to-face’ course and students need to come to class with a mask. After Thanksgiving break the course becomes

virtual with video-taped lectures. Videos and on-line materials for this final portion of the course will be available and can be downloaded before Thanksgiving so that the internet connections are only needed for email communication.

## GRADING:

Grading is based on

.....5 tests, each worth 15 points for a total of 75 possible points. The first four exams will be in-class and closed book and the final test will be open book and notes.

All grading will be done on a 3 point scale: 3 points earned for an excellent performance and 1 point earned for an acceptable performance. Hence your score on any test will be multiplied by 5 to get your point score.

Final grades will be assigned based on total points accumulated relative to the following scale:

A grade: 67 points or more (average of ~2.7  
.....on each graded component)

A- grade: 61-66 points

B+ grade: 55-60 points

B grade: 49-54 points

B- grade: 43-48 points

C+ grade: 37-42 points

C grade: 31-36 points

C- grade; 25-30 points

## LEARNING OUTCOMES

Upon  
completing  
this course  
students will:

- know the major groups of biological molecules, their structure, nomenclature and synthetic pathways
- know the common techniques used to analyze these molecules
- know how the structure of biomolecules and their interactions are dictated by the laws of thermodynamics
- know how some of these molecules interact with other molecules and produce consequences that are significant to biological function, including the following:
  - understand how enzymes function: how they catalyze reactions, how their activities can be regulated and the typical patterns seen in their catalytic behavior
  - understand how such interactions can result in synthesis, motion, transport, communication and sensation
- know how the process of evolution is a force that can modify biological molecules and shape the patterns in structure and function that we observe
- understand how specific biomolecules, e.g. pigments, antibodies, hormones, messengers, allow for specific functions that are significant to the ability of organisms to survive and interact with their environment