MITBM

Master International Technologies Biomédicales

Biochemistry (Medical) BTC 5302 Spring 2008

SYLLABUS

Course Instructor: **Dr. Azzedine Ibrahimi**
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Complementary seminars: **Dr Patrick Robberecht, ULB, Belgium**

Office Hours: **By appointment**
Teaching Hours: **MW 12:00 – 13:20**

Course Text: **Molecular Biology of the Cell, 5th edition**

Course Description

This will be an integrated course of biochemistry, covering many aspects of biology, including: metabolism, pharmacology, enzymology, biomolecules synthesis and signal transduction by connecting biochemical information to other disciplines such as cell biology, molecular biology, organic chemistry, medicine, evolution, etc.. This course represents an overview of basic biochemistry as well as covering the most important aspects of the structures and functions of a variety of biologically important molecules that will be studied with the goal being the development of an integrated understanding of how biomolecules act and interact.
A technical aspect will also be covered, including standard and advanced techniques of biomolecules analysis, extraction and purification, with a special focus on proteins purification.
A series of students' animated seminars will accompany the course to provide students with more criticizing view and allow them to relate biochemistry with cutting edge research in biotechnology and medicine.
This course is designed to provide graduate students (in medicine, biotechnology and health professions) with strong foundation in the fundamental biochemistry of normal and abnormal body processes. Therefore, we will often approach material from a medical perspective, without ceding the chemical nature of the discipline.

Objectives of the Course

Prepare students for professional education in medicine, biotechnology and health professions.
Connect biochemical information to other disciplines such as nutrition, molecular biology, organic chemistry, medicine, evolution, etc.
Provide the tools and analytical methods that biochemists use to dissect biological problems.
Provide biochemical solid background for careers in biotechnology, pharmaceuticals, clinical & forensic laboratories

Intended Learning Outcomes

Students will be expected to develop the following skills upon successful completion of the course:

- Be able to identify and describe all biomolecules
- Understand and link function to protein's structure
- Be able to demonstrate a very good knowledge of different biochemical techniques

- Understand the relationship between diabetes and glucose/lipid metabolisms
- Understand the relationship between obesity and glucose/lipid metabolisms.
- Describe cholesterol metabolism and hypercholesterolemia condition
- Have an integrated approach to discuss syndrome X
- Describe the intermediary metabolism
- Be able to discuss and analyze different processes and conditions from the biochemistry perspective

Preparing the Course

The student is totally responsible for preparing the lecture topics using the textbook. He/she is expected to read assignments before class meetings, contribute positively to class discussions, write clear and concise responses to assignments, and complete any homework or project assigned.

Presentations:

Students will be asked to give presentations on specific topics related to the course material. They should be able to respect the time of the presentation, explain clearly the subject matter, and answer questions.

Evaluation Procedures

The assessment of student progress and performance will be done through journal paper presentation, quizzes, and examinations throughout the semester.

Quizzes will take place without previous notice from the instructor during

One exam is scheduled during the semester. Students will have one-week notice on these. In addition, a comprehensive final exam ends the semester.

The final course grade is based on points accumulated from the different evaluation procedures as follows:

Evaluation Procedure	Grade Contribution (%)
Presentation	7
Quizzes	3
Midterm test	35
Final Examination	55

Tentative Outline of Course Lectures

Week	Course Lectures
1	Basic Chemistry of Biomolecules (Review)
2	Basic Chemistry of Biomolecules (Review)
3	Ionic Equilibria (Review)
4	Enzyme Kinetics (Review)
5	Protein Structure-Fonction
6	Protein Modifications and targeting Glycoproteins, *Examination 1*
7	Protein Modifications and targeting Glycoproteins
8	Methods of Protein analysis
9	Intermediary metabolism vitamins, cofactors and iron
10	Intermediary metabolism vitamins, cofactors and iron
11	Diabetes mellitus, obesity and metabolic X syndrome, *Examination 2*
12	Cholesterol metabolism and hypercholesterolemia
13	Biochemistry of the inflammatory response
14	Epigenetics
15	Epigenetics
16	Review - *Final Examination (Comprehensive)*

IMPORTANT NOTES:

- *The student is responsible for knowing university policies and procedures.*
- *This syllabus is tentative and subject to change.*
- *A student who misses a quiz or an exam without valid reason is given a zero.*

Best wishes for a successful course!