BIO 3100 (*Cellular Biochemistry*) section 001
Course Syllabus *Spring* Semester, *2021*

Instructor: Eduardo Palomino, Ph.D.
Biological Science Bldg. Lab 0169
Office phone: 313-577-2303
Email address: ad9020@wayne.edu

TEXTBOOK : **Lehninger, Principles of Biochemistry, 7th edition**
CLASS RECORDING TIME: M, W 11:30AM – 2:00 PM **Sci 2009**
OFFICE HOURS: by email, anytime. By phone M and W 2:15 – 4:00 PM
CREDITS AND PREREQUISITES: This is a 3 credit course. Grade of C or better in BIO 2200 & 2600, CHM 1220, 1230, 1240, 1250 or CHM 1410 are required.

COURSE DESCRIPTION: This course will provide an introduction to the composition and function of bioorganic compounds. The objective is to familiarize the student with the works of proteins, lipids, carbohydrates and other bio-molecules in living systems**.**

LECTURES: Presentations for lectures follow the order of the textbook and other sources. Presentations are comprehensive and serve as a study guide. All lectures are video captured and available anytime in the Echo Center after 2 pm of the class date.

Two regular **CUMULATIVE EXAMS** worth 50 points each will be given from 11:30 am – 12:30 pm on designated Mondays and a **CUMULATIVE FINAL** worth also 50 points given from 11:30 am – 1:30 pm on Monday June 28. **Homework Assignments** worth 50 points total will be given with each lecture and are due weekly on Saturdays. **FORMAT** of exams is multiple choice provided entirely through Canvas. There are no make-up exams. All exams are cumulative, so exam 2 will also cover the material of exam 1 and the final will cover all the phases.

SCHEDULE

Session	Subject and Exams
5/10 - 19	Phase 1- 2
5/24	**Exam 1**
5/24– 6/9	Phase 2- 3
6/14	**Exam 2**
6/14 – 6/23	Phase 3-4
6/28 **11:30–1:30**	**Final Exam**

GRADING: Based on 200 points total (the number refers to the low end of the letter grade)
A 184, A- 176, B+ 168, B 160, B- 152, C+ 144, C 136, C- 128, D+ 120, D 112, D- 104, F below 104.
Grades posted ~72h after at the exam

OVERALL TOPICS OF PRESENTATIONS

Phase 1
The cell, organelles, membrane composition, macromolecules introduction: proteins, carbohydrates, nucleic acids and triglycerides; physical and chemical foundation: osmosis, functional groups, water and noncovalent interactions, acids, bases and buffers, pH and pI, Energy and thermodynamics, ATP and its energy, redox reactions. Amino acids and proteins: properties and functions.

Phase 2
Enzymes and coenzymes: properties, reactions and regulation. Carbohydrates classification and reactions. Glycoconjugates and blood types. Nucleic acids: DNA and RNA fundamentals. Cloning single genes, PCR. Lipids: storage triglycerides, membrane lipids and sphingolipids. Steroids, eicosanoids, isoprenoids and oleo-soluble vitamins. Biological membranes composition and membrane transport: diffusion, facilitated transport and active transport. Signal transduction

Phase 3
Biochemical reactions. Glycolysis, gluconeogenesis and the pentose phosphate pathway. Glycogen metabolism, citric acid and glyoxylate cycles. Fatty acid and amino acid catabolism. The urea cycle. Oxidative phosphorylation and photophosphorylation

Phase 4
Carbohydrate biosynthesis. Biosynthesis of fatty acids, eicosanoids and steroids. Biosynthesis of some amino acids. Introduction to hormones and hormonal regulation. DNA, RNA and protein synthesis.

Format of the Class

Lectures are recorded on Mondays and Wednesdays of each week from 11:30 am to 2:00 pm. The recordings can be viewed after 2:00 pm. They follow Powerpoint slides that are available on Canvas for early download by the students. Although the lectures follow those powerpoints as a guide, actual lectures include additions to the slides, homework assignments and blackboard camera handwritten explanations. All that information represents the material for the exams.

The **homework questions** are given at different times during each lecture so students must watch each lecture carefully. The homework assignments given on Monday and Wednesday is due Saturday. Most homework is multiple choice and might include material not mentioned particularly in lecture but found in the textbook. It evaluates the understanding of the subject.

Exams follow the regular system of an in-person classroom exam but without proctors. The exam will be sent via Canvas email to the students 5 min before the official starting time (11:30 am) given the opportunity to be printed at home. The time limit is observed, and exams received past that time will be rejected. The students submit their answers exclusively via Canvas email as a string as shown:

Bio 3100 Exam 1
Robert Lucky
Answers: 1a, 2c, 3d, 4b, 5d, 3a, …….etc.