

CHEM 102 College Chemistry II-CrsRvs-2019-11-06

- The workflow icon is no longer available. Please click on the Page Status after the orange circle icon near the page title. *

Form Information

 The page you originally access is the global template version. To access the template document that progresses through the workflow, please complete the following steps:

First Step: ONLY change the bracketed text in the proposal name to match one of the following naming formats. You should remove the brackets as you do so.

- For a course revision proposal: **SWST 201 Sidewalk Construction and Planning-CrsRvs-2019-09-02**
- For a course deletion proposal, you may modify the page code: **SWST 217 Construction of Cobblestone Sidewalks-CrsDel-2019-09-02**
- For a course revision that includes a new request for distance education approval, you may modify the page code: **SWST 440 Computer-Aided Sidewalk Design-CR/DE-2019-09-02**

Note - you generally do not need to request DE approval again if the course is already on the approved list: [CLICK HERE TO SEE ALL APPROVED DE COURSES](#)

Second Step: Click "SAVE" on bottom right

- DO NOT TYPE ANYTHING INTO THE FIRST PAGE OTHER THAN THE TEXT IN BRACKETS**
- Please be sure to remove the Brackets while renaming the page**

Third Step: Make sure the word **DRAFT** is in yellow at the top of the proposal

Fourth Step: Click on "**EDIT CONTENTS**" (*not EDIT*) and start completing the template. When exiting or when done, click "**SAVE**" (*not Save Draft*) on bottom right

When ready to submit click on the **Page Status** link next to the orange circle icon and hit approve. It will then move to the chair as the next step in the workflow.

**Indicates a required field*

Proposer*	Sanda Maicaneanu	Proposer Email*	sanda.maicaneanu@iup.edu
Contact Person*	Sanda Maicaneanu	Contact Email*	sanda.maicaneanu@iup.edu
Proposing Department/Unit*	Chemistry	Contact Phone*	724-357-2277

Course Level*	undergraduate-level
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Course Revisions

(Check all that apply; fill out categories below as specified; i.e. if only changing a course title, only complete Category A)

Category A:	Category B: course_revision liberal-studies <i>* Teacher Education: Please complete the Teacher Education section of this form (below)</i> <i>* Liberal Studies: Please complete the Liberal Studies section of this form (below)</i> <i>* Distance Education: Please complete the Distance Education section of this form (below)</i> <i>Check the APPROVED DE Course List - ON THE I-WIKI DOCUMENTS PAGE <u>before</u> completing the Distance Education (DE) section. If the course is already approved for Distance Education, you DO NOT need to do another DE proposal.</i>
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Rationale for Proposed Changes (All Categories)

<p>(A) Why is the course being revised/deleted:*</p> <p><i>Please be specific - this should be have more detail than the Summary for the Senate.</i></p>	<p>CHEM 102 College Chemistry II is being revised in order to align the course Student Learning Outcomes (SLOs) with the Expected Undergraduate Student Learning Outcomes (EUSLOs) that underpin the Liberal Studies program. The proposal also describes the methods by which the SLOs are assessed.</p>
<p>(B) University Senate Summary of Rationale*</p>	<p><i>Please enter a single paragraph summary/rationale of changes or proposal for University Senate.</i></p> <p>CHEM 102 College Chemistry II is being revised in order to align the course Student Learning Outcomes (SLOs) with the Expected Undergraduate Student Learning Outcomes (EUSLOs) that underpin the Liberal Studies program. The proposal also describes the methods by which the SLOs are assessed.</p>
<p>(C) Implications of the change on the program, other programs and the Students:*</p>	<p>The proposal has no implications for students, chemistry programs, or other programs.</p>

Current Course Information*	
Category A	
(D) Current Prefix*	CHEM
Proposed Prefix	
(E) Current Number*	102
Proposed Number	
(F) Current Course Title*	College Chemistry II
Proposed Course Title	
(G) Current Prerequisite(s)	CHEM 101
Proposed Prerequisite(s)	<p><i>Note: if the current prerequisite is being dropped, you must state that clearly here: "Prerequisite is being changed to none." If it is being kept, you should repeat it here. <u>Please do not leave either prerequisite field blank.</u> If both the current and proposed rerequisites are 'none', please write 'none' in both boxes.</i></p>
(H) Current Catalog Description	<p>Fundamental principles and concepts of organic and biochemistry are studied. Deals primarily with structural features of organic compounds, the chemistry of functional groups, and practical examples and uses of organic compounds. The laboratory portion illustrates properties and reactions of representative organic compounds. Designed for selected majors within the College of Health and Human Services and to fulfill the Liberal Studies Natural Science Laboratory Sequence requirement.</p>
Proposed Catalog Description	
<i>If changing Category A, no further action required.</i>	
Category B (if no change, leave blank)	
<p>(I) Repeatable Course</p> <p>This is only required for a course that can be repeated multiple times, such as an Independent Study or Internship. It does not refer to the D/F repeat process.</p>	<p>If YES, please complete the following:</p> <p>Number of Credits that May be Repeated:</p> <p>Maximum Number of Credits Allowed to be Repeated:</p>
Proposed Repeatable Course	<p>If YES, please complete the following:</p> <p>Number of Credits that May be Repeated:</p> <p>Maximum Number of Credits Allowed to be Repeated:</p>

