Syllabus for
CHE 211--Organic Chemistry I Laboratory
1.0 Credit Hour
Fall 2014

I. COURSE DESCRIPTION

An introduction to methods of synthesis and analysis of pertinent organic reaction types. Project sessions give the student adequate training in the use of organic lab techniques and report writing. (One recitation per week immediately followed by a 3 hour lab.)
Prerequisites: CHE 112 Lecture and Lab.
Corequisite: CHE 211 Lecture.
Lab fee: $50.00

II. COURSE GOALS

This laboratory is a vital supplement to the lecture course, CHE 211. Students receive hands-on experience in the experimental methods of organic chemistry. Many organic chemical reactions are examined in the context of their reaction mechanisms.

The purpose of this course is for the student to gain proficiency in the manipulation of laboratory apparatus, instruments, and rudimentary techniques in order to separate, purify, and identify organic compounds. The student will also learn the investigative approach to laboratory problems and organic chemistry.

III. STUDENT LEARNING OUTCOMES FOR THIS COURSE

Terminal Objectives
As a result of successfully completing this course, the student will be able to do the following:

A. Demonstrate proficiency in the manipulation of laboratory apparatus, in the use of proper solvents, and rudimentary techniques employed in organic chemistry.

B. Apply the scientific method in problem solving.

C. Control the experimental conditions influencing a chemical reaction.

D. Apply methods to obtain the maximum amount of material in the simplest and most economical way and with the greatest degree of purity.

E. List the factors which control organic reactions.

F. Identify safety hazards in all aspects of laboratory operations.

G. Relate the role of organic chemistry to medicine, food, clothing, pollution, energy, and the environment.

IV. TEXTBOOKS AND OTHER LEARNING RESOURCES

Required Textbook
Pavia, D. L. et al. Introduction to Organic Laboratory Techniques. 4th ed., 2007, ISBN: 0-495-01630-6; Orlando: Thompson Learning; Brooks/Cole

V. POLICIES AND PROCEDURES

A. University Policies and Procedures

1. Attendance at each class or laboratory is mandatory at Oral Roberts University. Excessive absences can reduce a student's grade or deny credit for the course.
2. Students taking a late exam because of an unauthorized absence are charged a late exam fee.
3. Students and faculty at Oral Roberts University must adhere to all laws addressing the ethical use of others' materials, whether it is in the form of print, electronic, video, multimedia, or computer software. Plagiarism and other forms of cheating involve both lying and stealing and are violations of ORU's Honor Code: "I will not cheat or plagiarize; I will do my own academic work and will not inappropriately collaborate with other students on assignments." Plagiarism is usually defined as copying someone else's ideas, words, or sentence structure and submitting them as one's own. Other forms of academic dishonesty include (but are not limited to) the following:
    a. Submitting another's work as one's own or colluding with someone else and submitting that work as though it were his or hers;
    b. Failing to meet group assignment or project requirements while claiming to have done so;
    c. Failing to cite sources used in a paper;
    d. Creating results for experiments, observations, interviews, or projects that were not done;
    e. Receiving or giving unauthorized help on assignments.

    By submitting an assignment in any form, the student gives permission for the assignment to be checked for plagiarism, either by submitting the work for electronic verification or by other means. Penalties for any of the above infractions may result in disciplinary action including failing the assignment or failing the course or expulsion from the University, as determined by department and University guidelines.
4. Final exams cannot be given before their scheduled times. Students need to check the final exam schedule before planning return flights or other events at the end of the semester.
5. Students are to be in compliance with University, school, and departmental policies regarding the Whole Person Assessment requirements. Students should consult the Whole Person Assessment handbooks for requirements regarding general education and the students' majors.
    a. The penalty for not submitting electronically or for incorrectly submitting an artifact is a zero for that assignment.
    b. By submitting an assignment, the student gives permission for the assignment to be assessed electronically.

B. School and/or Department Policies and Procedures

1. The Department of Biology and Chemistry adheres to the Assessment policy concerning plagiarism as described in the University Catalog, "Written assignments using sources must demonstrate ethical and accurate use of source material. Plagiarism and any unethical or inappropriate use of sources are not tolerated."

2. The following assessment actions will be taken in the of event of documented instances of plagiarism on written assignments, copying of homework assignments, or cheating during examinations:
   a. An automatic zero will be given for the assignment or exam.
   b. The original assignment or exam will be kept in the student file and a copy will be given to the student. This could have a negative impact on letters of reference and admission to graduate schools and other postgraduate programs.
   c. The Department will take repeated offences as grounds for further action.
3. Any Whole Person Assessment Requirement activity required in this course must be completed and assessed prior to the end of the semester to receive course credit, otherwise a grade of zero for the assignment will be assigned.

C. Course Policies and Procedures

1. Evaluation Procedures
   a. Final laboratory grades will be determined based on the final laboratory exam, lab reports, lab notebook, participation in the class, and a well-disciplined and scientific approach in performing experiments.
   b. In order to maintain excellent academic standards, the professor reserves the right to curve scores according to his best judgment, even though a tentative grading scale is given below:
      A = 1000 – 900
      B = 899 – 800
      C = 799 – 700
      D = 699 – 600
      F = 599 - 0
   c.

