

# BIOC 502 Advanced Biochemistry-NewCrs-2018-02-07

- 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 text in the [brackets] so it looks like this: **CRIM 101 Intro to Criminology-CrsRvs-2015-08-10**

- ***If DUAL LISTED list BOTH courses in the page title***

**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 workflow icon and hit approve. It will then move to the chair as the next step in the workflow.

*\*Indicates a required field*

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

(A) Course Prefix*	BIOC
(B) Course Number*	<i>See the Registrar's List of Unavailable Course Numbers at <a href="http://www.iup.edu/WorkArea/linkit.aspx?LinkIdentifier=id&amp;ItemID=129323">http://www.iup.edu/WorkArea/linkit.aspx?LinkIdentifier=id&amp;ItemID=129323</a></i> 502
(C) Course Title*	Advanced Biochemistry
(D) Course Level*	graduate-level

<p><b>(E) Cross Listed*</b></p> <p>Dual Listed courses must use the</p> <p>Dual Listed form</p> <p>Note: both courses to be dual-listed</p> <p>must be approved through Senate</p> <p>PRIOR to requesting Dual Listing</p> <p><i>Dual Listed = Courses listed at two levels, such as undergraduate and graduate, masters and doctoral, etc.</i></p>	<p><i>Cross Listed = Course has more than one prefix such as GEOG/RGPL 233</i></p> <p>NO</p> <p>If YES, with:</p>
<p><b>(F) Variable Credit*</b></p>	<p>NO</p> <p>If YES, enter the number of credits:</p>
<p><b>(G) Variable Title*</b></p>	<p>NO</p> <p>If YES, enter the title(s):</p>
<p><b>(H) Number of Credits*</b></p>	<p>Class Hours per Week:3</p> <p>Lab Hours:0</p> <p>Credits:3</p>
<p><b>(I) Repeatable Course*</b></p> <p>This is for courses that can be</p> <p>Repeated multiple times e. g. Internship</p>	<p>NO</p> <p>If YES, please complete the following:</p> <p style="text-align: center;">Number of Credits that May be Repeated:</p> <p style="text-align: center;">Maximum Number of Credits Allowed to be Repeated:</p>
<p><b>(J) Prerequisite(s)</b></p>	<p>instructor permission (credit for an undergraduate course in biochemistry is required)</p>
<p><b>(K) Co-requisite(s)</b></p>	<p><i>This means that another course must be taken in the same semester as the proposed course</i></p>