(J) Number of Credits	Class Hours per week:3 Lab Hours:2 Credits:4												
Proposed Number of Credits	Class Hours:Lab Hours:Credits:												
(K) Current Course Student Learning Outcomes (SLOs)	<ol style="list-style-type: none"> 1. Recognize the principles of organic chemistry and apply them to biomolecules. 2. Analyze biochemical processes in a qualitative and semi-quantitative manner. 3. Relate biochemical principles to practical applications in areas such as safety science. 												
(L) Proposed Course Student Learning Outcomes (SLOs) For each outcome, describe how the outcome will be achieved	Note that the text box in the table expands <table border="1" data-bbox="472 541 1484 894"> <thead> <tr> <th data-bbox="472 541 561 621">SLO #</th> <th data-bbox="561 541 886 621">Outcome</th> <th data-bbox="886 541 1484 621">How outcome is assessed</th> </tr> </thead> <tbody> <tr> <td data-bbox="472 621 561 716">1</td> <td data-bbox="561 621 886 716">Recognize the principles of organic chemistry and apply them to biomolecules</td> <td data-bbox="886 621 1484 716">Homework assignments, quizzes, and exam questions will require students to identify and apply these principles.</td> </tr> <tr> <td data-bbox="472 716 561 810">2</td> <td data-bbox="561 716 886 810">Analyze biochemical processes in a qualitative and semi-quantitative manner</td> <td data-bbox="886 716 1484 810">Homework assignments, quizzes, and exam questions will require students to perform qualitative and semi-quantitative analysis of specific chemical problems.</td> </tr> <tr> <td data-bbox="472 810 561 894">3</td> <td data-bbox="561 810 886 894">Relate biochemical principles to practical applications in areas such as safety science</td> <td data-bbox="886 810 1484 894">Lab reports and exam questions will evaluate how well students can connect theory with practice.</td> </tr> </tbody> </table>	SLO #	Outcome	How outcome is assessed	1	Recognize the principles of organic chemistry and apply them to biomolecules	Homework assignments, quizzes, and exam questions will require students to identify and apply these principles.	2	Analyze biochemical processes in a qualitative and semi-quantitative manner	Homework assignments, quizzes, and exam questions will require students to perform qualitative and semi-quantitative analysis of specific chemical problems.	3	Relate biochemical principles to practical applications in areas such as safety science	Lab reports and exam questions will evaluate how well students can connect theory with practice.
SLO #	Outcome	How outcome is assessed											
1	Recognize the principles of organic chemistry and apply them to biomolecules	Homework assignments, quizzes, and exam questions will require students to identify and apply these principles.											
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3	Relate biochemical principles to practical applications in areas such as safety science	Lab reports and exam questions will evaluate how well students can connect theory with practice.											
(M) Previous Brief Course Outline <i>(It is acceptable to copy from old syllabus)</i>	<p><i>As outlined by the federal definition of a "credit hour", the following should be a consideration regarding student work - For every one hour of classroom or direct faculty instruction, there should be a minimum of two hours of out of class student work.</i></p> <ol style="list-style-type: none"> 1. Review of College Chemistry I <ul style="list-style-type: none"> • Brief review of chemical bonding, acid-base behavior, oxidation/reduction and intermolecular forces. 2. Saturated Hydrocarbons <ul style="list-style-type: none"> • Definition of organic chemistry and introduction to functional groups. • Structures, formulas, names (nomenclature system) of alkanes and cycloalkanes. • Physical properties of saturated hydrocarbons including water solubility, melting/boiling points and relationship to chemical composition/structure. • Constitutional and geometric isomers. • Chemical reactivities including combustion, halogenation. • Applications including insecticides, global warming/loss of the ozone layer, safety issues. 3. Unsaturated Hydrocarbons <ul style="list-style-type: none"> • Structures, formulas, names (nomenclature system) of alkenes and alkynes, aromatics. • Physical properties of unsaturated hydrocarbons. • Constitutional and geometric isomers. • Chemical reactivities including addition, oxidation, polymerization, (aromatic) substitution. • Practical applications/everyday uses including plastics, pharmaceuticals, food additives (antioxidants). 4. Alcohols, Phenols, Ethers and their Sulfur Analogues <ul style="list-style-type: none"> • Structures, formulas, names (nomenclature system) of alcohols, phenols, ethers, and Physical properties. • Chemical reactions including acid-base behavior, dehydration and oxidation. • Practical applications/everyday uses. 5. Aldehydes and Ketones <ul style="list-style-type: none"> • Structures, formulas, names (nomenclature system) of aldehydes and ketones. • Physical properties. • Chemical reactions including oxidation and reduction, hemiacetal and acetal formation, hydrolysis. • Practical applications/everyday uses including industrial solvents. 6. Carboxylic Acids. Esters and other Acid Derivatives 												

