

COURSE SYLLABUS

Course Title:	Organic Chemistry II	Date submitted:	May 2019 (AAC:19-25)											
Department:	Mathematics and Science													
Curriculum:	Chemistry													
Course Descriptors: Make certain that the course descriptors are consistent with college and Board of Trustees policies, and the current course numbering system.	Course Code: (eg. ACC 101) <table border="1"><tr><td>CHE*212</td></tr></table>	CHE*212	Prerequisites:											
	CHE*212													
	Course Type: <table border="1"><tr><td>X</td></tr></table>	X	C- or better in Organic Chemistry I (CHE*211)											
	X													
	A: Clinical B: Lab D: Distance Learning I: Individual/Independent L: Lecture N: M: Seminar Internship P: Practicum U: Studio X: Combined Lecture/Lab Y: Combined Lecture/Clinical/Lab Z: Combined Lecture/Studio													
	Elective Type: <table border="1"><tr><td>G/LAS/S</td></tr></table>	G/LAS/S	Corequisites:											
	G/LAS/S													
	E: English FA: Fine Arts FL: Foreign Language G: General HI: History HU: Humanities LAS: Liberal Arts & Sciences M: Math S: Science SS: Social Science	None												
	Credit Hours: <table border="1"><tr><td>4</td></tr></table>	4	Other Requirements:											
	4													
Developmental: (yes/no) <table border="1"><tr><td>NO</td></tr></table>	NO	Safety glasses, scientific calculator, technology skills												
NO														
Contact Hours: <table border="1"> <tr><td>Lecture:</td><td>3</td></tr> <tr><td>Clinical:</td><td>0</td></tr> <tr><td>Lab:</td><td>4</td></tr> <tr><td>Studio:</td><td>0</td></tr> <tr><td>Other:</td><td>0</td></tr> <tr><td>TOTAL:</td><td>7</td></tr> </table>	Lecture:	3	Clinical:	0	Lab:	4	Studio:	0	Other:	0	TOTAL:	7		
Lecture:	3													
Clinical:	0													
Lab:	4													
Studio:	0													
Other:	0													
TOTAL:	7													
Class Maximum: <table border="1"><tr><td>20</td></tr></table>	20													
20														
Semesters Offered: <table border="1"><tr><td>S</td></tr></table>	S													
S														
Catalog Course Description:	Continuation of Organic Chemistry I. Topics include: aromatic compounds, aldehydes, ketones, carboxylic acids and their derivatives, amines, phenols and aryl halides. Reaction mechanism studies include carbanions, electrophilic substitutions and nucleophilic additions and nucleophilic substitutions. Laboratory sessions continue principles initiated in the precursor course.													
Topical Outline: List course content in outline format.	Lecture: 1. Aromatic compounds, including halides and aryl alkanes 2. Conjugation, resonance and dienes: Diels Alder Reaction 3. Aldehydes and ketones 4. Carboxylic acids and derivatives 5. Carbonyl Condensation Reactions: Aldol, Claisen 6. Amines 7. Phenols 8. Heterocyclic compounds 9. Condensed ring systems 10. Electrophilic aromatic substitution reactions 11. Nucleophilic addition and substitution reactions													

	<p>Laboratory:</p> <ol style="list-style-type: none"> 1. Aromatic substitution: nitration of methyl benzoate 2. Friedel-Crafts acylation 3. Aldehydes and ketones 4. Aldol condensation 5. Wittig reaction 6. Esterification 7. Aspirin 8. Biosynthesis of ethanol 9. Dyes 10. Diels-Alder reaction 11. Isolation of lycopene and B- carotene 12. Sulfanilamide synthesis 13. Diazotization reactions 14. Qualitative organic analysis
<p>Outcomes: Describe measurable skills or knowledge that students should be able to demonstrate as evidence that they have mastered the course content.</p>	<p>Upon successful completion of this course, the student will be able to do the following:</p> <p>Lecture:</p> <ol style="list-style-type: none"> 1. identify aromatic compounds, including halides and aryl alkanes 2. explain conjugation, resonance and dienes: Diels Alder reaction 3. identify and predict reactions of aldehydes and ketones 4. identify, give examples and discuss reactivity of carboxylic acids and derivatives 5. discuss the carbonyl condensation reactions: e.g., aldol, claisen 6. identify and discuss Amines and reactions 7. identify phenols and discuss phenolic chemistry 8. identify heterocyclic compounds and illustrate their chemistry 9. explain condensed ring systems 10. discuss electrophilic aromatic substitution reactions 11. discuss nucleophilic addition and substitution reactions <p>Laboratory:</p> <ol style="list-style-type: none"> 1. master principles and techniques of completing laboratory notebook records by recording experimental procedures and results 2. synthesize representative organic compounds in the laboratory 3. purify laboratory products by distillation and recrystallization 4. determine fundamental physical properties of synthetic products by Fourier Transform Infrared Spectroscopy, boiling points, melting points and refractive index 5. identify selected organic molecules from their infrared, NMR and mass spectra 6. determine theoretical and per cent yields of laboratory products 7. utilize chromatography to resolve mixtures and determine purity 8. configure and utilize molecular modeling and molecular orbital calculation programs <p>PROGRAM: <i>(Numbering reflects Program Outcomes as they appear in the college catalog)</i> N/A</p> <p>COMPETENCY FULFILLED: Scientific Knowledge & Understanding (SCKX) OR Scientific Reasoning (SCRX)</p>
<p>Evaluation: List how the above outcomes will be assessed.</p>	<p>Assessment will be based on some or all of the following criteria:</p> <p>quizzes examinations brief reports library research reports laboratory reports bound laboratory notebooks</p>

Instructional Resources: List library (e.g. books, journals, on-line resources), technological (e.g. Smartboard, software), and other resources (e.g. equipment, supplies, facilities) required and desired to teach this course.	Required: Chemical laboratory Desired: Software for molecular modeling
Textbook(s)	Smith, <i>Organic Chemistry</i> , 2 nd ed.; McGraw Hill Williamson, <i>Organic Experiments</i> , 9 th ed.; Houghton Mifflin