<p><b>(L) Additional Information</b></p>	<p><i>Check all that apply. Note: Additional documentation will be required</i></p> <p><i>* Teacher Education: Please complete the Teacher Education section of this form (below)</i></p> <p><i>* Liberal Studies: Please complete the Liberal Studies section of this form (below)</i></p> <p><i>* Distance Education: Please complete the Distance Education section of this form (below)</i></p>																		
<p><b>(M) Recommended Class Size</b></p>	<p>NO</p> <p>Number (Enter Zero if No):0</p> <p>If YES: (Check one of the following reasons and provide a narrative explanation)</p> <p>Explain (required):</p>																		
<p><b>(N) Catalog Description*</b></p>	<p><i>Guidelines: Do not include pre/co-requisite information here. The registrar prefers a concise description of course content, beginning with an active verb.</i></p> <p>Examines biochemical processes with a focus on metabolism. Central pathways are considered in detail, including regulatory mechanisms and hormonal signaling. Other selected processes and integration of mammalian metabolism are explored. Assumes an understanding of concepts relating to structure/function relationships for biomolecules, biological membranes, and signaling included in BIOC 301.</p>																		
<p><b>(O) Student Learning Outcomes* (SLO)</b></p> <p>For Each Outcome Describe</p> <p>How the Outcome Will Be Measured</p>	<p><i>These should be measurable, appropriate to the course level, and phrased in terms of <u>student achievement</u>, not instructional or content outcomes</i></p> <p><i>If dual listed, indicate additional learning objectives for the higher level course. <b>Hit Tab to add additional lines</b></i></p> <p>Note that the text box in the table expands</p> <table border="1" data-bbox="326 1024 1485 1465"> <thead> <tr> <th data-bbox="326 1024 415 1100">SLO #</th> <th data-bbox="415 1024 1268 1100">Outcome</th> <th data-bbox="1268 1024 1485 1100">How outcome is assessed</th> </tr> </thead> <tbody> <tr> <td data-bbox="326 1100 415 1167">1</td> <td data-bbox="415 1100 1268 1167">Explore the structure and function of different biomolecules and how they facilitate a number of biochemical processes.</td> <td data-bbox="1268 1100 1485 1167">in-class activities, quizzes and exams</td> </tr> <tr> <td data-bbox="326 1167 415 1234">2</td> <td data-bbox="415 1167 1268 1234">Master the unifying theme by which organisms orchestrate transformations of matter and energy in order to maintain the living state, in a word: metabolism.</td> <td data-bbox="1268 1167 1485 1234">in-class activities, quizzes and exams</td> </tr> <tr> <td data-bbox="326 1234 415 1327">3</td> <td data-bbox="415 1234 1268 1327">Explain in detail the difference between the energy production in animals and photosynthetic organisms.</td> <td data-bbox="1268 1234 1485 1327">in-class activities, quizzes and exams</td> </tr> <tr> <td data-bbox="326 1327 415 1394">4</td> <td data-bbox="415 1327 1268 1394">Show a nuanced understanding of the relationship between metabolism and different human diseases.</td> <td data-bbox="1268 1327 1485 1394">in-class activities, quizzes and exams</td> </tr> <tr> <td data-bbox="326 1394 415 1461">5</td> <td data-bbox="415 1394 1268 1461">Demonstrate their ability to use the biochemical literature to research a topic, and to communicate this scientific information in both written and oral formats.</td> <td data-bbox="1268 1394 1485 1461">written report, oral presentation</td> </tr> </tbody> </table>	SLO #	Outcome	How outcome is assessed	1	Explore the structure and function of different biomolecules and how they facilitate a number of biochemical processes.	in-class activities, quizzes and exams	2	Master the unifying theme by which organisms orchestrate transformations of matter and energy in order to maintain the living state, in a word: metabolism.	in-class activities, quizzes and exams	3	Explain in detail the difference between the energy production in animals and photosynthetic organisms.	in-class activities, quizzes and exams	4	Show a nuanced understanding of the relationship between metabolism and different human diseases.	in-class activities, quizzes and exams	5	Demonstrate their ability to use the biochemical literature to research a topic, and to communicate this scientific information in both written and oral formats.	written report, oral presentation
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<b>(P) Brief Course Outline*</b>	<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</i></p> <p><i>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"> <li>1. Principles of bioenergetics &amp; metabolism</li> <li>2. Glucose metabolism</li> <li>3. Metabolic regulation &amp; glycogen metabolism</li> <li>4. Citric acid cycle</li> <li>5. Fatty acid catabolism</li> <li>6. Amino acid oxidation &amp; urea cycle</li> <li>7. Oxidative phosphorylation</li> <li>8. Photophosphorylation</li> <li>9. Carbohydrate synthesis in bacteria and plants</li> <li>10. Lipid biosynthesis</li> <li>11. Hormonal regulation &amp; integration of metabolism</li> </ol>
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<b>Rationale for Proposal</b>
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<b>(Q) Why is this Course Being Proposed?*</b>	<p>Many students in our graduate program have taken only one biochemistry course. The present graduate biochemistry course has not been offered in several years, and there are no plans to offer it in the foreseeable future. Therefore, there is no opportunity for our graduate students to take a second biochemistry course and gain a knowledge base that would be appropriate for a Master's degree in Chemistry. This proposal for BIOC 502 represents a course that will be offered every year, and this will allow our graduate students to meet their needs for a biochemistry course at the graduate level.</p>
<b>(R) University Senate Summary of Rationale</b>	<p><i>Please enter a single paragraph summary/rationale of changes or proposal for University Senate.</i></p> <p>BIOC 502 is being proposed as a dual-listed course with BIOC 402. This will allow graduate students who have not taken two semesters of biochemistry to address their needs and gain a knowledge base that would be appropriate for a Master's degree in Chemistry.</p>
<b>(S) How Does it Fit into the Departmental Curriculum?*</b>	<p><i>Check all that apply</i></p> <p>Other</p> <p>If Other, please explain:</p> <p>Students must take a minimum of 12 credits from a list of courses, and BIOC 502 would be one of the courses on this list.</p>
<b>(T) Is a Similar Class Offered in Other Departments? *</b>	<p>NO</p> <p>Please Provide Comment:</p>
<b>(U) Does it Serve the College /University Above and Beyond the Role it Serves in the Department?*</b>	<p>NO</p> <p>Please Provide Comment:</p>

