COURSE NAME: (PHS236) ORGANIC CHEMISTRY II

5.0 Semester hours

INSTRUCTOR: Dr. Margaret Williams

OFFICE: Office #29

PHONE: 573-518-2150 Office/Voice Mail

E-MAIL: MWILLIAM@MineralArea.edu

OFFICE HOURS: M, W, F 9:00 – 10:50 a.m.
or by appointment

DEPARTMENT CHAIR: Ms. Nancy Petersen

Office #33

573-518-2227

COURSE DESCRIPTION:
The second half of a two semester course where the theory of the fundamental reactions of organic compounds are studied and practiced. This course will lay a sound foundation of organic chemistry for the student who has chosen chemistry or chemical engineering as a major field of study. It is also for the student who has chosen a field of study such as dentistry, premedicine, or pharmacy, where organic chemistry is a supporting subject. Three one-hour lectures and two three-hour laboratories per week. Part of the laboratory time may be used for problem solving when the need arises. The prerequisite for this course is the completion of Organic Chemistry I with a grade of C or better.

I. Textbooks:
The following textbooks and materials are REQUIRED:

---Bound composition book
---Safety goggles which will protect against splashes and impacts.
---Ink pen, dish soap, pipe cleaners.
---Molecular model set, available at the bookstore.

The following materials are SUGGESTED:

---Lab apron, available at the bookstore.
---Paper towels.

II. Course Objectives:

A. To understand the correlation between the structure of an organic molecule and its properties.
B. To understand the mechanisms of reactions.
C. To understand the methods of synthesis of organic compounds.
D. To show relevance between organic chemistry and everyday life.

III. Learning Experiences:

A. Students are expected to participate in lectures and discussions. In order to do so, students shall have read the reading assignment prior to class time.
B. Students will perform various investigations in the laboratory. The first experiments are devoted to the general techniques of crystallization, distillation, extraction, separation, and identification. The second half of the experiments are related to the lecture topics.
C. With the help of molecular models, students develop concepts of stereochemistry.
D. Students will view various audio-visuals such as videos and transparencies designed to stimulate interest, clarify concepts, and enrich the course content.

IV. Course Content:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Text Assignment</th>
<th>Laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Conjugated Unsaturated Systems</td>
<td>Chapter 15</td>
<td>Check-In/Review</td>
</tr>
</tbody>
</table>
Student Evaluation:
Homework --- Always do the Problems throughout and at the end of the chapter. Homework assignments will be given throughout the semester.
Quizzes --- Usually quizzes will be announced in advance. "Pop-quizzes" may also be given.
Exams --- The tentative exam schedule is shown below. At the end of the semester, the average of all hour exams will replace the lowest hour exam score.
Lab work --- The students are to keep a lab notebook, described later in the syllabus.

4 Exams, 100 points each .................. 400 points total
Final Exam 200 points ..................... 200 points
Homework,Quizzes ............................. 300 points
Lab reports, lab work ....................... 400 points
Attendance .................................. 100 points

V. Student Evaluation:
Homework --- Always do the Problems throughout and at the end of the chapter. Homework assignments will be given throughout the semester.
Quizzes --- Usually quizzes will be announced in advance. “Pop-quizzes” may also be given.
Exams --- The tentative exam schedule is shown below. At the end of the semester, the average of all hour exams will replace the lowest hour exam score.
Lab work --- The students are to keep a lab notebook, described later in the syllabus.

4 Exams, 100 points each .................. 400 points total
Final Exam 200 points ..................... 200 points
Homework,Quizzes ............................. 300 points
Lab reports, lab work ....................... 400 points
Attendance .................................. 100 points

VI. Special Policies:

SPECIAL NEEDS:
If you have special needs as addressed by the Americans with Disabilities Act and need any test or course materials provided in an alternative format, notify your instructor immediately. Reasonable efforts will be made to accommodate your special needs. The Access is located in AS103 under the direction of Lisa Leftridge, ext 2152.

