SYLLABUS

DEPARTMENT: Chemistry
COURSE PREFIX & NO: TBD
COURSE TITLE: Elementary Bioorganic Chemistry
INSTRUCTOR: TBD
OFFICE LOCATION: TBD
LAB: TBD
OFFICE HOURS: TBD
PHONE EXT: TBD
E-MAIL: TBD
COURSE CREDIT: 4
PREREQUISITES: Chemistry for Health Sciences and Introductory Biology

COURSE DESCRIPTION: CHEM-TBD is an introductory course, which is designed exclusively (and required) for nursing majors. It is a one-semester course that will discuss fundamental principles of Organic Chemistry and Biochemistry basic to the understanding of the health related sciences. Fundamentals of organic nomenclature and a survey of the physical, chemical and biological properties of the main organic functional groups will be covered. Furthermore, a survey of relevant elementary Biochemistry Principles will be discussed with an emphasis on Carbohydrates, Proteins, Enzymes, and Bioenergetics. Four hours of lecture and two hours of laboratory per week are required.

TEXTBOOK REQUIRED:


SCHEDULE/TOPICS/ASSIGNMENTS:

<table>
<thead>
<tr>
<th>DATE</th>
<th>WEEK</th>
<th>TOPIC</th>
<th>CHAPTER</th>
<th>Concept/Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBD</td>
<td>1</td>
<td>Overview and Review of Organic Chemistry</td>
<td>11-12</td>
<td>Introduction and safety</td>
</tr>
<tr>
<td>TBD</td>
<td>2</td>
<td>Alcohols, Phenols, Thiols, and Ethers</td>
<td>13</td>
<td>Synthesis of Aspirin and Acetaminophen</td>
</tr>
<tr>
<td>TBD</td>
<td>3</td>
<td>Aldehydes and Ketones and Chiral Molecules</td>
<td>14</td>
<td></td>
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<tr>
<td>TBD</td>
<td>4</td>
<td>Carbohydrates</td>
<td>15</td>
<td>Organic Reactions: Examine biological relevant reactions.</td>
</tr>
<tr>
<td>TBD</td>
<td>5</td>
<td>Carboxylic Acids and Esters</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>TBD</td>
<td>6</td>
<td>Lipids</td>
<td>17</td>
<td>Organic Reactions: Examine biological relevant reactions.</td>
</tr>
<tr>
<td>TBD</td>
<td>7</td>
<td>Amines and Amides</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>TBD</td>
<td>8</td>
<td>Amino Acids and Proteins: Protein Structure and Function</td>
<td>19</td>
<td>Lactase Dehydrogenase, heart attack case study.</td>
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<tr>
<td>TBD</td>
<td>9</td>
<td>Enzymes and Vitamins</td>
<td>20</td>
<td></td>
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<tr>
<td>TBD</td>
<td>11</td>
<td>Overview of metabolism</td>
<td>22-24</td>
<td></td>
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<tr>
<td>TBD</td>
<td>12</td>
<td>Metabolic Pathways for Carbohydrates: ATP and Energy, Digestion of Carbohydrates: Gluconeogenesis, Glycogen Metabolism</td>
<td>22</td>
<td>Carbohydrates and Diabetes: Glucose Testing</td>
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<tr>
<td>TBD</td>
<td>13</td>
<td>Metabolism and Energy Consumption: The Citric Acid Cycle: Electron Transport, and</td>
<td>23</td>
<td></td>
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</tbody>
</table>
COURSE EVALUATION AND GRADING SCALE:
Five hour long examinations will be given during the semester. Each examination will be worth 100 points. Quizzes and homework will be assigned during the semester. The quizzes will be administered during the first ten minutes of the class. Students entering the class after the quiz has been handed out will not be permitted to take the quiz. Anyone caught cheating on an examination will automatically receive and “F” for the exam and could fail the course. Please refer to the University policy on cheating for more information.
Students are required to complete all of the laboratory experiments and submit the laboratory report for grading. Failure to submit all lab reports will result in the student receiving an “F” for the course. “Dry Labbing” and plagiarism will not be tolerated. Anyone violating this policy will fail the course. The course will be evaluated as follows:

