Chem 681 **Fall 2015**

MEDICAL BIOCHEMISTRY

Objective: Overview of the biochemical reactions of the human body in health and disease.

Class: Wednesdays 4:30 p.m. - 7:30 p.m. in S01-089 (Chemistry Conference Room in the old Science Building).

Prerequisite: Graduate degree student or permission of the instructor.

Instructor:
Dr. Marianna Torok
Associate Professor of Chemistry
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Office: ISC 3420
Office Hours: Wed 2:00 p.m.-4:00 p.m. & Thurs 10:00 a.m.-11:00 a.m., or by appointment.

Primary textbook:
Bhagavan N. V., Ha C-E., A. Essentials of Medical Biochemistry with Clinical Cases, 1st edition, Academic Press, Elsevier Inc., 2011
Additional recommended textbooks:
Murray R. K., Bender D., Botham K. M., Rodwell V. W., Kennely P. J., Weil P. A. Harper's Illustrated Biochemistry, 29th edition, McGraw-Hill, Inc., United States, 2012
Salway J. G. Medical Biochemistry at a Glance, 3th Edition, Wiley-Blackwell, 2012
Berg J. M., Tymoczko J. L., Stryer L., Biochemistry, 7th edition, W. H. Freeman and Company, New York, 2012.
Further reading materials on current research will be placed on the course website or distributed in class.

Course website:
The course web pages are operated through Blackboard Learn. Login at https://umb.umassonline.net with your UMB email credentials.

Proposed class schedule:
(subject to change, except exam dates)

Date	**Topic**
SEP 9	General Announcements. ***Sign up for Presentation Assignments***. *"Phages and Humans: Unexpected Holobionts" Guest Lecture by Professor Daniel Dowling (Chemistry)*
SEP 16	Structure of Amino Acids and Proteins. Protein Folding and Associated Diseases.
SEP 23	Enzymes and Enzyme Regulation. Clinical Enzymology and Biomarkers of Tissue Injury.
SEP 30	Bioenergetics. Carbohydrate Metabolism.
OCT 7	Protein and Amino Acid Metabolism.
OCT 14	Lipid Metabolism.
OCT 21	***Exam #1*** Contractile Systems.
OCT 28	Perturbations of Energy Metabolism: Obesity and Diabetes Mellitus. Xenobiotics. Alcohol Metabolism.
NOV 4	Free Radicals and Antioxidant Nutrients. The Biochemistry of Aging.
NOV 11	Veterans Day (Holiday)
NOV 18	Nucleotide Metabolism. DNA Replication, Repair and Mutagenesis. RNA and Protein Synthesis.
NOV 25	Signal Transduction and Hormones.
DEC 2	***Exam #2*** Mineral Metabolism. Vitamins. Water, Electrolytes, and Acid-Base Balance.
DEC 9	Biochemistry of the Senses.
DEC 16-22	***FINAL EXAM*** *(Exact date/time TBA)*
DEC 23	Emergency Snow Day

Absence policy:
Attendance to at least 75% of the classes is compulsory. Active participation is expected.

Required Background, Readings and Homework:
A previous knowledge of fundamental biochemistry is necessary for understanding the course material. It can be refreshed by completing the posted reading assignments and related chapters from the recommended textbooks. Only the

connections of basic biochemical concepts to physiological and pathophysiological processes will be discussed during the lecture. Selected reviews and practice problems will be posted on the course website regularly.
(If you never took biochemistry, consider completing Biochemistry I.&II. (Biochm 383 & 384) or Biological Chemistry (Chem 654) before taking this class.)

Exams:
Two hourly exams and a cumulative final exam are scheduled for the semester. The lowest score from the two hourly exams will be dropped. Attendance on exams is mandatory. There are no make-up exams. Your missed hourly exam will be your dropped exam. In case of any serious problem, contact me, preferably in advance.

Student Presentations:
Each student will give two 15-minutes talks on current research topics related to the class material. The dates and titles of these presentations will be determined, and research papers or case studies will be provided by the instructor during the first week. Students are also encouraged to search for additional literature. Their performance will be evaluated and graded.

Extra credits:
Extra credits *up to 25 points* can be earned by writing exam questions in multiple choice format with five possible answers. Each submitted question must indicate and explain the correct answer and also include a short description why the other four choices are wrong. These questions (max. 5) must be your own original work and should be emailed to your instructor by December 10th. Approved questions will be used to create a practice exam for the class prior to the final exam.

Grading:
The final grade is based on the best hourly exam *(150 points total),* the presentation grade *(2X40 points total for presentations and 20 points total for participation in discussions)* and the final exam *(250 points total)*. The grade equivalences are as follows:

Points Earned	*%*	*Grade*
500-450	>90	A
449-430	>86	A-
429-410	>82	B+
409-390	>78	B
389-370	>74	B-
369-350	>70	C+
349-330	>66	C
329-310	>62	C-
309-290	>58	D+
289-270	>54	D
269-250	>50	D-
below 250	<50	F

Any grade lower than a C automatically becomes an F for graduate students.

Accommodations:
The University of Massachusetts Boston is committed to providing reasonable academic accommodations for all students with disabilities. This syllabus is available in alternate format upon request. If you have a disability and feel you will need accommodations in this course, please contact the Ross Center for Disability Services, Campus Center, Upper Level, Room 211 at 617.287.7430. http://www.umb.edu/academics/vpass/disability/ After registration with the Ross Center, a student should present and discuss the accommodations with the professor. Although a student can request accommodations at any time, we recommend that students inform the professor of the need for accommodations by the end of the Drop/Add period to ensure that accommodations are available for the entirety of the course.

Code of Conduct and Academic Integrity:
It is the expressed policy of the University that every aspect of academic life--not only formal coursework situations, but all relationships and interactions connected to the educational process--shall be conducted in an absolutely and uncompromisingly honest manner. The University presupposes that any submission of work for academic credit is the student's own and is in compliance with University policies, including its policies on appropriate citation and plagiarism. These policies are spelled out in the Code of Student Conduct. Students are required to adhere to the Code of Student Conduct, including requirements for academic honesty, as delineated in the University of Massachusetts Boston Graduate Catalogue and relevant program student handbook(s). UMB Code of Student Conduct