Spr 2014
Fayetteville State University
College of Arts and Sciences
Department of Chemistry & Physics

CHEM 226 Organic Chemistry II - Lab

I. Locator Information:
Instructor: Dr. Bidisha Bose-Basu
Office Location: SciTec 311
Office Phone: (910) 672 1052

Office hours (email appointments are encouraged):

Course: CHEM 226 Organic Chemistry II - Lab
Semester Credit Hours: 1

Day and Time Class Meets: 11:50 - 12:55 MTWR
Total Contact Hours for Class: 15 wks × 180 min/wk = 45 hours (Lab)
Prerequisite: Undergraduate level CHEM 223 & CHEM 224 Minimum Grades of C
Corequisites: CHEM 225.

Email address: bbosebas@uncfsu.edu

FSU Policy on Electronic Mail: Fayetteville State University provides to each student, free of charge, an electronic mail account (username@broncos.uncfsu.edu) that is easily accessible via the Internet. The university has established FSU email as the primary mode of correspondence between university officials and enrolled students. Inquiries and requests from students pertaining to academic records, grades, bills, financial aid, and other matters of a confidential nature must be submitted via FSU email. Inquiries or requests from personal email accounts are not assured a response. The university maintains open-use computer laboratories throughout the campus that can be used to access electronic mail.

Rules and regulations governing the use of FSU email may be found at http://www.uncfsu.edu/PDFs/EmailPolicyFinal.pdf

!! CHECK BLACKBOARD & E-MAIL REGULARLY !!

II. Course Description: A course investigating the nomenclature, synthesis, reactions and reaction mechanism, and methods for analysis of functionally substituted organic compounds with laboratory activities extending the topics started in CHEM 223 and emphasizing syntheses and technical writing.
Prerequisites: CHEM 223 and 224 with a grade of “C” or higher in the course. Corequisites: CHEM 225.

COURSE COMPETENCIES: The course enables the students to acquire competencies required for registration and completion of first semester biochemistry. This course will provide a thorough understanding of the nomenclature of benzene derivatives, alcohols, aldehydes, carboxylic acids and carboxylic acid derivatives. This course will provide students with concepts necessary to understand and explain the stabilities of aromatic compounds. Students also demonstrate an understanding of the following types of reactions and can predict both the regiochemistry and stereoscopy of these: electrophilic aromatic substitution, aldol condensation, Diels-Alder reaction, oxidation and reduction reactions. Students will demonstrate knowledge of named reactions and will be introduced to various biochemistry terms. Finally, students will be able to interpret NMR and IR spectra of alkanes, alkyl halides, alcohols, ethers and benzene derivatives.

III. Disabled Student Services: In accordance with Section 504 of the 1973 Rehabilitation Act and the Americans with Disabilities Act (ACA) of 1990, if you have a disability or think you have a disability to please contact the Center for Personal Development in the Spaulding Building, Room 155 (1st Floor); 910-672-1203, as early in the semester (preferably within the first week) as possible.

IV. Textbook & other Course Requirements:
1. SAFETY GOGGLES MUST BE PURCHASED BY STUDENT BEFORE STARTING TO ATTEND ANY LAB.
   As of Spring 2011 the Department of Chemistry and Physics will no longer provide students with safety glasses. Fayetteville State University requires students to wear safety glasses while in the laboratory. Safety glasses can be purchased at the FSU Book Store: safety glasses must meet ANSI standard if purchased elsewhere. It is the student’s responsibility to bring them the day of lab and NOT to store them in Lab drawers. (laboratory)

   Molecular models are also required-available in the bookstore.

   Additionally, you will need a Laboratory manual customized for the course that is available at the FSU Bookstore.

V. Learning Outcomes:
The instructional goals of this course are to provide the student with: Concepts and higher-level skills (i.e., analysis, synthesis, and evaluation) necessary for additional study in organic chemistry (e.g. CHEM 225)
through both active and passive learning. Opportunities exist in which one can develop technical communication (both oral and written) skills. The student will:

1. Follow safe laboratory practices:
   (a) Be familiar with chemical hygiene.
   (b) Be in the habit of wearing the appropriate personal protection equipment.
   (c) Be familiar with the proper use of safety equipment.
   (d) Consistently observe administrative controls.

