

**Rutgers School of Dental Medicine
COURSE SYLLABUS**

COURSE#: BIOC 7102 - BASC 1002
OFFICIAL COURSE NAME: Biochemistry
COURSE DIRECTOR: Dr. Melissa Rogers
CONTACT INFORMATION: rogersmb@njms.rutgers.edu

ADDITIONAL COURSE FACULTY: Drs. Ken Markowitz
Vivan Bellofatto
Michael Lea
Sergei Kotenko
Carol Lutz
Carolyn Suzuki
Ray Birge
Anish Das
Carla Cugini
Zafri Humayun
Emanuel Goldman
Sylvia Christakos
John Bogden

ACADEMIC YEAR: D1
GRADE PERIOD/S: 4

DAYS & TIME: Refer to Academic Schedule
ROOM#: Refer to Academic Schedule

COURSE DESCRIPTION:

The main theme of the Biochemistry course is the correlation of molecular structure and biological function. Accordingly, the course presents the salient facts of Biochemistry from which the general characteristics of structure and function in living systems can be deduced.

Emphasis is given to the nature, biosynthesis, and degradation of the major building blocks of cells and tissues; the details, interrelationships, and control mechanisms of the various pathways of intermediary metabolism; the production and utilization of energy and the nature and function of biological catalysis; the nature and expression of genetic information; and the special characteristics of certain organs and tissues. Human Biochemistry will be the predominant subject of the course, with emphasis on dental and other clinical problems.

Handouts comprising PowerPoint slides for all lectures and, on occasion, study problems will be provided on Canvas prior to each lecture or group of lectures. Students are responsible for material included in these handouts as well as the orally presented information and specific textbook assignments.

All class conferences are held to review, clarify, and highlight material presented in the previous block of lectures. In addition, individual instructors are available by appointment to discuss matters arising from their lectures. Faculty email addresses are provided above. Contact Dr. Melissa Rogers at rogersmb@njms.rutgers.edu or 973-972-2984, if needed.

COURSE GOALS & OBJECTIVES

Goal:

The goal is to teach students human Biochemistry with some emphasis on biochemical pathology of the oral cavity and emphasis on dental and other clinical problems.

Objectives:

At the end of this course, the student will be able to engage in the behaviors listed under "RSDM Competencies Taught".

RBHS Shared Learning Goals on Anti-Racism in Health Profession Education:

<i>Learning Goal 1:</i> Race and racial disparities	Explain that race is a social construct and racism contributes to the increased risk for certain diseases and disparities
<i>Learning Goal 2:</i> Historical examples and ongoing impact of structural racism	Describe and list historical examples of institutional racism in science, health care, and/or society and the impact of the present-day role of ongoing structural racism on access, diagnosis, treatment and health outcomes for minoritized (particularly African-American and Indigenous populations) and marginalized communities.
<i>Learning Goal 3:</i> Addressing racial disparities at a systems level	Discuss systems-level barriers and social determinants of health as well as systems-level approaches to address racial disparities and inequities
<i>Learning Goal 4:</i> Individual skills to mitigate bias and racism	Develop skills for identifying, addressing, and overcoming unconscious bias and racism in interactions with patients, communities, and/or colleagues for equitable health outcomes

COURSE REQUIREMENTS:

Passing this course requires achievement of the milestones enunciated below under the grading policy.

REQUIRED TEXTS

Lippincott Illustrated Reviews: Biochemistry, 8th edition, 2022, by Abali, Cline, Franklin, Viselli, published by Wolters Kluwer, Philadelphia.

An eBook is available through the library: <https://meded-lwwhealthlibrary-com.proxy.libraries.rutgers.edu/book.aspx?bookid=3073>

RECOMMENDED TEXTS

Medical Biochemistry by Gerhard Meisenberg and William Simmons, Elsevier Publishers, 3rd Edition

EXAMS/ASSIGNMENTS

COURSE GRADING POLICY

Grades in the course will be based on three unit examinations. Each unit exam will constitute 33% of the grade. Students will receive .5 points for their attendance at each case based learning session for a total of 100 %. Final grades will be adjusted to give a class mean average of not less than 79.

Letter Grade	Description	Grade Points	Numerical Scores
A	Excellent	4	90 to 100
B+		3.5	85 to 89
B	Average	3	80 to 84
C+		2.5	75 to 79
C	Fair	2	70 to 74
D	Failure: Unacceptable	1	65 to 69
F	Failure: Poor	0	60 to 64
FR	Failure: Repeat	0	59 and below
For calculation of final course grades, decimal values are rounded to the nearest whole number. For example, 89.45 would be a B+, while 89.55 would be an A.			

