SYLLABUS

DATE OF LAST REVIEW: 02/2013

CIP CODE: 24.0101

SEMESTER: Departmental Syllabus

COURSE TITLE: Organic Chemistry II Lab

COURSE NUMBER: CHEM-0214

CREDIT HOURS: 3

INSTRUCTOR: Departmental Syllabus

OFFICE LOCATION: Departmental Syllabus

OFFICE HOURS: Departmental Syllabus

TELEPHONE: Departmental Syllabus

EMAIL: Departmental Syllabus

KCKCC-issued email accounts are the official means for electronically communicating with our students.

PREREQUISITE: Organic Chemistry I CHEM-0211 and Organic Chemistry I Lab, CHEM-0213

REQUIRED TEXT AND MATERIALS:
Contact the Bookstore (www.kckccbookstore.com) for the current textbook and supporting materials for this course.

COURSE DESCRIPTION: The emphasis of this continuation of Organic Chemistry I Lab CHEM 213 is on organic synthesis and identification.

METHOD OF INSTRUCTION:
A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE:
I. Oxidation of alcohols
II. Dehydration of Alcohols – Synthesis of Alkenes
III. Reduction of ketones and aldehydes
IV. Thin-Layer Chromatography Analysis  
V. Nucleophilic Substitution Reactions  
VI. Aromatic Substitution Reactions  
VII. Aldol Condensation  
VIII. Esterification and Hydrolysis  
IX. Synthesis of Sulfanilamide

EXPECTED LEARNER OUTCOMES:

A. The student will be able to perform common techniques in reactions of a variety of functional groups and multistep syntheses.
B. The student will be able to perform hands-on reactions of a variety of functional groups.
C. The student will be able to develop knowledge and experience with organic syntheses.
D. The student will be able to perform laboratory techniques necessary for analysis and identification of organic compounds.

COURSE COMPETENCIES:

The student will be able to perform common techniques in reactions of a variety of functional groups and multistep syntheses.

1. The student will be able to perform simple laboratory manipulations of organic chemicals (extractions, distillations, recrystallization, etc.).
2. The student will be able to determine and perform suitable methods of separation and purification of reaction product(s) from single step reactions or multistep syntheses.
3. The student will be able to calculate theoretical and percent yields of individual reactions or overall percent yields of multistep syntheses.

The student will be able to perform hands-on reactions of a variety of functional groups.

4. The student will be able to prepare and isolate alkenes by dehydration of alcohols.
5. The student will be able to perform mild oxidation of alcohols to ketones using household oxidizing agents such as chlorox.
6. The student will be able to perform vigorous oxidation of alcohols to carboxylic acids.
7. The student will be able to perform a nitration of substituted benzene, an example of electrophilic aromatic substitution.
8. The student will be able to perform and isolate the product of an aldol condensation.
9. The student will be able to perform functional group identification.
10. The student will be able to perform functional group derivatization.
11. The student will be able to use a Grignard reagent.
12. The student will be able to do a Friedel-Craft reaction.
13. The student will be able to do a Diels-Alder reaction.
14. The student will be able to perform esterification and hydrolysis reactions of carboxylic acid derivatives.

The student will be able to develop knowledge and experience with organic syntheses.
15. The student will be able to carry out the acetylation of an amine.
16. The student will be able to perform a multistep synthesis of the drug sulfanilamide.

_The student will be able to perform laboratory techniques necessary for analysis and identification of organic compounds._

17. The student will be able to record IR spectra.
18. The student will be able to interpret IR spectra.
19. The student will be able to interpret NMR spectra.
20. The student will be able to interpret MS spectra.

**ASSESMENT OF LEARNER OUTCOMES:** The student will be evaluated by means of classroom participation, laboratory reports, homework problems, exams, and quizzes.

**SPECIAL NOTES:**

_This syllabus is subject to change at the discretion of the instructor. Material included is meant to provide an outline of the course and rules that the instructor will adhere to in evaluating the student’s progress. However, this syllabus is not intended to be a legal contract. Questions regarding the syllabus are welcome any time._

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