BIO 3100 (*Cellular Biochemistry*) section 31707
Course Syllabus *Spring* Semester, *2020*

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TEXTBOOK (followed but not required): **Lehninger, Principles of Biochemistry, 6th or 7th ed.**
CLASS RECORDING TIME: M, W 11:30AM – 2:00 PM
OFFICE HOURS: by email, anytime

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 recording date.

Three regular **CUMULATIVE EXAMS** worth 60 points each will be given from 11:30 am – 12:30 pm on designated Mondays and the **CUMULATIVE FINAL** worth 80 points given from 11:30 am – 1:30 pm on Monday June 22. One exam, not the final, will be dropped. **FORMAT** of exams is multiple choice provided entirely through Canvas. There are no make-up exams.

SCHEDULE

Session	Subject and Exams
5/4 - 13	Phase1- 2
5/18	**Exam 1**
5/18– 27	Phase 2- 3 (No class Monday 25th, Memorial day)
6/1	**Exam 2**
6/1 – 6/10	Phase 3-4
6/15	**Exam 3**
6/15 - 6/17	Phase 4
6/22 **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

Study Tips: The class is fast pace involving chemical principles applied to biology. A review will be given of those forgotten chemical and physical bases, but it requires a periodic review in order to avoid confusion as we build the program. Review as often as you can because the exams are cumulative.
Lectures are recorded on Mondays and Wednesdays of each week from 11:30 am to 2:00 pm and from 12:30 pm to 2:00 pm on exam days. 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 and blackboard camera handwritten explanations. All that information represents the material for the exams.
Exams follow the regular system of a regular 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) giving the opportunity to be printed at home. The students submit their answers via Canvas email (only) as a string as shown:

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

Because the exams are given without Lockdown or proctors, questions are not straightforward and require more mental processing than a sit-in version. Examples of questions will be provided during lectures.
Questions: Submit any questions you encounter in the lectures through email; or call me after 2:30 pm at 313-577-2303. If the questions are of general importance I will address those in the next lecture, otherwise they will be answer individually.