

# Biochemistry 104 – Molecular Mechanisms, Human Health & You – Spring 2015

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**Lecture** - MWF 3:30-4:20, 1116 DeLuca Biochemistry Building

**Office Hours (Lisa)** – MWF 10:00-11:30, Tuesday 9:50-10:50 or by appointment.

## Course objectives

1. To develop an appreciation for the complexity of life and human health.
2. To understand the nature of science and how it is presented (and sometimes misrepresented) in the media.
3. To learn something about your own health.
4. To generate enthusiasm for learning about biology regardless of your career objectives.

## Grading

Exams (2 X 100)	200 points
Short Assignments	100
Monogenic Disease Presentation	100
Media Analysis Assignment	100
Final Exam (cumulative)	<u>100</u>
<b>Total</b>	<b>600</b>

## Grading Scale

<b>A</b>	90-100
<b>AB</b>	87-89.9
<b>B</b>	80-86.9
<b>BC</b>	76 -79.9
<b>C</b>	70-75.9
<b>D</b>	60-69.9
<b>F</b>	< 60

## Exam Policy

Make-up exams will only be considered under special circumstances, including verifiable illness, family emergencies, or school sponsored events. You must notify me prior to the exam if you will be absent. If you miss an exam for other reasons or without prior approval you will receive zero points.

## STUDENTS WITH DISABILITIES

We are committed to providing a learning environment that is accessible to all. If you are a student with approved accommodations through the McBurney Center, please contact us privately to discuss your specific needs.

## SCHEDULE

This course will be divided into different blocks, with each block having one broad focus. Each block will begin with a short assignment and a discussion about it. The purpose of the short assignments is to get you to start thinking more broadly about science and how to become more critical of things you hear about science. After the discussions we will talk about content related to the topic. We will work through problems as a class to help you better understand the concepts and will have many discussions throughout the course. The schedule is purposefully open-ended to provide you the opportunity to discuss in detail any topic that you find particularly interesting. Assignment due dates and exam dates are bolded.

Date	Block/Activity
W. 1/21	<i>Introduction</i> – In this class we will discuss the format of the course and expectations and will be introduced to a few interesting aspects of genetics and biochemistry.
	<i>Metabolism</i> – In this block we will discuss how sugars and fats are broken down and synthesized and how hormones regulate blood sugar levels.
W. 2/18	Review for Exam 1
F. 2/20	<b>Exam 1.</b> Anything covered through 2/18 could be on the exam.
	<i>Clinical Studies</i> – In this block we will discuss how clinical trials work and what constitutes a rigorous and convincing clinical trial. We will also discuss enzymes.
	<i>Cell Signaling</i> – In this block we will discuss the basics of signal transduction and how cell receive outside signals to alter their behavior and gene expression.
F. 3/6	<b>Media Analysis Assignment due</b>
	<i>Cancer</i> – In this block we will discuss the complexities of cancer and how mutations may alter the cell cycle.
	<i>Evolution</i> – In this block we will discuss how evolution occurs. We will talk about how DNA replicates and mutations develop and how mutations may produce altered gene products. We will also perform genetics problems to understand how traits are inherited from generation to generation.
	<b>The monogenic disease presentations will be presented here.</b>
W. 4/8	Review for Exam 2
F. 4/10	<b>Exam 2.</b> Anything covered from 2/23 – 4/8 could be on the exam.
	<i>Genes and Environment</i> - In this block we will discuss how genetics and the environment contribute to the presentation of most traits.
	<i>Viruses</i> – In this block we will discuss how viral life cycles work, focusing on HPV, HIV and Ebola.
	<i>Biotechnology</i> – In this block we will discuss how genetically modified organisms are generated and their uses.
F. 5/8	Review for Final Exam
Sun. 5/10	<b>Final Exam. The final exam is cumulative.</b>