

Biology 540

Intermediary Metabolism

Course Syllabus – Spring 2017

Time: Monday, Wednesday, and Friday from 11:00-11:50 AM

Place: 301 Davidson

Professor: David J. Schultz, Ph.D.

Office: 226 Life Sciences Building

Phone: 852-5938

Email: david.schultz@louisville.edu

Office Hours: By appointment (arranged by email)

Required Reading:

- Textbook of Biochemistry with Clinical Correlations, 7th edition. Devlin (2010)
- Supplemental material will be assigned as needed.

Course Objectives/Learning Outcomes:

The goal of this course is to assist students in understanding the biochemical reactions in a cell and in understanding the processes by which biochemical reactions affect cell function. We will focus on the synthesis of macromolecules, and regulation of cellular metabolism.

Grading:

- Four examinations will be given, each worth 100 points.
- Grades are based on the percentage of total points earned.

93-100%	A	73-76%	C
90-92%	A-	70-72%	C-
87-89%	B+	67-69%	D+
83-86%	B	63-66%	D
80-82%	B-	60-62%	D-
77-79%	C+	below 60%	F

Examinations

- The nature of materials covered in this course is cumulative.
- Each exam will focus on the most recent material. However, you may be asked to relate current subjects to previously covered materials and thus you are not likely to achieve a high level of success with a “memorize and forget” study strategy.
- Examination format may include a mixture of multiple choice, short answer and/or explanation questions.
- All examinations must be completed in the given class time.
- Incomplete answers to examination questions may receive no credit.
- If you arrive late to an examination, you will not be given additional time to complete your exam.
- After a completed exam has been turned in to me, anyone arriving late will not be permitted to begin the examination.

Policy for make-up examinations

- A make-up exam will only be given when a valid excuse is provided.
- Make-up exam format may be written, oral, or a combination of both.
- You must notify me immediately if you have missed an exam and have a valid excuse.
- You must notify me prior to an absence related to official UofL activities or other prearranged event.
- Any make-up exam must be taken within 24 hours of your return to the University.

Miscellaneous:

- To most effectively utilize class time, you must read assigned materials prior to the lecture. Lectures will provide clarification to complex materials and/or will be used to delve into greater depth than presented in the assigned readings. **It is imperative that you come to class prepared to participate!**
- I reserve the right to alter the syllabus during the semester in order to better meet the course objectives, account for missed classes, or to introduce new or alternative subject materials.
- All electronic devices (e.g. cell phones, pagers, ipods, etc.) must be turned off during lecture. Interruptions to class by such devices are inconsiderate to other students and will not be tolerated.
- Any incident of academic dishonesty will result in a “zero” score for the assignment/exam etc. and may result in receiving a failing grade (“F”) for the course.
- Use of any tobacco products is not permitted during this class.
- The University of Louisville is committed to providing access to programs and services for qualified students with disabilities. If you are a student with a disability and require accommodation to participate in and complete requirements for this class, contact the Disability Resource Center (Robbins Hall, 852-6938) for verification of eligibility and determination of specific accommodations.
- Sexual misconduct (including sexual harassment, sexual assault, and any other nonconsensual behavior of a sexual nature) and sex discrimination violate University policies. Students experiencing such behavior may obtain **confidential** support from the PEACC Program (852-2663), Counseling Center (852-6585), and Campus Health Services (852-6479). To report sexual misconduct or sex discrimination, contact the Dean of Students (852-5787) or University of Louisville Police (852-6111).
- Disclosure to **University faculty or instructors** of sexual misconduct, domestic violence, dating violence, or sex discrimination occurring on campus, in a University-sponsored program, or involving a campus visitor or University student or employee (whether current or former) is **not confidential** under Title IX. Faculty and instructors must forward such reports, including names and circumstances, to the University’s Title IX officer.
- For more information, see the Sexual Misconduct Resource Guide (<http://louisville.edu/hr/employeerelations/sexual-misconduct-brochure>).

Course Schedule

Date	Topic	Reading (Devlin)
1/9	Cell biology and chemistry	Chapter 1
1/11	Thermodynamics/organic chemistry	Chapter 14.1-2, Appendix
1/13	Thermodynamics/organic chemistry	Chapter 14.1-2, Appendix
1/16	<i>No Class - Martin Luther King Holiday</i>	
1/18	DNA - Review	Chapter 2.1-3 (to p 33), 2.4 (p 54-58), 4.1-3 (to p 157)
1/20	Transcription - Review	Chapter 5.1-2 (to p 185), 5.3
1/23	Protein structure - Review	Chapter 3.1-3 (to p 85), 3.4-5, 3.7 (p 116-119)
1/25	Protein structure - Review	Chapter 3.1-3 (to p 86), 3.4-5, 3.7 (p 116-119)
1/27	Protein synthesis - Review	Chapter 6.1-4, 6.6
1/30	Introduction to enzymes	Chapter 10.1-2, 10.5-8
2/1	Introduction to enzymes	Chapter 10.1-2, 10.5-8
2/3	EXAM #1	
2/6	Introduction to enzymes	Chapter 10.1-2, 10.5-8
2/8	Enzyme activity	Chapter 10.3-4, 10.9-10
2/10	Enzyme activity	Chapter 10.3-4, 10.9-10
2/13	Enzyme activity	Chapter 10.3-4, 10.9-10
2/15	Membrane transport	Chapter 12.5-10
2/17	Membrane transport	Chapter 12.5-10
2/20	Cell Energy	Chapter 14.3-4
2/22	Cell Energy	Chapter 14.6
2/24	Cell Energy	Chapter 14.7-8
2/27	Cell Energy	Chapter 14.10
3/1	EXAM #2	
3/3	Glycolysis	Chapter 15.1-3
3/6	Glycolysis	Chapter 15.1-3
3/8	Glycolysis	Chapter 15.1-3
3/10	Glycolysis regulation	Chapter 15.4
3/13	<i>No Class – Spring Break</i>	
3/15	<i>No Class – Spring Break</i>	
3/17	<i>No Class – Spring Break</i>	
3/20	Gluconeogenesis	Chapter 15.5
3/22	Gluconeogenesis	Chapter 15.5
3/24	Glycogen metabolism	Chapter 15.6
3/27	Glycogen metabolism	Chapter 15.6
3/29	Pentose Phosphate Pathway	Chapter 16.1
3/31	EXAM #3	
4/3	Lipid structure and lipogenesis	Chapter 17.1-2, 17.4
4/5	Lipid structure and lipogenesis	Chapter 17.1-2, 17.4
4/7	Lipid transport and utilization	Chapter 17.3, 17.5-7
4/10	Lipid transport and utilization	Chapter 17.3, 17.5-7
4/12	Phosphoglycerolipids/sphingolipids	Chapter 18.1-2, 18.4
4/14	Phosphoglycerolipids/sphingolipids	Chapter 18.1-2, 18.4
4/17	Cholesterol/arachidonic acid	Chapter 18.3, 18.5-6
4/19	Cholesterol/arachidonic acid	Chapter 18.3, 18.5-6
4/21	Nitrogen metabolism	Chapter 19.1-3
4/24	EXAM #4	