	<ul style="list-style-type: none"> • Structures, formulas, names (nomenclature system) of carboxylic acids, esters, anhydrides. • Physical properties. • Chemical reactions including acidity, esterification, saponification, hydrolysis. Importance of phosphate esters and anhydrides to biological reactions. • Esters as flavor compounds and pain relievers. <p>7. Amines and Amides</p> <ul style="list-style-type: none"> • Structures, formulas, names (nomenclature system) of amines and amides. • Physical properties. • Chemical reactions including basicity of amines, synthesis and hydrolysis of amides. • Practical applications/everyday uses. <p>8. Stereoisomerism</p> <ul style="list-style-type: none"> • Identification of chiral molecules, tetrahedral stereocenters. • Optical activity of enantiomers. • Chemical reactivity of enantiomers. • Importance of enantiomers to synthetic drug molecules (side effects). <p>9. Carbohydrates</p> <ul style="list-style-type: none"> • Chemical structures of carbohydrates including mono-, di- and polysaccharides. • Physical and chemical properties of carbohydrates, including stereochemistry. • Biological and nutritional roles of carbohydrates. • Structure/function relationships. <p>10. Lipids</p> <ul style="list-style-type: none"> • Chemical structures of lipids including fatty acids, triacylglycerols, phospholipids, sphingolipids, steroids, eiconasnoids, fat soluble vitamins. • Physical and chemical properties of lipids. • Biological and nutritional roles of lipids. Structure/function relationships. • Structure and importance of biological membranes. <p>11. Proteins</p> <ul style="list-style-type: none"> • Chemical structures of amino acids. • Peptide bond formation. • Physical and chemical properties of proteins. • Levels of protein structure. • Protein denaturation. • Biological and nutritional roles of proteins. • Structure/function relationships. <p>12. Nucleic Acids</p> <ul style="list-style-type: none"> • Chemical structures of nucleic acids. • Three-dimensional structures of DNA and RNA. • The genetic code. • Introduction to biotechnology and its importance.
<p>(N) Brief Course Outline</p> <p><i>(Give sufficient detail to communicate the content to faculty across campus. It is not necessary to include specific readings, calendar or assignments)</i></p>	<p><i>As outlined by the federal definition of a "credit hour", the following should be a consideration regarding student work - For every one hour of classroom or direct faculty instruction, there should be a minimum of two hours of out of class student work.</i></p>

Distance Education Section

- Complete this section only if adding Distance Education to a New or Existing Course

If Completing this Section, Check the Box to the Right:	NOTE: you must check this box if the Course has previously been approved for Distance Education
Course Prefix/Number	
Course Title	
Type of Proposal	<i>See CBA, Art. 42.D.1 for Definition</i>
Brief Course Outline	<p><i>Give an outline of sufficient detail to communicate the course content to faculty across campus. It is not necessary to include specific readings, calendar or assignments</i></p> <p><i>As outlined by the federal definition of a "credit hour", the following should be a consideration regarding student work - For every one hour of classroom or direct faculty instruction, there should be a minimum of two hours of out of class student work.</i></p>
Rationale for Proposal (Required Questions from CBA)	
How is/are the instructor(s) qualified in the Distance Education delivery method as well as the discipline?	
For each outcome in the course, describe how the outcome will be achieved using Distance Education technologies.	
How will the instructor-student and student-student interaction take place? (if applicable)	
How will student achievement be evaluated?	
How will academic honesty for tests and assignments be addressed?	

