CAMPBELLSVILLE UNIVERSITY

COURSE SYLLABUS

PLEASE TYPE. DATE 7 January 2016

ACADEMIC UNIT Natural Science Division FACULTY Elizabeth K. Sutton

Discipline	Course # Section	Title of Course	Credit Hours	Cross Reference (if applicable)
CHE	344-91	Organic Chemistry II Lab	2	n/a

TEXTBOOK [X] Required [ ] Not Required

Author WebAssign Online Title "Laboratory Experiments for Organic Chemistry 2"

Publisher WebAssign Date of Publication 2011

WORKBOOK [ ] Required [ ] Not Required

Author Title

Publisher Date of Publication

PLEASE ANSWER THE FOLLOWING QUESTIONS ON A SEPARATE SHEET OF PAPER AND ATTACH TO THIS FORM.

1. DESCRIPTION OF COURSE: Develop a brief description of the course as it will appear in the Catalog.

2. STUDENT LEARNING OBJECTIVES: List the student learning objectives for the course. Please relate these objectives to the mission and goals of the University and the Academic Unit. For general education courses, please indicate which student learning objectives address general education goals and the intended method of assessment. A minimum of four of the seven general education goals must be included.

   Example: Students will demonstrate their ability to compare and contrast two types of basket weaving. (Goal: Oral and Written Communication; Evidence: research paper and class presentation)

3. COURSE OUTLINE: Outline the topics/units that are to be taught.

4. EVALUATION: How do you plan to determine the grade in the course? Please include grading scale.

5. REQUIREMENTS:
   a. Examinations: State when tests are to be administered, including unit, mid-term, and final examinations.
   b. Reports: How many, length required, and what type (Oral, term and/or research, book critiques).
   c. Supplemental reading assignments or outside work required.
   d. Supplemental instruction aids: Audio visual aids, field trips, guest speakers, etc.

6. BOOKLIST

DEAN Date Copy Received

VICE PRESIDENT FOR ACADEMIC AFFAIRS Date Copy Received

CHE 344 Organic Chemistry II Lab
Spring 2016

INSTRUCTOR: E. K. Sutton
CREDIT HOURS: Two
OFFICE: SSC 206
OFFICE HOURS: As posted

Section 1: Course Description

CHE 344 is a laboratory course illustrating typical reactions and an introduction to qualitative organic analysis. Two 100-minute laboratory periods per week are required. Pre requisites: CHE 341 and CHE 343. Concurrent enrollment with CHE 342.

Section 2: Course Objectives

A. General Education Curriculum Objectives (GECO): (numbered to correspond to the objectives listed in the University catalog.)

2. Critical Thinking: Students will demonstrate the ability to reflect on theories and issues in a systematic fashion.
4. Ethics: Students will demonstrate an understanding of Christian values and ethical standards in order to make mature and informed decisions concerning moral issues.
5. Oral and Written Communication: Students will demonstrate the ability to express ideas, beliefs, and information in an organized, precise, and persuasive manner.
6. Quantitative Literacy: Students will demonstrate the ability to understand and utilize mathematical and/or logical relationships to analyze data, to construct and assess arguments, and to make sound judgments in quantitative situations that arise in daily life.
7. Social Responsibility and Citizenship: Students will demonstrate an understanding of personal and social responsibility in a changing global environment so that students can make contributions to their respective discipline and to society as a whole.

B. Student Learning Outcomes (SLO): (Numbered to correspond to the pertinent General Education Curriculum Objective [GECO]).

1. Students will understand and be able to explain the basic principles of methods of organic chemical analysis. (GECO 2, 6)
2. Students will execute calculations related to quantitative aspects in organic chemical methods of analysis. (GECO 2, 6)
3. The student will recognize how chemistry provides solutions to contemporary, historical, technological, and societal issues. (GECO 2, 4, 6, 7)
4. Students will develop an awareness of how a basic understanding of chemistry, the proper application of that knowledge, and the interaction between chemistry and other fields of study and careers is important to personal and social issues. (GECO 4, 6, 7)
5. Students should be able to read, understand, and apply scientific information through thinking more critically, discussing more meaningfully, arguing more persuasively, and writing more effectively. (GECO 2,5**)**

C. Program Learning Outcomes (PLO): (numbered to correspond to the listing in the program assessment document)

1. The student will be able to demonstrate a solid understanding of the core principles in the traditional subdivisions of chemistry: Analytical, Inorganic, Organic, and Physical.
2. The student will be able to perform qualitative/quantitative chemical analyses/syntheses through the use of the appropriate laboratory techniques/equipment, experimental design, data acquisition, interpretation of data, and relevant instrumentation.
4. The student will be able to articulate chemical information/data/ideas clearly and effectively in speech and in writing in an acceptable presentation format.
6. The student will demonstrate critical thinking skills in chemistry: interpretation, evaluation, explanation, and scientific inquiry; how to ask appropriate questions, gather relevant information effectively and creatively, and reason logically from this information to make reliable conclusions.