ABSENCES:
In accordance with College policy, students will be dropped from class for nonattendance after two weeks of consecutive unexcused absences. After THREE unexcused absences/tardies, each time you miss or are late to a class/lab you will lose FIVE points. These points will be deducted at the end of the semester from your 100 possible attendance points.

QUIZES AND EXAMS:
QUIZZES missed because of an unexcused absence ARE NOT MADE-UP  QUIZZES missed because of an excused absence are to be made up the day that the student returns to class. Exams are to be taken early or at the scheduled time. EXAMS missed because of an unexcused absence are subject to a 25 point per day penalty. Missed exams will be taken to the Learning Center by noon the next day. Students missing an exam because of an excused absence are to make exam arrangements to take the exam EARLY.

Sometimes exams might be taken in the Learning Center, outside of regular class time.
At the end of the semester, the average of all hour exams will replace the lowest hour exam score.

LATE WORK:
For each day your homework is late, you will lose 5 points.

BEHAVIOR:
Dishonesty, plagiarism, or cheating will not be tolerated and will result in disciplinary action, depending on the
offense, ranging from a zero on the assignment to an F for the course. Respecting the learning environment of fellow students is an essential part of learning. Disruptive behavior which is for example: disruptive whispering/talking/chattering during class, coming to class late, getting up during the middle of class, leaving class before it is dismissed, or using a cell phone during class, whether in the classroom or the lab, will not be tolerated. Please turn OFF your cell phones.

**EXTRA CREDIT:**
Usually there are Bonus Points on each test. Generally there is an extra credit assignment given during the semester. MAC Special Events Cards may be turned in for 2 points per event. Sports events are limited to one of each type per semester. The MAC Special Events Cards are available in the Student Services Office. A maximum of 10 extra credit points can be earned by using MAC Special Events Cards.

**LABORATORY:**
Part of your lab grade will be based on your technique and lab behavior. By this I mean, do you need reminding to wear your goggles, do you dress appropriately, do you follow safety precautions and the rules, are you prepared for lab, do you know what you are doing, how is your technique????
So, you are expected to come to lab prepared. This means you have read the lab, completed your notebook, and are ready to begin. Your lab notebook must be bound and have its pages numbered. You must write in ink, not pencil. Start on page 3 with a TABLE OF CONTENTS. You will keep adding entries to the Table of Contents as the semester progresses. Leave a few pages in case the Table of Contents runs a bit long. **Each entry into your lab book is to be dated.** The format of the write-up of each experiment should be as follows:

**TITLE ---** this will be the chapter number and title
**PRELAB ---** Many times there is a Prelab Exercise. You are to do this Prelab Exercise.

**EXPERIMENT 1 TITLE ---** this will be the title of the specific experiment you will be doing.
**PURPOSE ---** this is to be a complete sentence.
**CHEMICAL AND EQUIPMENT LIST ---** here list the chemicals you will be using, include structures, melting points, densities, any special handling, warnings, etc. Also include the materials and equipment you will need. Sometimes it helps to have a picture of the apparatus you will be building. This is a list, you do not need complete sentences here.
**CHEMICAL REACTION ---** write the reaction, if there is one. Show the mechanism as well.

**PROCEDURE**
Write out the procedure in a step-wise fashion. These do not need to be in complete sentences. Write using only half of the page.
Include “Cleaning Up” in your procedure.
The goal of this section is that I should be able to take your procedure and do the experiment without the aid of your textbook.

**DATA AND OBSERVATIONS**
On the other half of the page, for each step in your procedure, write what you did or did not do, note procedural changes such as helpful techniques that the textbook forgot to mention. Include your observations such as the color of solutions, shape of crystals, behavior of the reaction. Include the data such as masses, melting points, volumes, heating/cooling times. Be sure to include the proper units. Include your calculations and show your work and units. Watch your significant figures.
Again you do not need to use complete sentences in this section.