2. Develop good laboratory techniques:
   (a) Be able to name chemical glassware and set up organic apparatus such as simple distillation, fractional distillation, vacuum filtration, and extraction.
   (b) Know when precise, accurate results are necessary-and when they are not necessary.
   (c) Make good use of time in the laboratory.
   (d) Use a laboratory notebook consistently, recording data and observations.
   (e) Develop basic understanding about the details of the individual labs.
   (f) Know how to operate scientific instrumentation such as NMR and IR
   (g) Know how to interpret NMR and IR spectra.

3. Be able to report data in the format of a scientific lab report:
   (a) Write an experimental procedure that follows a logical sequence.
   (b) Indicate the correct kind of details in the experimental procedure.
   (c) Write a lab report free of spelling and grammatical errors, in the proper tense and voice, and with units written properly.
   (d) Indicate results in the form of tables, with graphs used as appropriate.
   (e) Write an objective, introduction, and conclusion that has the correct kinds of information.

VI. Course Requirements and Evaluation Criteria: The final letter grade will be assigned according to University Catalog: 

A. Grading Scale: 

<table>
<thead>
<tr>
<th>Percentile Points</th>
<th>Letter Grade</th>
<th>Accomplishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 - 100%</td>
<td>A</td>
<td>Excellent</td>
</tr>
<tr>
<td>80 - 89.9%</td>
<td>B</td>
<td>Proficient</td>
</tr>
<tr>
<td>70 - 79.9%</td>
<td>C</td>
<td>Acceptable</td>
</tr>
<tr>
<td>60 - 69.9%</td>
<td>D</td>
<td>Poor</td>
</tr>
<tr>
<td>below 59.9%</td>
<td>F</td>
<td>Unacceptable</td>
</tr>
<tr>
<td></td>
<td>FN</td>
<td>Failing due to non-attendance</td>
</tr>
</tbody>
</table>

B. Interim Grades: 

Interim grades will be assigned from the first week of the semester until the deadline for class withdrawals. Interim grades are used for informational and warning purposes only; they are not part of your permanent transcript and have no effect on your grade-point average (GPA). In accordance with university policy, the following changes have been implemented:

**Please note: there are no longer WN grades!**

WN (withdrawal due to non-attendance) grades have been discontinued. This means that it is the student’s responsibility to withdraw from classes prior to the published deadline.

Final grade FN (failure due to non-attendance). This final grade is assigned to students who are on a class roster, but who never attend the class. An FN grade is equivalent to an F grade and adversely affects your GPA.

Interim Grade X (No-show). This grade is assigned to students who are on a class roster, but who never attend class. If you have an X grade, either begin attending class or withdraw from it. If you do not take action in response to an X grade, you will receive a final grade of FN.

Interim Grade EA (Excessive Absences). This grade is assigned to students whose class absences exceed 10% of the total contact hours. If you have an EA grade, you are in jeopardy of failure if you do not take immediate actions. Either resume attending the class or withdraw from it.

**NOTE: X, EA, FN are the part of Early Alert System.**

C. Assignments: 

<table>
<thead>
<tr>
<th>Component Lab Reports</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bromination of Alkenes</td>
<td>10</td>
</tr>
<tr>
<td>Nuclear Magnetic Resonance Lab</td>
<td>10</td>
</tr>
<tr>
<td>Infrared Spectroscopy Lab</td>
<td>10</td>
</tr>
<tr>
<td>Synthesis of Ethanol</td>
<td>10</td>
</tr>
<tr>
<td>Oxidation of Cyclohexanol</td>
<td>10</td>
</tr>
<tr>
<td>Identifying and Unknown Aldehyde or Ketone</td>
<td>10</td>
</tr>
<tr>
<td>Aldol Condensation: synthesis of Dibenzlacetone</td>
<td>10</td>
</tr>
</tbody>
</table>
Graded Assignments –Pre-Lab, experiments, post-labs & Exams will be used to determine student’s final grade.

The progress of each student will **be evaluated & final grade will be determined ONLY by means of**

by above assignments.

The final exam date will be posted on University registrar’s website and announced in class. **Final Exam for Graduating Seniors -inform me ahead of time if you are graduating.**

D. **DROP DEADLINE:**

No student will be allowed to drop the class after the official university drop deadline listed in the Academic Calendar, 2013-2014, which is Friday Mar 28, 2014 for this term. If a student stops attending class after this date, they will receive a final grade of FN (failure due to non-attendance). An FN grade is equivalent to an F grade in the calculation of your grade-point average (GPA).