D. Course Specific Objectives (CSO): The student is expected to recognize and apply the fundamental and practical aspects of the following concepts and apply the concepts to problem solving: (numbered to correspond to the pertinent program learning outcome [PLO])

1. The student will illustrate an understanding of the principles of UV-visible, infrared, and nuclear magnetic resonance spectroscopy. (PLO 1,2,6)
2. The student will demonstrate the ability to interpret a given problem and decide which organic chemistry laboratory method(s) best apply. (PLO 4,6)
3. The student will be able to assess sources of error in chemical analysis and account for errors in data analysis. (PLO 1)

4. The student will recognize interferences in chemical analysis. (PLO1)
5. The student will distinguish between qualitative and quantitative measurements and be able to effectively compare and critically select methods for elemental and molecular analyses. (PLO 4)
6. The students will be able to perform simple laboratory operations with standard organic glassware in the process of completing simple organic synthesis reaction schemes.(PLO 2)
7. The students will be able to explain and perform simple laboratory operations such as distillations, re-crystallizations, extractions, melting point determinations and separation of mixtures. (PLO 2)
8. The student will be able to design and perform experiments that will lead to the identification of unknown organic compounds. (PLO 2)
9. The student will be able to complete the identification of organic compounds through the preparation of organic chemical derivatives. (PLO 2)
10. The students will demonstrate the ability to record and tabulate and explain scientific data in a concise and organized manner.
11. The students will be able to perform simple laboratory operations with standard organic glassware in the process of completing simple organic synthesis reaction schemes.
12. The students will build upon prior knowledge and gain experience in performing syntheses and isolation of organic compounds and will make use of laboratory operations such as distillations, recrystallizations and extractions.

Section 3: Course Outline

1. IR spectroscopy	3. NMR Spectroscopy	5. Ketones	7. Carboxylic Acids & their Derivatives
2. Mass Spectroscopy	4. Aldehydes	6. Aromatic Compounds	8. Hydrolysis of Esters

Section 4: Evaluation

Pre-laboratory assignments (Best 10 @ 10 pts)	100	A (90-100%)
Literature Assignment, 1 @ 50 pts	50	B (80-89%)
Post-Lab Notebook Pages, (Best 10 @ 50)	500	C (70-79%)
Lab Exam	150	D (60-69%)
Total Possible	**800**	F (Below 60)

- **If, for any reason, you cannot continue to attend this class, be certain you DROP IT OFFICIALLY. Otherwise you will automatically receive a failing grade.**
- **Any student who does not obtain at least 50% of the lecture components (homework/ quizzes, hourly exams and final) will fail the course.**

Section 5: Requirements

A. Phone Numbers to Remember:

1. **Campus Security Cell Phone: 270-403-3611**
2. **Campus Security Office Phone: 270-789-5555**
3. **Natural Science Division Office Phone: 270-789-5065**

B. ***Attendance:*** Each student is expected have punctual attendance at each course meeting. The University Undergraduate Student Attendance Policy will be followed in this course. According to that policy, only **four (4) absences** are allowed, because this course meets twice a week. The University Undergraduate Attendance policy will be followed for this course. Do NOT expect to be able to make-up lab time missed (without an instructor approval for justifiable absence) to conduct experiments!

All of the following will constitute an absence:
a) Arrival at class more than ten (10) minutes after the class period has begun
b) Leaving the classroom before class has ended without permission from the instructor
c) Texting, sleeping, or otherwise disrupting the flow of the classroom activities.

After **two** absences, the student will be turned in to the Office of Academic Support. After **eight** absences (the equivalent of four weeks of class), the student will be dropped from the course with a 'WA', this counts like an 'F' in grade-point average computation.

If a student misses the final exam for a documented emergency (traveling early for Christmas vacation or Spring Vacation does not count as an emergency), then a grade of 'X' will be assigned for the course, and a special exam must be taken within one month after the student re-enters the University (contingent on approval by the course instructor and the Vice President for Academic Affairs), otherwise, the 'X' becomes a failing grade and is so recorded.

