

# Bachelor of Science Chemistry Pre-medical Track-PrgRsv-2015-10-21

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## Form Information



**First Step:** Change the text in the [brackets] so it looks like this: **Bachelors in Criminology Pre-Law-PrgRsv-2015-08-10**

**Second Step:** Click save on bottom right

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

**Fourth Step:** Click on **EDIT CONTENTS** and start completing the template. When exiting or done, click save on bottom right

When ready to submit click on the workflow icon and hit approve. It will then move to the chair as the next step in the workflow.

Please direct any questions to [curriculum-approval@iup.edu](mailto:curriculum-approval@iup.edu)

*\*Indicates a required field*

<b>Proposer*</b>	Ronald See	<b>Proposer Email*</b>	rfsee@iup.edu
<b>Contact Person*</b>	Ronald See	<b>Contact Email*</b>	rfsee@iup.edu
<b>Proposing Department/Unit*</b>	Chemistry	<b>Contact Phone*</b>	7-4489

### Program Revision Options (Check all that apply)

Program Revision

*\* Teacher Education: Please complete the Teacher Education section of this form (below)*

*\* Liberal Studies: Please complete the Liberal Studies section of this form (below)*

**Course Level:\***

undergraduate-level

### Rationale for Proposed Changes

**(A) Why is the program being revised?\***

**Objective 3:**

show the ability to synthesize and apply concepts from multiple sub-disciplines of chemistry.

**Rationale:**

Course content in the advanced chemistry courses requires a foundation knowledge across the breadth of chemistry. Advanced courses, seminar courses and undergraduate research require students to apply concepts from a variety of courses in novel ways.

**Objective 4:**

be able to work with peers to solve complex, multi-step problems.

**Rationale:**

Starting with General Chemistry, all chemistry lecture courses require higher-level quantitative problem-solving ability. In laboratory courses, students often work in small groups, and are required to transfer the problem-solving strategies learned in the classroom to real-world, hands-on situations.

**Objective 5:**

demonstrate the ability to communicate answers and scientific reasoning clearly, in both written and oral forms.

**Rationale:**

Laboratory reports and oral presentations require students to learn and master the ability to communicate in the context of scientific discourse.

**Objective 6:**

have progressively developed effective and safe chemistry laboratory skills that require the methods and instrumentation of modern chemistry.

**Rationale:**

As students progress, laboratory course content requires an increasing level of synthesis and evaluation, with a greater emphasis on procedure development and independent thinking. Throughout the laboratory experience, safety is stressed and students are expected to critically analyze procedure for safety and effectiveness.

**Objective 7:**

demonstrate, during their undergraduate research experience, the ability to: evaluate novel results; self-direct their activities; apply their knowledge in an integrated scientific context.

**Rationale:**

Undergraduate research represents the capstone experience for chemistry majors, synthesizing the knowledge and experience of a student's lecture and laboratory courses in the context of a novel scientific problem.

**Assessment**

There are three components proposed for the periodic assessment of this degree program:

*Senior Survey* – A questionnaire will be given to students who are in the last semester of their degree program. This questionnaire will address the graduates' perceptions of whether they have achieved the program learning outcomes set by the Chemistry Department. It will also have the students indicate where they plan to go once they leave IUP, and the strengths and weaknesses of the program.

*DUCK Exam* - Students in their last semester will be given the Diagnostic of Undergraduate Chemical Knowledge (DUCK) exam provided by the American Chemical Society's Exam Institute. The student's scores will be compared to the published national norms for this exam.

	<p><i>Five-year Review</i>– The American Chemical Society evaluates the B.S. degree programs for certification every five years and requires an interim report every year. The Chemistry Department will carefully consider for implementation, the recommendations of the American Chemical Society Committee on Professional Training. The five-year ACS review is a thorough examination of program content by a uniquely qualified extramural agency. The review results in specific recommendations for improvement when weaknesses are detected. Since continued certification of the program depends on the outcomes of this review, it represents a very important mea important mea im</p>

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CHE M 343	Physical Chemistry Laboratory I	1 cr
M		cr
CHE M 490	Chemistry Seminar III	1 cr
CHE M 498	Problems in Chemistry	2 cr
BIO C 301	Foundations of Biochemistry	3 cr
C		cr
<b>Controlled Electives:</b>		
326, 342 and 344, or 411		c r- 8 cr
<b>Other Requirements:</b>		1
		20
MA TH	Probability and Statistics for Sciences	3 cr
MA TH	Calculus III for Physics, Chemistry, and	3 cr
BIO L	Principles of Cell and Molecular Biology	4 cr
L	Microbiology	cr
364		r- cr

At least 11cr additional from the following list: (2, 3, 4)  
 BIOC: 311, 312, 481  
 BIOL: 150, 240, 241, 250, 331  
 CHEM: 326, 331, 342, 343, 344, 411, 481

BIOL 202 Principles of Cell and Molecular Biology 4 cr  
 BIOL 203 Principles of Genetics and Development 4 cr  
 MATH 216 Probability and Statistics for Natural Sciences 3 cr

**Total Degree Requirements:** 1

(1) For students transferring into the program, MATH 121 and 125 and 126, respectively.

additional courses. Students should be aware of the require

following toward the requirements for the Bachelor of Science: 3cr of LS social science; 11cr of required CHEM courses (see 27cr). Upon completing the first year of Medical School, students are required to take CHEM 214, 325 and 341. If these CHEM cou

(4) To qualify for an ACS-certified degree in chemistry, stu



<p><b>Liberal Studies courses must include</b></p> <p><b>the perspectives and contributions</b></p> <p><b>of ethnic and racial minorities and</b></p> <p><b>of women whenever appropriate to</b></p> <p><b>the subject matter. Please explain</b></p> <p><b>how this course will meet this</b></p> <p><b>criterion.</b></p>	
<p><b>Liberal Studies courses require the</b></p> <p><b>reading and use by students of at</b></p> <p><b>least one non-textbook work of</b></p> <p><b>fiction or non-fiction or a collection</b></p> <p><b>of related articles. Please describe</b></p> <p><b>how your course will meet this</b></p> <p><b>criterion.</b></p>	

### Teacher Education Section

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

<p><b>If Completing this Section,</b></p> <p><b>Check the Box to the Right:</b></p>	
<p><b>Course Designations:</b></p>	
<p><b>Key Assessments</b></p>	
<p><b>Narrative Description of the Required Content</b></p>	<p>For both new and revised courses, please attach (see the program education coordinator):</p> <ul style="list-style-type: none"> <li>• The Overall Program Assessment Matrix</li> <li>• The Key Assessment Guidelines</li> <li>• The Key Assessment Rubric</li> </ul> <div style="text-align: center; margin: 10px 0;"> <p><b>File      Modified</b></p> <hr style="width: 100px; margin: 0 auto;"/> <p>No files shared here yet.</p> </div> <ul style="list-style-type: none"> <li>• Drag and drop to upload or <a href="#">browse for files</a> </li> </ul>
<p><b>Narrative Description of the Required Content</b></p>	<p><i>How the proposal relates to the Education Major</i></p>

**For Deans Review**



Are Resources Available/Sufficient for this Course?

Is the Proposal Congruent with the College Mission?

Has the Proposer Attempted to Resolve Potential Conflicts with Other Academic Units?

Comments:

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