CHEM 10055 - Molecules of Life - Fall 2017

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Dr. Earley's Schedule				
	M	**T**	**W**	**R**
9:00am		↑		
9:30am		Organic		
10:00am		Chemistry		
10:30am		I		
11:00am		Lab		
11:30am		↓		
12:00pm		↑		
12:30pm		*Office*		
1:00pm		*Hours*		
1:30pm	*Office Hrs*	↓	*Office Hrs*	*Office Hrs*
2:00pm 2:30pm	Organic I	Organic I	Organic I	Organic I
3:00pm	*Office Hrs*	*Office Hrs*	*Office Hrs*	*Office Hrs*
3:30pm	Molecules		Molecules	
4:00pm	of Life		of Life	

Additional office hours available by appointment

Text

General, Organic, and Biological Chemistry, by L. Frost & T. Deal; Pearson (*any edition*).

Purpose of this Course

Molecules of Life is an introductory chemistry course designed to introduce students to a broad range of basic chemical principles and apply these to living organisms. Topics to be covered are listed on the course schedule. In all cases, the emphasis will be on demonstrating how the chemical principles being discussed apply to biological systems.

This course will cover a rather large amount of material. If you feel you are falling behind, it is essential that you get help as soon as possible. The pace of this course and the fact that concepts build on each other makes it extremely difficult to catch up once a student falls behind.

Learning Outcomes

Upon successful completion of this course, students will be able to:

- Understand atomic, molecular, and ionic structure
- Be able to represent ionic and molecular species, including more complex organic structures, correctly
- Understand the role of polarity and geometry in determining behavior at the molecular level
- Describe the role of equilibrium in chemical systems
- Understand the role of energy in chemical reactions and its application to metabolism in a living system
- Understand important aspects of solution chemistry and its application to the chemistry of a living organism
- Understand the chemical basis for the functioning of biomacromolecules such as proteins, lipids, and DNA

Attendance

Attendance in lecture is optional, but strongly encouraged. Students are responsible for all material presented in lecture whether or not they are present. If you must miss class for an extended period, please see me.

Grading

Grades for this course will be based on the results of (a) three examinations worth 100 points each, (b) online quizzes, and (c) a cumulative final worth 100 points. Tentative dates for these exams are given in the lecture outline below. I will make every attempt to give reasonable notice if any of these dates change. Grades will be based on the scale given below and will not be curved or arbitrarily adjusted in any manner. Extra credit will not be given.

Examinations	3 x 100 pts	300 pts
Quizzes		50 pts
Final Exam	1 x 100 pts	100 pts
TOTAL		450 pts

Grade	**A**	**B+**	**B**	**B-**	**C+**	**C**	**C-**	**D**	**F**
%	90-100%	88-89%	82-88%	80-81%	78-79%	72-78%	70-71%	60-70%	<60%

Online Quizzes

I have set up a website containing supplementary information for this course. An account will be created for you on this site, and a portion of your grade will be based on completion of the quizzes on this site. These quizzes are designed to test concepts covered in lecture and should help you prepare for the exams. Details for accessing this system will be given during the first class period. It is important that students complete all of the assigned quizzes by the posted deadlines.

Examinations

The format of examinations will typically include varying combinations of multiple choice, true/false, matching, drawing structures, and/or short answer. Copies of examinations given in previous semesters will be made available on the course web site. It is important to realize the content of this course is dynamic, and these old examinations may not include all topics covered this semester and probably will *not* place the same emphasis on all topics between semesters.

The final examination is scheduled for the Wednesday, December 13 at 3:30pm. This examination will be cumulative.

If you are unable to attend any examination during the regularly scheduled time, you must contact Dr. Earley *before* the examination is given to arrange a makeup examination. Makeups must be normally completed within one week of the scheduled date, and will only be given for legitimate, documented excuses. All makeup exams MUST be completed before the start of finals week.

Office Hours

Office hours are listed near the top of this syllabus. If you would like to meet with me outside of these normal times, see me before or after class (or email or call) and we can set up additional time to meet.

University Policy/General Information

Information on various University policies (Academic honesty, Students with disabilities, etc.) and other general information (email accounts, posting of grades, etc.) is posted on the course website. This information should be considered as part of this syllabus and is available at:

https://delta.stark.kent.edu/chemistry/KSU/UniversityPolicy

Tentative Schedule

Dates	Monday	Wednesday
Aug 28, 30	Ch. 1.3-1.5 Sci. Method, Measurements, Metric System	Ch. 1.1-1.2, 1.6 Conversions, Classifying Matter
Sept 4, 6	**LABOR DAY**	**Class Canceled** Nuclear Chemistry section (Website)
Sept 11, 13	Ch. 2, Ch. 3.4 Nuclear Chemistry summary, Covalent Bonds	Ch. 3.4 Covalent Bonds & Lewis Structures (cont.)
Sept 18, 20	Ch. 3.6-3.7, 7.1-7.3 Molecular Shapes, Polarity, Intermolecular Forces	Ch. 4, 7.1-7.3, 7.5-7.6 Organic Compounds, Lipids
Sept 25, 27	Ch. 7.5-7.6 Membranes, Review	**Exam #1**
Oct 2, 4	Ch. 1, 3.5 Moles and Molecular Weights	Ch. 3.1-3.3 Ionic Compounds
Oct 9, 11	Ch. 8, 7.4 Solutions and Concentrations, Osmosis	Ch. 9.1-9.2, 9.4 Electrolytes, Acids and Bases
Oct 16, 18	Ch. 9.4-9.6 Equilibrium, pH, & pK_a	Ch. 9.7 Amino Acids
Oct 23, 25	Ch. 10.1-10.7, 1.6 Proteins, Chemical Equations and Balancing	Ch. 5 Balancing, Kinetics, Chemical Reactions
Oct 30 Nov 1	Ch. 5 Coupling Rxns, Review	**Exam #2**
Nov 6, 8	Ch. 6.1-6.3 Carbohydrates: Monosaccharides	Ch. 6.4-6.7 Carbohydrates: Di- and Polysaccharides
Nov 13, 15	Ch. 5.4 Oxidation/Reduction	Ch. 12 Food & Metabolism
Nov 20, 22	Ch. 12 Food & Metabolism	**THANKSGIVING**
Nov 27, 29	Ch. 11 DNA	Ch. 4.5 Isomers, stereoisomers, Review
Dec 4, 6	**Exam #3**	Final Exam Review

All dates listed above are tentative and are subject to change.
Final examination for this class is scheduled for Wednesday, December 13 at 3:30pm