Each student is responsible for all material covered in class, whether or not the student is in attendance, so always keep up with what was done during an absence by borrowing notes from other students and/or speaking with the instructor. Medical absences will be excused based on written advice from the campus nurse or a health-care provider (based upon clinical findings and prescribed treatment recommendations). The medical document must specifically indicate that you were unable to attend class/recitation. All excused absences require written documentation and will be verified by the chemistry department staff. **No verbal or email excuses will be accepted**.

C. ***Safety****:* Students are required to follow all necessary safety precautions including protective eyewear and clothing. Failure to do so will result in the immediate expulsion from the laboratory room. Cell phones, beepers, devices that require headphones, etc. should not be used in the lab. Long hair must be tied back. Gloves are available and sometimes will be made mandatory. Precautions about each experiment are to be noted in the lab write up.

Students who fail to follow all safety rules may be asked to leave the lab or suffer grading penalties.

1. No unauthorized experiments are to be performed. If you are curious about trying a procedure not covered in the experimental procedure, consult with your laboratory instructor.
2. Students must absolutely wear a pair of ANSI Z87.1 approved goggles the **entire time** they are in the laboratory. *The Chemistry Department does not keep spare goggles to lend to students.* It is the students' responsibility to bring their goggles with them to the lab meeting.
3. You **must** wear clothing that is consistent with good laboratory safety. Older pants, slacks, or jeans should be worn, although female students *may* wear longer dresses if they desire. The goal is to cover up as much of the body as possible with clothing that you do not mind having a few acid holes in. This goal is often contrary to the prevailing sense of fashion.
4. Long pants must be worn. ***Shorts, skirts, and kilts are not permitted in the lab atany time.***
5. Arms should be covered to the elbow and midriffs should not be exposed. Wearing a full-length lab coat or apron at all times is required for most experiments.
   Shoes/ sneakers that cover the entire foot should be worn. Sandals, clogs, open-top, high heels or open-toe shoes are not permitted in the lab at any time.
6. Female students should ensure that hair or jewelry does not hang down into the work area. ***Students dressed inappropriately for lab will be required to leave the laboratory to redress properly.***
7. Neatness and cleanliness are important for everyone's safety in the laboratory. The cleanliness of your work area is your responsibility. The cleanliness of the entire lab (particularly balances, sinks and fume hoods) is the responsibility of the entire class. If the lab is not left clean and neat, the responsible individuals or the entire class may have their grade lowered.
8. Do not come to lab if you are ill with a contagious disease or under the influence of any medications that might cause you to hallucinate or became excessive drowsy. If on any medication, please consult with the instructor and make me aware prior to entering the lab on a respective day.
9. Eating, drinking, and smoking are strictly prohibited in the laboratory.
10. Horseplay will not be tolerated and will result in immediate expulsion from the laboratory.

D. ***Lab Preparation:*** Read the appropriate sections noted in the syllabus PRIOR to each experiment**. Before entering the lab, you MUST provide evidence that you have satisfactorily completed ALL of the pre-lab assignment.** Failure to do so will result in lost time (and points) in lab while you are doing the pre-lab.

In addition to any assigned pre-lab questions, the following sections should also be set-up in your lab notebook ***prior to*** starting an experiment: title of experiment, purpose, overall reaction scheme, and general procedure. Add observations, data, and conclusion during the course of the experiment.

E. ***"Notebook pages":*** Each experiment must be completed and written up in the appropriate form. Details on the format for these pages will be given in the first laboratory period. This semester in Organic II lab, I will collect each student's duplicate notebook pages on a regular (weekly) basis. These assignments will be worth 40 points each, for a total of 400 points. These lab reports are due by the beginning of the lab period on the dates noted in

the course schedule UNLESS indicated otherwise in writing by the instructor. NO LATE REPORTS will be accepted. Failure to submit the lab report on time will result in a grade on zero.

F. ***Laboratory Notebook:*** Learning to keep an accurate and detailed record of results is an extremely important skill for all engineers and scientists. ***Your notebook is a permanent record of your experiment and your data!*** Students are required to keep a bound laboratory notebook detailing the procedures, data, etc obtained in the lab analyses conducted during the course. The format for the notebook will be discussed on the first day of lab.