E. **ATTENDANCE REQUIREMENTS:**

<table>
<thead>
<tr>
<th>STUDENT RESPONSIBILITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. <strong>Attend all labs,</strong> except in cases of illness and other unforeseen emergencies including “military related functions”. It is the student’s responsibility to make up any and all missed work. The university policy concerning absences from class will be strictly enforced. Note that a missed lab session counts as three hours of absence, and for the classes that run for 1 hour four times a week, a missed class counts as one hour of absence.</td>
</tr>
<tr>
<td>B. <strong>Be punctual!!</strong> Attendance will be taken promptly at the beginning of each class. Students will be charged with a tardy for departure from class before the specified end of class. The <strong>accumulation of three (3) tardies will be counted as one (1) absence.</strong> Students are expected to arrive to class on time, remain in class until dismissed by the instructor, and refrain from preparing to leave class until it is dismissed.</td>
</tr>
<tr>
<td>C. Students must arrive at the laboratory on time: your instructor will be too busy with answering questions and monitoring safety to provide late arriving students with a separate lecture and/or demonstration. You must come prepared for the laboratory-having read the laboratory manual or the hand-out. Also students must clean up behind themselves. A student will be warned three times to clean up behind themselves, after the third warning, the student will be deducted 5 points for the lab that the incident occurred.</td>
</tr>
<tr>
<td>D. Participate actively in laboratory activities. Active attendance is expected of every student at all classes.</td>
</tr>
</tbody>
</table>

F. **POLICY ON MISSED OR LATE ASSIGNMENTS:**

It is the student’s responsibility to make up any and all missed work, in cases of medical demands or “military related” functions. **Students are expected to take examinations on the scheduled dates.** Missing an exam will require a written medical or supervisor excuse. Keep in mind that all homework, pre-lab, in-lab, post-lab and written lab reports must be submitted within a specified time frame (for labs, one week at the latest after lab exercise) in order to be accepted and graded. Late submission will **NOT** be graded. There will be no make-up for labs administered. Please note: If these evaluation criteria must be revised because of extraordinary circumstances, the instructor will distribute a written amendment to the syllabus.

G. **OTHER STUDENT EXPECTATIONS:**

The instructor will respect all students and will make every effort to maintain a classroom climate that promotes learning for all students. Students must accept their responsibility for maintaining a positive classroom environment by abiding by the following rules:

1. Students who are absent from class must inform me ahead of time if you are graduating.
2. Each student must work towards an understanding of the material discussed in class and the textbook, including the basic language of chemistry, chemical concepts and principles, and applying chemical principles to solving chemistry-related problems. (Note that you are expected to be familiar with many concepts introduced in General Chemistry.)
3. Each student is expected to read the assigned chapters in the textbook. This will help in understanding key concepts and learning necessary factual material. Due to time constraints, it is not possible to cover each topic fully in lecture. Students are responsible for reading the text to fill in the details that are not covered specifically during class meetings.
4. Students are expected to refrain from disruptive behavior during class. Such behavior is rude and may cause you or those around you to miss an important point or announcement made in class.
5. Participate actively in classroom discussions and activities.
6. Take examinations at the scheduled dates and times.
7. Refrain from participating in all forms of academic misconduct (see below)
FSU Policy on Disruptive Behavior in the Classroom

The Code of the University of North Carolina (of which FSU is a constituent institution) and the FSU Code of Student Conduct affirm that all students have the right to receive instruction without interference from other students who disrupt classes.

FSU Core Curriculum Learning Outcome under Ethics and Civic Engagement (6.03): All students will “prepare themselves for responsible citizenship by fulfilling roles and responsibilities associated with membership in various organizations.” Each classroom is a mini-community. Students learn and demonstrate responsible citizenship by abiding by the rules of classroom behavior and respecting the rights all members of the class. The FSU Policy on Disruptive Behavior (see FSU website for complete policy) identifies the following behaviors as disruptive:

1. **Failure to respect** the rights of other students to express their viewpoints by behaviors such as repeatedly interrupting others while they speak, using profanity and/or disrespectful names or labels for others, ridiculing others for their viewpoints, and other similar behaviors;
2. Excessive **talking** to other students while the faculty member or other students are presenting information or expressing their viewpoints.
3. Use of **cell phones** and other electronic devices
4. Overt **inattentiveness** (sleeping, reading newspapers)
5. Eating in class (except as permitted by the faculty member)
6. Threats or statements that jeopardize the safety of the student and others
7. **Failure to follow reasonable requests of faculty members**
8. Entering class **late or leaving class early** on regular basis
9. Students will not pass notes or carry on **private conversations** while class is being conducted.
10. Students are not permitted to sleep in class, or be in laboratory without proper attire and safety goggles.