EXAMINATION POLICIES:

Please review the Exam Entry/Exit Policy in the RSDM Student Handbook for guidelines regarding exam arrival and departure.

Examination Conditions:

Three 110-minute unit examinations will be given during the course that will consist of multiple choice questions. Students who arrive late for the exam will not be given additional time to complete the test. In the event students have difficulty attending an exam due to unavoidable circumstances, e.g. unexpected traffic, they will be allowed to take the exam if they arrive in the first 30 minutes. After that it will be treated as a missed exam. Only a surface/laptop is permitted on the student's desk during the examination. Personal items must be left in lockers or deposited at designated areas in the front of the lecture hall. Clarifications of questions will not be addressed during exams.

MAKEUP EXAMINATION POLICY

A makeup examination will be given to a student who has missed a scheduled examination only if the absence is suitably documented and acceptable to the Director for Academic Affairs. **The student must notify the Office of Academic Affairs by telephone (973-972-4440) at least 1 hour before the examination, and the office will notify the appropriate department. All absences from scheduled examinations must be substantiated by a valid, dated and written statement elaborating the reasons for the student's absence.** The statement must be presented to the Office of Academic Affairs on the first day the student returns following the absence. The written statement and any other documentation supplied will be verified by the Office of Academic Affairs. The Office of Academic Affairs may require additional documentation or other information to evaluate the reason for the absence. The student and Course Director will be notified if the absence is approved or non-approved. If approved, the student must be prepared to take the missed examination immediately upon return to school at a time and date set by the Course Director. **Any absence from the scheduled examination that is not approved by the Office of Academic Affairs will result in 0 points being recorded for the examination.**

EXAMINATION REVIEW POLICY

- The course director will ensure exams are vetted by at least one departmental faculty prior to the exam. Course director will review the exam item analysis following the exam and rescore any questions determined to be invalid, not reliable based, or otherwise inappropriate on the item analysis. Students may not request specific questions be rescored by the course director.

Examinations in this course will be available for review by

- secure electronic exam review via ExamSoft. Students will be permitted to view incorrect answers.

The course director will ensure exams are vetted by at least one other departmental faculty member prior to the exam, Course Director will review the exam item analysis following the exam and re-score any questions determined to be invalid, not reliable based, or otherwise inappropriate on the item analysis. Students may not request specific questions be re-scored by the course director.

Re-scoring of exams is at the sole discretion of the Course Director, and they may opt to Accept Multiple Answers, Throw Out, Bonus, or give Full Credit to any question deemed invalid, unreliable, or otherwise inappropriate for the exam. Students may not appeal the Course Director's decision regarding accepted answers to test questions.

REMIEDIATION

All students are reviewed by the Student Academic Performance Committee (SAPC) at regular intervals; remediation of failed courses is at the discretion of the SAPC and cannot be arranged with the course director without prior approval. All course remediation must be completed during the designated summer remediation period.

In the case of a failure in the course, a student may be given the privilege of a comprehensive examination; the re-examination will be given during the summer break.

A student who does not satisfactorily complete all course requirements may be permitted to remediate based on the recommendation of the SAPC. This remediation includes F (Failure) and D (Unacceptable) grades. The Course Director, based on the student's performance in the course, will determine the remediation activity for this course.

TUTORIALS:

Information on tutoring is available in the Student Handbook and from the Office of Student Affairs.

Tutorials are provided as a regular part of the teaching programs. Students needing assistance in a course must contact the Course Director. The Course Director will then communicate with the Office of Student Affairs to arrange tutorial assistance. Students already receiving tutorials must attend all subsequent class sessions. Lack of attendance can result in forfeiture of tutorial service.

ATTENDANCE/ABSENTEE POLICY:

The course adheres to the RSDM policy on attendance which appears in full in the RSDM Student Handbook. Students are expected to be present for all coursework. Attendance implies arriving promptly at the start of the session and remaining until its conclusion.

Students requesting an exam absence must do so in accordance with the Exam Absence policy in the Student Handbook, and should direct associated questions to the Office of Academic Affairs. Course Directors will direct all inquiries regarding exam absences to Academic Affairs.

Students must directly contact didactic course directors if requesting an excused absence from any session other than examinations. Documentation must be presented upon request to the course director in writing within 24 hours to justify any excused absences.

Any unethical/unprofessional actions related to attendance will be considered an unexcused absence and are subject to discipline as per the Code of Professional Conduct and Ethics.

If a student is absent from 30 percent of assigned time in this course the student will be ineligible for tutorials, remediation or reexamination following a failure in the course. Absence due to illness or personal circumstances, unless due to an approved medical leave of absence, is included in the 30 percent total listed above.

