DATE OF LAST REVIEW: 02/2013

CIP CODE: 24.0101

SEMESTER: Departmental Syllabus

COURSE TITLE: Organic Chemistry II

COURSE NUMBER: CHEM-0212

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.*

PREREQUISITES: Organic Chemistry I, CHEM0211

REQUIRED TEXT AND MATERIALS: Please check with the KCKCC bookstore, http://www.kckccbookstore.com for the required text for your particular class.

COURSE DESCRIPTION:
A continuation of Organic Chemistry I, CHEM-0211 lectures cover the main functional groups not discussed in 211: ethers, acids, esters, aldehydes ketones, and amines.

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, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE:
I. Review of Spectroscopic Techniques
II. Conjugated Systems and Aromatic Chemistry
III. Aldehydes and Ketones
IV. Carboxylic Acids and Derivatives of Carboxylic Acids
V. Amines and Amides
VI. Carbohydrates
VII. Lipids
VIII. Amino Acids and Protein

EXPECTED LEARNER OUTCOMES:
A. The learner will be able to have a working knowledge of the interaction of functional groups in organic chemistry and the relationship between structure, reactivity and mechanism.
B. The learner will be able to apply the scientific framework of functional groups and mechanisms in organic chemistry to the biochemistry of living systems and the physical world around us.
C. The learner will be able to have a working knowledge of some basic chemical instrumentation used in the analysis of organic compounds.

**COURSE COMPETENCIES:**

*The learner will be able to have a working knowledge of the interaction of functional groups in organic chemistry and the relationship between structure, reactivity and mechanism*

1. The student will be able to define various aromatic functional groups.
2. The student will be able to define various aliphatic functional groups.
3. The student will be able to define various halogen functional groups.
4. The student will be able to define various aldehyde functional groups.
5. The student will be able to define various ketone functional groups.
6. The student will be able to define various carboxylic acid functional groups.
7. The student will be able to define various ester functional groups.
8. The student will be able to define various amine functional groups.
9. The student will be able to define various amide functional groups.
10. The student will be able to identify various aromatic functional groups.
11. The student will be able to identify various aliphatic functional groups.
12. The student will be able to identify various halogen functional groups.
13. The student will be able to identify various aldehyde functional groups.
14. The student will be able to identify various ketone functional groups.
15. The student will be able to identify various carboxylic acid functional groups.
16. The student will be able to identify various ester functional groups.
17. The student will be able to identify various amine functional groups.
18. The student will be able to identify various amide functional groups.
19. The student will be able to illustrate various aromatic functional groups.
20. The student will be able to illustrate various aliphatic functional groups.
21. The student will be able to illustrate various halogen functional groups.
22. The student will be able to illustrate various aldehyde functional groups.
23. The student will be able to illustrate various ketone functional groups.
24. The student will be able to illustrate various carboxylic acid functional groups.
25. The student will be able to illustrate various ester functional groups.
26. The student will be able to illustrate various amine functional groups.
27. The student will be able to illustrate various amide functional groups.
28. The student will be able to demonstrate the ability to name and draw structures of chemical compounds possessing those functional groups.
29. The student will be able to predict the outcome of organic reactions involving the various functional groups under given reaction conditions.
30. The student will be able to demonstrate the ability to outline syntheses of simple organic compounds.

*The learner will be able to apply the scientific framework of functional groups and mechanisms in organic chemistry to the biochemistry of living systems and the physical world around us.*

31. The learner will be able to define simple sugars, saccharides, acetal links and related chemical reactions.
32. The learner will be able to identify simple sugars, saccharides, acetal links and related chemical reactions.
33. The student will be able to illustrate simple sugars, saccharides, acetal links and related chemical reactions.
34. The student will be able to define fatty acids, fats, oils, waxes, steroids, and their chemical reactions.
35. The student will be able to identify fatty acids, fats, oils, waxes, steroids, and their chemical reactions.
36. The student will be able to illustrate fatty acids, fats, oils, waxes, steroids, and their chemical reactions.
37. The student will be able to define amino acids, proteins, peptide bonds, and their chemical reactions.
38. The student will be able to identify amino acids, proteins, peptide bonds, and their chemical reactions.
39. The student will be able to illustrate amino acids, proteins, peptide bonds, and their chemical reactions.

The learner will be able to have a working knowledge of some basic chemical instrumentation used in the analysis of organic compounds.

40. The student will be able to demonstrate an ability in theory and practice of modern instrumental methods of analysis including ultraviolet spectroscopy, infrared spectroscopy, and gas chromatographic mass spectrometry (GC/MS).
41. The student will be able to use spectroscopic techniques for identification of organic compound.
42. The student will be able to interpret NMR of simple organic compounds.
43. The student will be able to interpret IR spectra of simple organic compounds.
44. The student will be able to interpret MS of simple organic compounds.
45. The student will be able to predict the NMR of simple organic compounds.
46. The student will be able to predict the IR spectra of simple organic compounds.
47. The student will be able to predict the MS of simple organic compounds.

ASSESSMENT OF LEARNER OUTCOMES:
The student will be evaluated by means of classroom participation, homework problems, exams, quizzes, and the final exam.

SPECIAL NOTES:
The syllabus is subject to change at the discretion of the instructor. Material included is intended 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.

Kansas City Kansas Community College is committed to an appreciation of diversity with respect for the differences among the diverse groups comprising our students, faculty, and staff that is free of bigotry and discrimination. Kansas City Kansas Community College is committed to providing a multicultural education and environment that reflects and respects diversity and that seeks to increase understanding.

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