Assignments	**Points**
Laboratory Reports;	620
Service Learning	40
Exams and Quizzes	175
Laboratory Technique	90
Notebook Check	75
TOTAL	1000

   d. The instructor reserves the right to change the syllabus.
2. Whole Person Assessment Requirements
   Chemistry and Biomedical chemistry majors enrolled in this class are required to identify an unknown organic compound, generate a flow chart, and scan the flow chart to their Whole Person Assessment
3. Other Policies and/or Procedures
   a. The student is responsible for knowing "safety information." Strict adherence to safety regulations must be followed.
   b. The student should study the laboratory assignments before class in order to be familiar with the procedures and have preliminary calculations completed, if any. The student will be required to submit a preliminary report for approval before the experiment is started and should be prepared to show and explain the results of the experiments at any time. Unless excused for special circumstances, all assigned work shall be complete before leaving. Any student who performs an experiment, which has not been authorized by the instructor, is subject to dismissal from the course with a grade of WF.

c. Required (while performing experiments in lab)

(1) Laboratory notebook:

Each student will maintain a laboratory notebook and will:
Use a bound notebook about the dimension of the textbook cover (or instructor will instruct in the beginning as to the type of notebook, etc.).
Leave several pages at the beginning for the Table of Contents, and keep it current.
Number the pages through the entire notebook.
Start a new page for each new experiment. (This may or may not coincide with the beginning of a laboratory period.)

(2) Safety glasses:

Safety glasses must be worn at all times in laboratory. Contact lenses and sunglasses are not acceptable.

(3) Laboratory coat or apron

d. Formal reports should be typed, using complete sentences, third person, and contain the following:

(1) Introduction:

State the purpose and the theoretical basis for the experiment, commenting on each of the objectives listed for the particular experiment. This section should show comprehension of the topic.

(2) Procedure:

Give a brief summary of the procedure, including all safety precautions necessary.

(3) Observation:

Record any observations, including color changes, formation of crystals, etc.

(4) Data and calculations:

Record any data obtained directly into the laboratory notebook. Data should not be recorded on scraps of paper, paper towels, etc. Data should be shown in tables, graphs, or another organized format.

(5) Results and Conclusions:

Answer assigned questions from the text and explain your results. Show sample calculations for percent yield in a well-organized format. State briefly the conclusion(s) reached and explain any irregularities in your data.

e. Laboratory reports are due the week following performance of the experiment. Late submission of reports will result in a 10% grade reduction per week. After two weeks, reports will NOT be accepted.

VI. COURSE CALENDAR

Week	Experiment	Topic
1	Check-In Exp. 1	Safety and Laboratory Procedures; Introduction to Microscale Laboratory
2	Exp. 2	Does Like Really Dissolve Like? (Solubility)
3	Exp. 3	What If the Antibiotic Is Impure? (Crystallization)
4	Exp. 10	How Are Mixtures Separated Anyway? (Extraction)
5	Handout	Is Carbon Really 3-D? (Models)
6	Handout	Determination of an Unknown
7	Exp. 11	What's in This Painkiller? (Thin Layer Chromatography of Analgesics)
8	Exp. 4D	What's the Red Stuff in the Tomato Paste? (Column Chromatography; UV-visible Spectroscopy); **Exam**
9	Exp. 8	Who Wins the Competition for Iodide Ion?
10	Exp. 21D	How Does Bayer Make Aspirin?
11	Handout	What's in the Paint Thinner? (Distillation)
12	Handout	How Much Caffeine Is in the Energy Drink?
13	Handout	What's in the Gasoline?
14	Check-out	**Final Exam**

Course Inventory for ORU's Student Learning Outcomes

Organic Chemistry I Laboratory – CHE 211
Fall 2014

This course contributes to the ORU student learning outcomes as indicated below:
Significant Contribution – Addresses the outcome directly and includes targeted assessment.
Moderate Contribution – Addresses the outcome directly or indirectly and includes some assessment.
Minimal Contribution – Addresses the outcome indirectly and includes little or no assessment.
No Contribution – Does not address the outcome.

The Student Learning Glossary at http://ir.oru.edu/doc/glossary.pdf defines each outcome and each of the proficiencies/capacities.

OUTCOMES & Proficiencies/Capacities	Significant Contribution	Moderate Contribution	Minimal Contribution	No Contribution
1 **Outcome #1 – Spiritually Alive** Proficiencies/Capacities				
1A Biblical knowledge			X	
1B Sensitivity to the Holy Spirit			X	
1C Evangelistic capability			X	
1D Ethical behavior		X		
2 **Outcome #2 – Intellectually Alert** Proficiencies/Capacities				
2A Critical thinking	X			
2B Information literacy	X			
2C Global & historical perspectives		X		
2D Aesthetic appreciation			X	
2E Intellectual creativity	X			
3 **Outcome #3 – Physically Disciplined** Proficiencies/Capacities				
3A Healthy lifestyle				X
3B Physically disciplined lifestyle				X
4 **Outcome #4 – Socially Adept** Proficiencies/Capacities				
4A Communication skills		X		
4B Interpersonal skills	X			
4C Appreciation of cultural & linguistic differences		X		
4D Responsible citizenship		X		
4E Leadership capacity		X		