Please refer to the RSDM Student handbook for further information. The link to the RSDM website is as follows: <http://sdm.rutgers.edu/handbook/index.htm>.

CONDUCT, ETHICS & PROFESSIONALISM POLICY:

This course requires students to uphold the RSDM Honor Code contained in the RSDM Student Handbook. It also adheres to the RSDM policy on professionalism fully described in the RSDM Student Handbook and requires maintenance of acceptable standards of professionalism. When applicable students may be evaluated using the attached "RSDM Professionalism Evaluation Form."

STUDENTS REQUIRING ACCOMMODATIONS:

Any student who feels they need accommodations should discuss this matter with the Associate Dean of Academic Affairs, and must request accommodations through the RBHS Office of Disability Services. Students are not permitted to make arrangements for accommodations directly with the course director. Course directors will direct all student requests to the Associate Dean of Academic Affairs.

LECTURE/SEMINAR SCHEDULE SUMMARY*

Hours	Date	Topic or Exam	Lecturer or Seminar Faculty	Method (i.e. lecture, seminar, PBL, computer based)	Reading Assignment (DVD section number for 1 st & 2 nd yr.; text page numbers for 3 rd & 4 th yr.) and/or Special Project
1	3/19/23	Introduction to biomolecules	Rogers	Lecture 1	
1	3/19/23	Salivary buffering	Markowitz	L2	
1	3/20/23	Amino acids and transport	Rogers	L3	
1	3/20/23	Protein Structure	Bellofatto	L4	
1	3/20/23	Enzymes	Lea/Kotenko	L5	
1	3/21/23	Connective Tissue Proteins	Lutz	L6	
1	3/26/23	Glycolysis and gluconeogenesis	Rogers	L7	
1	3/26/23	TCA cycle	Rogers	L8	
1	3/27/23	Oxidative phosphorylation	Rogers	L9	
1	3/27/23	Pentose phosphate pathway and glycogen	Rogers	L10	
1	3/27/23	Glycoproteins & proteoglycans	Rogers	L11	
1	3/28/23	Prostaglandins	Lutz	L12	
2	4/3/23	EXAM 1 Lectures 1-12	Rogers	Exam, 2 hr	
1	4/3/23	Exam 1 Post Review	Rogers	Other	
1	4/9/23	Cholesterol synthesis	Suzuki	L13	
1	4/9/23	Cholesterol transport	Suzuki	L14	
1	4/16/23	Fatty acid metabolism	Suzuki	L15	
1	4/16/23	Nitrogen Part 1: Amino acid and nucleotide metabolism	Birge	L16	
1	4/16/23	Nitrogen Part 2: Aminoacidopathies	Birge	L17	
1	4/16/23	Nitrogen Part 3: Urea Cycle and Hyperammonemia	Birge	L18	

1	4/17/23	DNA synthesis	Das	L19	
1	4/17/23	RNA synthesis	Das	L20	
1	4/22/23	Genetic code and protein synthesis	Bellofatto	L21	
1	4/22/23	Biochemical Impact of Viruses	Carla Cugini	L22	
2	4/23/23	AIDs Case-based learning	Rogers/Cugini	CBL1, 2hr	
1	4/24/23	Oncogenes	Humayun	L23	
1	4/24/23	DNA Damage and Repair	Humayun	L24	
2	5/1/23	EXAM II Lectures 13-24	Rogers	Exam, 2hr	
1	5/1/23	Exam II Post Review	Rogers	Other	
1	5/6/23	Prokaryotic gene regulation	Goldman	L25	
1	5/6/23	Eukaryotic gene expression	Goldman	L26	
1	5/7/23	ROS and Inflammation	Suzuki	L27	
1	5/7/23	Hemoglobin & Heme Metabolism	Rogers	L28	
1	5/8/23	Blood clotting	Christakos	L29	
1	5/8/23	Mechanism of action of peptide hormones (insulin/glucagon)	Rogers	L30	
1	5/14/23	Mechanism of action of steroid hormones	Christakos	L31	
1	5/14/23	Calcium metabolism	Christakos	L32	
1	5/15/23	Integration of metabolism	Rogers	L33	
1	5/15/23	Vitamins	Christakos	L34	
1	5/15/23	Minerals	Bogden	L35	
1	5/15/23	Saliva and caries	Markowitz	L36	
2	5/16/23	Diabetes Case-based learning	Lea/Rogers	CBL2, 2 hr	
2	5/21/23	EXAM III Lectures 25-36	Rogers	Exam, 2hr	
1	5/21/23	Exam III Post Review	Rogers	Other	