This notebook will include the procedural strategy, observations, balanced chemical reactions, raw data, etc. obtained in the lab analyses conducted during the course. Notebook entries should be written clearly, concisely, and neatly. The following guidelines for recording entries in your lab notebook will be graded for competency when lab notebook entries are due:

1. You must use a spiral-bound carbonless duplicate notebook. The purpose of having a notebook is so your records represent a *complete* log of your work. Only tear out the duplicate pages for submission.
2. The first several pages of a notebook are to be reserved for a *table of contents.*
3. All entries in your notebook MUST be made in blue or black *ink pen*. Any mistakes should be crossed out with a single horizontal line and initialed. *Do not use whiteout*.
4. Each page should be numbered sequentially in the upper outside corner.
5. Each experiment should start on a new page. Your entry should include your name and your title, the date, a title for the experiment, and a reference for the procedure.
6. Sign each entry after you have completed the experiment. This signifies that the data reported came from the person responsible for the notebook.
7. Have your instructor initial your lab entry before leaving the lab.

G. ***Formal (Full) Lab Reports:*** During the middle part of the semester, students will complete and turn in two formal lab reports. Each formal lab report will be worth 100 points.

1. All formal reports are to be submitted to the course TigerNet page under the "Coursework" tab as a MS Word .doc file. *No exceptions!*
2. Failure to comply with this policy will result in an automatic loss of 5 points for the first offense and subsequent events will result in the report not being graded.
3. Reports will be penalized five (5) points per day (including the weekend as one day) for every day the report is late and will not be accepted more than one week after a report is due and this will result in a grade of zero.
4. An automatic five-point penalty will be assessed for a report considered grossly insufficient or inadequate. An example of this includes missing section(s) of the report.

H. **Classroom Behavior:**

1. **Your basic responsibilities include:**
   a. Attend all lectures, recitations and exams and bring a scientific calculator.
   b. Read the assigned material prior to class.
   c. Study your lecture notes and assigned text reading.
   d. Do assigned homework problems on time and review them before exams.
   e. Do not fall behind!
   f. Take all examinations!
   g. All students are expected to behave in a manner that is conducive to a learning/teaching environment. This includes begin respectful to fellow students, guest speakers, and me. Students who engage in behavior that is disruptive to the learning environment will be asked to leave for the remainder of the class period.
2. Guests are only allowed in class at the discretion of and with prior approval from the instructor.
3. Electronic recording devices of any kind are not permitted except in special circumstances and with the specific permission of the instructor.
4. While you are expected to attend and participate in this class, your cell phone, computer, and MP3 players are **not**. Pagers, cell phones, and similar items are disruptive to the entire class and **must be turned off** during class. **The owner of any such device that activates during class will be immediately excused from class and counted as absent for the entire period.**

5. **USE OF CELL PHONES, COMPUTERS, AND MP3 PLAYERS DURING EXAMINATIONS AND QUIZZES WILL BE CONSIDERED ACADEMIC DISHONESTY, WHICH WILL RESULT IN A ZERO BEING AWARDED FOR THE QUIZ OR EXAMINATION (NO EXCEPTIONS!).**
6. Hats and caps are to be removed prior to entering the classroom.
7. Take care of any physiological needs *before* coming into the classroom.
8. Unacceptable student behaviors:
   a. Sleeping during class
   b. Chronic tardiness. Be here ready to learn when class begins.
   c. Reading, studying or working on materials for other classes.
   d. Chatting with your classmates when the instructor or other classmates are speaking.
   e. Prematurely packing up your books and bags before class has been dismissed.

I. **Academic Misconduct/Integrity:** Students in this course will be working toward mastery of the material to satisfy the course objectives. ***This class is held to an honor system, meaning that cheating, allowing someone to cheat, or failing to report known cases of cheating are all considered academic misconduct***. Cheating includes, but is not limited to, any attempt to present the work of another as your own; discussing or copying exams, quizzes, or homework with students who have not yet completed them; using "cheat sheets" on exams or quizzes; altering a test for re-grade, plagiarism of primary or secondary sources of information or using programmable calculators to store and/or recall prohibited information for an exam. Any student who refuses to allow a calculator to be inspected by the instructor upon request will not be allowed to use that calculator on the exam/quiz. Be aware that aggressive methods are used to protect the majority of you who are honest. **Students caught cheating or plagiarizing will receive a grade of zero for that test or assignment and may be given an F for the course.** A copy of the Division of Natural Sciences (DNS) policy on Academic Integrity is available on the course TigerNet page. Please read this policy and take it very seriously.