Liberal Studies Section

- Complete this section only for a new Liberal Studies course or Liberal Studies course revision

If Completing this Section, Check the Box to the Right:	NOTE: you must check this box if the Course/Program has previously been approved for Liberal Studies
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Liberal Studies Course Designations (Check all that apply)

Learning Skills:

Knowledge Area:

natural_science_laboratory

Liberal Studies Elective

Please mark the designation(s) that apply - must meet at least one

Expected Undergraduate Student

Map each course outcome to the appropriate EUSLOs that apply. Fill in the course outcome number

See <https://www.iup.edu/liberal/faculty-and-staff/euslos/> for additional information regarding mapping EUSLOs

Learning Outcomes

(EUSLOs)

Map the Course Outcome to the

EUSLO's

Informed Learners demonstrate:	Course SLO #
<ul style="list-style-type: none"> the ways of modeling the natural, social and technical worlds 	#1
<ul style="list-style-type: none"> The aesthetic facets of human experience 	
<ul style="list-style-type: none"> the past and present from historical, philosophical and social perspectives 	
<ul style="list-style-type: none"> the human imagination, expression and traditions of many cultures 	
<ul style="list-style-type: none"> the interrelationships within and across cultures & global communities 	
<ul style="list-style-type: none"> the interrelationships within and across disciplines 	
Empowered Learners demonstrate:	Course SLO #
<ul style="list-style-type: none"> effective oral and written communication abilities 	
<ul style="list-style-type: none"> ease with textual, visual and electronically-mediated literacies 	
<ul style="list-style-type: none"> problem solving skills using a variety of methods and tools 	#2
<ul style="list-style-type: none"> information literacy skills including the ability to access, evaluate, interpret and use information from a variety of sources 	
<ul style="list-style-type: none"> the ability to transform information into knowledge and knowledge into judgement and action 	
<ul style="list-style-type: none"> the ability to work within complex systems and with diverse groups 	
<ul style="list-style-type: none"> critical thinking skills including analysis, application and evaluation 	

	<ul style="list-style-type: none"> reflective thinking and the ability to synthesize information and ideas 	
	Responsible Learners demonstrate:	Course SLO #
	<ul style="list-style-type: none"> intellectual honesty 	#3
	<ul style="list-style-type: none"> concern for social justice 	
	<ul style="list-style-type: none"> civic engagement 	
	<ul style="list-style-type: none"> an understanding of the ethical and behavioral consequences of decisions and actions on themselves, on society, and on the physical world 	
	<ul style="list-style-type: none"> an understanding of themselves and a respect for the identities, histories and cultures of others 	

How will each outcome be measured

(note should mirror (L) Student Learning

Outcomes* (SLO) from the course

proposal

Narrative on how the course will address the Selected Category Content

Course SLO #	Assessment Tool to be used to measure the outcome
1	Homework, quizzes, and exam questions
2	Homework, quizzes, and exam questions
3	Lab reports and exam questions

All Liberal Studies courses are required to include perspectives on cultures and have a supplemental reading.

Please answer the following questions.

Liberal Studies courses must include

the perspectives and contributions

of ethnic and racial minorities and

of women whenever appropriate to

the subject matter. Please explain

how this course will meet this


criterion.

Perspectives and contributions by women and ethnic minorities in chemistry are historic: Madam Curie's discovery of radiation, Markovnikov's Rule, the periodic table described by Mendeleev, the foundation of organic chemistry by Frederick Wohler, These landmark scientists and others are mentioned in the text and not overlooked by instructors.

<p>Liberal Studies courses require the reading and use by students of at least one non-textbook work of fiction or non-fiction or a collection of related articles. Please describe how your course will meet this criterion.</p>	<p>The exception to non-textbook work is made by the quantitative nature of the course in both lecture (topics such as measurements, dimensional analysis, stoichiometry) and laboratory. Students are required to use calculators for complex algebraic problem-solving and for logarithmic functions (pH). Videos describing various chemical and biochemical principles and practical applications are included in the instructors' class material.</p>
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Teacher Education Section

- Complete this section only for a new Teacher Education course or Teacher Education course revision

<p>If Completing this Section, Check the Box to the Right:</p>	<p>NOTE: you must check this box if the Course/Program has previously been approved for Teacher Education related items</p>
<p>Course Designations:</p>	
<p>Key Assessments</p>	
<p>Narrative Description of the Required Content</p>	<p>For both new and revised courses, please attach (see the program education coordinator):</p> <ul style="list-style-type: none"> • The Overall Program Assessment Matrix • The Key Assessment Guidelines • The Key Assessment Rubric <p style="text-align: center;">File Modified</p> <hr/> <p>No files shared here yet.</p> <ul style="list-style-type: none"> • Drag and drop to upload or browse for files 
<p>Narrative Description of the Required Content</p>	<p><i>How the proposal relates to the Education Major</i></p>

Please scroll to the top and click the Page Status if you are ready to take action on the workflow.

Please submit an ihelp if you have any questions <http://ihelp.iup.edu>