**RESULTS AND CONCLUSIONS**
Summarize your results. This is where your calculation of % yield and reporting of the final melting point go. Include reasons why the exp didn’t work as planned, how to make it better, why didn’t the exp work the first three times you tried it but it worked the forth time, what did you do differently. **Answers any questions your lab text asks in the course of the experiment and include any graphs you are told to make.** What did you learn???? What can you conclude? How does your data support your conclusion? Write your results and conclusions in complete sentences.

**EXPERIMENT 2 TITLE ---** this will be the title of the second experiment in that chapter which you will be doing.

Continue as above until all assigned experiments in that chapter are done........

**QUESTIONS**
At the end of each chapter are questions which are to be answered. Write the answers in complete sentences.

<table>
<thead>
<tr>
<th>Organic Chem II</th>
<th>Monday</th>
<th>Wednesday</th>
<th>Friday</th>
<th>LAB ASSIGNMENT FOR THE WEEK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 2008</td>
<td>Chapter 15 Conjugated Systems</td>
<td>Chapter 15 Conjugated Systems</td>
<td>Chapter 15 Conjugated Systems</td>
<td>Safety Check-In REVIEW</td>
</tr>
<tr>
<td>Date</td>
<td>Chapter 15</td>
<td>Chapter 15</td>
<td>Chapter 15</td>
<td>Chapter 48</td>
</tr>
<tr>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Jan. 21</td>
<td>NO CLASS</td>
<td>Martin Luther King Jr. Day</td>
<td>NO CLASS</td>
<td>Diels-Alder Reaction Exps 1, 2, 3, 4, 5</td>
</tr>
<tr>
<td>Jan. 28</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>Diels-Alder Reaction Exps 1, 2, 3, 4, 5</td>
</tr>
<tr>
<td>Feb. 4</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>Finish-Up EXAM 1 Chapter 15 and Review</td>
</tr>
<tr>
<td>Feb. 11</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>Chapter 28 Nitration of Methyl Benzoate, Exp 1</td>
</tr>
<tr>
<td>Feb. 18</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>Chapter 30 Alkylation of Mesitylene, Exp 1</td>
</tr>
<tr>
<td>Feb. 25</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>Chapter 31 Friedel-Craft Reaction: Anthraquinone and Anthracene, Exps 3, 5, 7, 8</td>
</tr>
<tr>
<td>March 3</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>Chapter 31 Friedel-Craft Reaction: Anthraquinone and Anthracene, Exps 3, 5, 7, 8</td>
</tr>
<tr>
<td>March 3</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>Chapter 32 Friedel-Craft Acylation of Ferrocene</td>
</tr>
<tr>
<td>March 10</td>
<td>SPRING BREAK -- NO CLASS</td>
<td>SPRING BREAK -- NO CLASS</td>
<td>SPRING BREAK -- NO CLASS</td>
<td></td>
</tr>
<tr>
<td>March 17</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>EXAM 2 CHAPTS. 16-17 No lab MARCH 20 Science Fair</td>
</tr>
<tr>
<td>March 24</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>Chapter 36 Aldehydes and Ketones Exp 1 – 8</td>
</tr>
<tr>
<td>March 31</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>Chapter 43 Amines Exp 1 – 5</td>
</tr>
<tr>
<td>April 7</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>Chapter 46 Dyes and Dyeing</td>
</tr>
<tr>
<td>April 14</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>Part 1: Make one dye, Exp 6</td>
</tr>
<tr>
<td>April 21</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>Part 2: Dyeing, Exp 1-9</td>
</tr>
<tr>
<td>April 28</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>Finish-Up EXAM 3 CHAPTS. 18-19</td>
</tr>
<tr>
<td>May 5</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
<td>Chapter 37 Aldol Condensation Chapter 67 Polymers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Part 1: Exp 1 – Nylon OR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Part 2: Exp 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Chapter 63 Carbohydrates and Sweeteners, Exp 1-6 OR Chapters 61 and 62 Chemiluminescence and Photochemistry</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EXAM 4 CHAPTS. 20-21</td>
</tr>
</tbody>
</table>

Final is May 14th at 10 a.m.