For information about plagiarism and how to avoid it, consult the following websites:

- Plagiarism? It's your call (Western Michigan University/Stanford University, 2008) http://www.wmich.edu/library/searchpath/module6
- The Plagiarism Court: You Be the Judge (Islam,2007, Fairfield University) http://www.fairfield.edu/library/lib_plagiarismcourt.html)
- What is Plagiarism? (Pearson/Prentice-Hall) http://wps.prenhall.com/hss_understand_plagiarism_1/
- Indiana University Bloomington, School of Education (accessed 16May2012) http://www.indiana.edu/~istd/.

Students will be asked to sign an integrity statement on each assignment/examination/quiz. The following statement reads as follows:

"I pledge on my honor that on this assignment/examination/quiz I have neither received nor given nor have I seen any dishonest work.

Signature _____ Date _____"

J. **Teaching Methods**
The lecture method will be used as well as a hands-on laboratory experience in instrumental methods. In addition to hands-on laboratory work, computer simulation programs will be used to provide the student with experience in generation and interpretation of several instrumental methods.

Section 6: Book List

a. *WebAssign: Microscale Experiments in Organic Chemistry 2, www.webassign.net, 2011.[ebook]*
b. *Organic Chemistry*, Janice Smith, 4th ed. Pearson Education, 2011.
c. *Organic Chemistry*, William H. Brown and Christopher S. Foote, 3rd ed., Brooks/Cole—Thomson Learning, 2002.
d. *CRC Handbook of Chemistry and Physics*, 84th ed. CRC Press.
e. *The Systematic Identification of Organic Compounds*, by Ralph L. Shriner, Christine K. F. Hermann, Terence C. Morrill, David Y. Curtin, Reynold C. Fuson, 8th edition, John Wiley and Sons, 2003.
f. *Lange's Handbook of Chemistry*, 15th ed. John A. Dean, McGraw-Hill, 1998.

Section 7: Disabilities

Campbellsville University is committed to reasonable accommodations for students who have documented physical and learning disabilities, as well as medical and emotional conditions. If you have a documented disability or condition of this nature, you may be eligible for disability services. Documentation must be from a licensed professional and current in terms of assessment. Please contact the Coordinator of Disability Services at 270-789-5192 to inquire about services.

Section 8: Title IX

Campbellsville University and its faculty are committed to assuring a safe and productive environment for all students. In order to meet this commitment and to comply with Title IX of the Education Amendments of 1972 and guidance from the Office of Civil Rights, the University requires all responsible employees, which includes faculty members, to report incidents of sexual misconduct shared by students to the University's Title IX Coordinator.

Title IX Coordinator:
Terry VanMeter
1 University Drive
UPO Box 944
Campbellsville, KY
42718

Administration Office 8A
Phone: 270-789-5016
Email: twvanmeter@campbellsville.edu

Information regarding the reporting of sexual violence and the resources that are available to victims of sexual violence is set forth at: www.campbellsville.edu/titleIX

CHE 344 TENTATIVE LABORATORY SCHEDULE Spring 2016

Week #	Week of	Topic
1	**1/18/2016**	**No Lab**
2	**1/25/2016**	Lab Check In, Lab Safety. Exp. 1 Literature Search
3	**2/1/2016**	Exp. 2A Infrared Spectroscopy—Handout
4	**2/8/2016**	Exp. 2B Mass Spectroscopy—Handout
5	**2/15/2016**	Exp. 2: Nuclear Magnetic Resonance Exp. 2C: NMR & IR –Handout
6	**2/22/2016**	Exp. 3: Reduction of a Ketone
7	**2/29/2016**	Exp. 4: Oxidation of Acetophenone
8	**3/7/2016**	**Mid-term Week** Exp. 5: Nitration of Methyl Benzoate
9	**3/14/2016**	**Spring Break—No Lab**
10	**3/21/2016**	Exp. 6: Aldol Condensation
11	**3/28/2016**	**Easter Break—No Lab**
12	**4/4/2016**	Exp. 8: Amide Preparation
13	**4/11/2016**	Exp. 9: Arenediazonium Salts
14	**4/18/2016**	Exp. 10: Hydrolysis of Glycerol Tristearate
15	**4/25/2016**	Lab Check out, **Lab Practical Final Exam**
16	**5/2/2016**	ACS Standardized Exam
17	**5/9/2016**	**Finals Week—No Lab**

CHE 344-91: Organic Chemistry II Lab

Student's Acceptance of Course Policies

Please fill out and sign the following form and to the instructor. **Use a blue or black pen (no pencil).**

I, _____, have read the entire syllabus describing the course

(Print your name neatly)

policies for _____, taught by Ms. E. Kay Sutton. I fully understand these policies and I agree to comply with them during the entire

_____ term.