A student found cheating during exams may be dismissed from exam room and assigned an overall grade of an F in the course.

**Consequences for Failing to Meet Behavioral Expectations:**
The instructor may take the following actions in response to disruptive behavior. Students should recognize that refusing to comply with reasonable requests from the faculty member is another incidence of disruptive behavior.

1. Direct student to cease disruptive behavior.
2. Direct student to **change seating** locations.
3. Require student to have **individual conference** with faculty member. At his meeting the faculty member will explain the consequences of continued disruptive behavior.
4. Dismiss class for the remainder of the period. (Must be reported to department chair.)
5. **Lower** the student’s final exam by a maximum of one-letter grade.
6. File a complaint with the Dean of Students for more **severe disciplinary action**.

Students who believe the faculty member has unfairly applied the policy to them may make an appeal with the faculty member’s department chair.

### I. ACADEMIC MISCONDUCT:

As members of an academic community, each student is expected to preserve his or her personal integrity by refraining from all forms of academic dishonesty. Academic fraud includes, but is not limited to, the following:

1. Copying answers on an exam, quiz, homework assignment, or laboratory assignment from another student.
2. Plagiarism of written work, including laboratory reports, from the textbook, internet webpage, laboratory manual, or other published work.
3. Using notes or a crib sheet on an exam or quiz without the consent of the instructor. This includes writing notes on any part of your body.
4. Asking another student for help or answers during an exam, or providing such help to another student.
5. Having another person take an exam or quiz for you.
6. Stealing or having in one’s possession without permission a copy of an exam or quiz generated by the instructor prior to its administration.

**Evidence of cheating, in any form, on an exam or quiz will result in an "F" (0 points).** Any student caught cheating more than once could face more severe disciplinary measures, including expulsion from the university, in accordance with university policies as outlined under Disciplinary System and Procedures in the Fayetteville State University Student Handbook. The handbook may be obtained from the Office of Student Affairs located in the Collins Admin Building.
VII. Academic Support Resources

Academic support resources available for this class include Center for Promoting STEM Education & Research (CPSER) in Lyons Science Annex. For registration please contact Ms. Haskins, http://www.uncfsu.edu/cpser. Programs like OpTIMUM, RISE, NCLSAMP, FICAM, McNair; offers FREE tutoring services. Students need to contact these program coordinators independently and sign-up. Tutoring slots are limited, so early registration is encouraged.

The University College Learning Center in the H.T. Chick Building in Room 216 C is available to assist students with writing, mathematics, and reading comprehension. Students needing extra help must sign-up for Student Support services for tutoring.

Additional textbooks related to the course are available in the FSU Library.

FSU strongly encourages students to utilize Criterion and Smarthinking, the online resources with tutoring in writing, math, biology, chemistry, physics, economics, accounting, statistics and Spanish. Visit Smarthinking Student Site at http://blackboard.uncfsu.edu

VIII. Course Outline and Assignment Schedule

The following is a tentative outline of topics to be covered in CHEM 226 this semester. Note that due to time constraints, we will not be able to cover each topic fully in class. However, you are responsible for reading the text/lab manual to fill in the details that are not covered specifically during class meetings. Students are responsible to keep abreast of any and all changes to the schedule. In the event that a particular laboratory session is cancelled due to inclement weather, etc., the schedule will resume starting with the laboratory experiment that was missed.

CHEMISTRY 226 LAB SCHEDULE:

<table>
<thead>
<tr>
<th>week</th>
<th>Lab #</th>
<th>Experiment Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TECH0700</td>
<td>No Labs</td>
</tr>
<tr>
<td>2</td>
<td>SYNT0719</td>
<td>Brominating an alkene p.157 (Lab Report)</td>
</tr>
<tr>
<td></td>
<td>TECH0710</td>
<td>Infrared Spectroscopy Lab p.349(Lab Report)</td>
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<tr>
<td></td>
<td></td>
<td>¹H Nuclear Magnetic Spectroscopy Lab (Lab Report)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>¹³C Nuclear Magnetic Spectroscopy Lab (Lab Report)</td>
</tr>
<tr>
<td>3</td>
<td>SYNT0740</td>
<td>Synthesis of Ethanol p. 237(Part 1)</td>
</tr>
<tr>
<td>4</td>
<td>SYNT0740</td>
<td>Synthesis of Ethanol p. 237(Part 2) (Lab Report)</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Oxidation of Cyclohexanol-Hand Out (Lab Report)</td>
</tr>
<tr>
<td>6</td>
<td>ANAL0728</td>
<td>Identifying and Unknown Aldehyde or Ketone, p. 13 (Lab Report)</td>
</tr>
<tr>
<td>7</td>
<td>SYNT 470</td>
<td>Preparation and Identification of Esters, p. 119(Lab Report)</td>
</tr>
<tr>
<td>8</td>
<td>SYNT0720</td>
<td>The Aldol Condensation: synthesis of Dibenzlacetone, p. 193 (Lab Report)</td>
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<td></td>
<td></td>
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<tr>
<td>9</td>
<td></td>
<td>Hand Out – Nitration Reaction (Lab Report)</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>Hand Out – Alkylation of Dimethoxybenzene (Lab Report)</td>
</tr>
<tr>
<td>11</td>
<td>SYNT0717</td>
<td>The Diels-AlderReaction of Anthracene with MaleicAnhydride, p.107(Lab Report)</td>
</tr>
<tr>
<td>12</td>
<td>REAC0446</td>
<td>Qualitative Testing for Carbohydrates p.63 / make-up lab</td>
</tr>
</tbody>
</table>

Laboratory Manager:
Grace Chavis
SciTec 232A
Ext. 1860
gchavis@uncfsu.edu

Laboratory reports must be typed.
A sample lab report will be available on Blackboard.
In the event that a particular laboratory session is cancelled due to inclement weather, etc., the schedule will resume starting with the laboratory experiment that was missed.
As of Spring 2011 the Department of Chemistry and Physics will no longer provide students with safety glasses. Fayetteville State University requires students to wear safety glasses while in the laboratory. Safety glasses can be purchased at the FSU Book Store; safety glasses must meet ANSI standard if purchased elsewhere. Glasses are not to be kept in the drawers, and it is the students’ responsibility to bring them the day of lab.

*In the event of an emergency, or reasonable excuse, and with the permission of the instructor one missed lab session can be made up at the end of the semester.

**IX. Teaching Strategies:** There will be hands on laboratory sessions and lab practical quizzes. Various teaching techniques will be applied to improve the teaching efficiency. Teamwork and group study, as well as, individual study are recommended.

Course will be conducted by lab experiments, discussion, and occasionally by online assignments. The primary means of instruction will be through labs; and occasionally by online assignments. To accommodate different student learning styles, the instructor will utilize both auditory and visual aids, such as Powerpoint© presentations, conventional blackboard recitations, and practical demonstrations that illustrate the application of theoretical concepts when necessary. The students are encouraged to participate in in-class, group problem-solving discussions to challenge their creativity, analytical, and logical reasoning skills.

Students are encouraged to see me for individual needs related to the course during my office hours (by appointments).

**X. Bibliography**

**XI. Disclaimer:**
To accommodate emergent circumstances, the professor reserves the right to make reasonable changes in the syllabus while the course is in progress. Any understandings between a student and the professor including, but not limited to, changes, expectations, or modifications to course requirements/procedures must be in writing and signed by both parties. Any question of interpretation of course requirements or of understandings between a student and the professor will be at the discretion of the professor.

**Plagiarism:** Plagiarism is any use of another person’s words or ideas without giving proper credit to the person from whom you borrowed the words or ideas. Plagiarism is the theft of intellectual property. Plagiarism includes the following:

- Failing to cite properly any direct or indirect quotation(s) from professionally written materials (books, journal articles, etc.) student papers, projects, presentations, etc.
- Submitting as your own work a paper, project, or presentation that you did not compose (that is, write, compile, draw, etc.)
- Allowing another person to write your paper or develop your presentation or assignment.

Students who plagiarize will be subject to failing the assignment and/or failing the course.

**Turnitin.com:** “Turnitin.com” is a web-based service that provides online reviews of written material to judge if it has been copied from another source. Turnitin.com is used to evaluate the possibility of a student plagiarizing or cheating on written material. The instructor may require students to submit written work in an electronic format for the purpose of utilizing the Turnitin.com service.

**Additional Information:**

**Disclaimer:** To accommodate emergent circumstances, the professor reserves the right to make reasonable changes in the syllabus while the course is in progress.