Course Evaluation
Hour Examinations (500 Points) 50%
Homework/Quizzes (50 Points) 5%
Laboratory (200 Points) 20%
Final Exam (250 Points) 25%
Total 100%

The following grading scheme will be used to assign letter grades:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points Earned</th>
<th>Minimum Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1000-920</td>
<td>92%</td>
</tr>
<tr>
<td>A-</td>
<td>919-880</td>
<td>88%</td>
</tr>
<tr>
<td>B+</td>
<td>879-830</td>
<td>83%</td>
</tr>
<tr>
<td>B</td>
<td>829-790</td>
<td>79%</td>
</tr>
<tr>
<td>B-</td>
<td>789-750</td>
<td>75%</td>
</tr>
<tr>
<td>C+</td>
<td>749-700</td>
<td>70%</td>
</tr>
<tr>
<td>C</td>
<td>699-660</td>
<td>66%</td>
</tr>
<tr>
<td>C-</td>
<td>659-630</td>
<td>63%</td>
</tr>
<tr>
<td>D+</td>
<td>629-580</td>
<td>58%</td>
</tr>
<tr>
<td>D</td>
<td>579-540</td>
<td>54%</td>
</tr>
<tr>
<td>D-</td>
<td>539-500</td>
<td>50%</td>
</tr>
<tr>
<td>F</td>
<td>499-0</td>
<td>0%</td>
</tr>
</tbody>
</table>

CLASSROOM POLICIES (ITALICIZED WORDS ARE UNIVERSITY POLICY)

1. ATTENDANCE:
   Attendance will be taken daily. Any student missing four or more classes will automatically fail the course. Students are expected in class on time. Lateness will not be tolerated. Two tardiness’ constitute one absence.
2. **Attendance.** Lincoln University uses the class method of teaching, which assumes that each student has something to contribute and something to gain by attending class. It further assumes that there is much more instruction absorbed in the classroom than can be tested on examinations. Therefore, students are expected to attend all regularly scheduled class meetings and should exhibit good faith in this regard. For the control of absences, the faculty adopted the following regulations:

- Four absences may result in an automatic failure in the course.
- Three tardy arrivals may be counted as one absence.
- Absences will be counted starting with whatever day is specified by the instructor but not later than the deadline for adding or dropping courses.
- In case of illness, death in the family, or other extenuating circumstances, the student must present documented evidence of inability to attend classes to the Vice President for Student Affairs and Enrollment Management. However, in such cases the student is responsible for all work missed during those absences.
- Departments offering courses with less than full-course credit will develop and submit to the Vice President for Student Affairs and Enrollment Management a class attendance policy in keeping with the above.
- Students representing the University in athletic events or other University sanctioned activities will be excused from class (es) with the responsibility of making up all work and examinations. The Registrar will issue the excused format to the faculty member in charge of the off- or on-campus activity for delivery by the student(s) to their instructors.

3. **Missed Information.** It is the responsibility of the student to obtain information that he/she missed while not in class. The student should meet with his/her classmates to obtain the information or meet with the professor during office hours.

4. **Assignments.** Assignments are due at the time announced during the class.

5. **Academic Integrity.** Students are responsible for proper conduct and integrity in all of their scholastic work. They must follow a professor's instructions when completing tests, homework, and laboratory reports, and must ask for clarification if the instructions are not clear. In general, students should not give or receive aid when taking exams, or exceed the time limitations specified by the professor. In seeking the truth, in learning to think critically, and in preparing for a life of constructive service, honesty is imperative. Honesty in the classroom and in the preparation of papers is therefore expected of all students. Each student has the responsibility to submit work that is uniquely his or her own. All of this work must be done in accordance with established principles of academic integrity.

**Acts of Academic Dishonesty (Cheating)**
Specific violations of this responsibility include, but are not limited to, the following:

- Copying, offering and/or receiving unauthorized assistance or information in examinations, tests, quizzes; in the writing of reports, assigned papers, or special assignments, as in computer programming; and in the preparation of creative works (i.e. music, studio work, art).
- The fabrication or falsification of data, results, or sources for papers or reports.
- The use of unauthorized materials and/or persons during testing.
- The unauthorized possession of tests or examinations.
- The physical theft, duplication, unauthorized distribution, use or sale of tests, examinations, papers, or computer programs.
- Any action that destroys or alters the work of another student.
- Tampering with grades, grade books or otherwise attempting to alter grades assigned by the instructor.
The multiple submission of the same paper or report for assignments in more than one course without the prior written permission of each instructor.

Plagiarism

If a student represents “another person's ideas or scholarship as his/her own,” that student is committing an act of plagiarism. The most common form of plagiarism among college students is the unintentional use of others' published ideas in their own work, and representing these ideas as their own by neglecting to acknowledge the sources of such materials. Students are expected to cite all sources used in the preparation of written work, including examinations. It is each student's responsibility to find out exactly what each of his/her professors expects in terms of acknowledging sources of information on papers, exams, and assignments. It is the responsibility of each faculty person to state clearly in the syllabus for the course all expectations pertaining to academic integrity and plagiarism. Sanctions peculiar to the course should also be explained in the syllabus.

Sanctions

- **A:** Warning - A written notice that repetitions of misconduct will result in more severe disciplinary action. The warning becomes part of the student's file in the Office of the Registrar and, if there is no other example of misconduct, is removed at the time of graduation.
- **B:** Failure for project (exam, paper, experiment).
- **C:** Failure of course.
- For serious and repeat offenses, the University reserves the right to suspend or expel.

Imposition of Sanctions

- **First Offense - A and/or B**
- **Second and Subsequent offenses - B or C**
- Expectations and sanctions will be explained in every syllabus. Students failing a course because of an instance of academic dishonesty may not drop the course. The student may appeal a charge of academic dishonesty within ten days of receiving notice of same. The appeal will be heard by an Academic Hearing Board (AHB) consisting of the chairs of each division of study (or their designees). Files on violations of this academic integrity code will be kept in the Office of the Registrar.

6. **Tests/Exams.** All exams must be taken during the scheduled time. Failure to take the exam during the scheduled time will result in an F for a grade. Proper documentation is required in the event that an emergency prevents a student form taking the exam at the scheduled time.

7. **Wireless Devices.** Use of wireless devices is not permitted in the classroom or during instructional time. Students must keep such equipment turned off or in a silent mode during class time. Cell phones that ring and/or answered during classroom instruction are subject to confiscation by the professor. Confiscated cell phones will be turned over to the Dean of Students.

**Student Learner Outcomes:**

After taking this course students are expected to proficient with the following topics:

1. Name and draw the major organic functional groups (alcohols, thiols, aldehydes, ketones, acids and acid derivatives, amines).

2. Apply the concepts of intermolecular forces to organic molecules.

3. Draw and complete substitution and addition reactions involving aldehydes, acids, and acid derivatives.

4. Describe, draw, and identify stereoisomers.
5. Identify and draw basic structural elements of proteins (peptides), lipids, carbohydrates and nucleic acids.

6. Explain the chemical reactivity, structural properties, and biological activities of the four major groups of biological macromolecules.

7. Explain the basic principles of bioenergetics and biological redox reactions.

8. Describe the major anabolic pathways: glycolysis, Kreb's, "-oxidation, especially as they relate to basic nutrition.

9. Explain the relationship between metabolic cofactors and vitamins.

10. Understand alterations in metabolism, especially Type II diabetes.

**Assessment:**
Several questionnaires will be administered throughout the course. The questionnaires are designed to assess student-learning outcomes. Additionally, exams, quizzes, and lab reports will be used to assess student learner outcomes and address deficiencies if needed.