<b>(V) Who is the Target Audience for the Course?*</b>	<p>Course Designed for Majors</p> <p>If Other, please explain:</p>								
<b>(W) Implications for Other Departments*</b>	<p>A. What are the implications for other departments? (For Example: overlap of content with other disciplines, requirements for other programs)</p> <p>none</p> <p>B. How have you addressed this with other department(s) involved? What was the outcome of that attempt?</p>								
<b>(X) Attach Supporting Documents for Implications, if Necessary</b>	<table border="1"> <thead> <tr> <th data-bbox="293 747 836 793">File</th> <th data-bbox="836 747 1487 793">Modified</th> </tr> </thead> <tbody> <tr> <td data-bbox="293 793 836 863">Microsoft Word Document Letter_BIOC 402_502.docx Letter of support from the Biochemistry/Cell &amp; Molecular Biology Group</td> <td data-bbox="836 793 1487 863">Mar 23, 2018 by Ronald F. See</td> </tr> <tr> <td data-bbox="293 863 836 932">PDF File BIOC 302 Syl_S18.pdf Syllabus for BIOC 402 and 502 will be the same, other than the extra requirements specified in the dual-listing form.</td> <td data-bbox="836 863 1487 932">Apr 09, 2018 by Ronald F. See</td> </tr> <tr> <td colspan="2" data-bbox="293 932 1487 953"><a href="#">Download All</a></td> </tr> </tbody> </table>	File	Modified	Microsoft Word Document Letter_BIOC 402_502.docx Letter of support from the Biochemistry/Cell & Molecular Biology Group	Mar 23, 2018 by Ronald F. See	PDF File BIOC 302 Syl_S18.pdf Syllabus for BIOC 402 and 502 will be the same, other than the extra requirements specified in the dual-listing form.	Apr 09, 2018 by Ronald F. See	<a href="#">Download All</a>	
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<b>(Y) Are the Resources Adequate?*</b>	<p><i>(i.e. faculty, space, equipment, laboratory supplies, library materials, travel funds, etc.)</i></p> <p>YES</p> <p>Please Provide Comment:</p> <p>The enrolment in the undergraduate course is not large, so increased numbers from the graduate students will be helpful, and will not require an additional section.</p>								

## Distance Education Section

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

<b>If Completing this Section, Check the Box to the Right:</b>	<b>NOTE: you must check this box if the Course has previously been approved for Distance Education</b>
<b>Course Prefix/Number</b>	
<b>Course Title</b>	
<b>Type of Proposal</b>	<i>See CBA, Art. 42.D.1 for Definition</i>

<b>Brief Course Outline</b>	<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>								
<b>Rationale for Proposal (Required Questions from CBA)</b>									
<b>How is/are the instructor(s) qualified in the Distance Education delivery method as well as the discipline?</b>									
<b>For each outcome in the course, describe how the outcome will be achieved using Distance Education technologies.</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Course SLO #</th> <th>How outcome is assessed using Distance Education Technologies</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td></td> </tr> <tr> <td style="text-align: center;">2</td> <td></td> </tr> <tr> <td style="text-align: center;">3</td> <td></td> </tr> </tbody> </table>	Course SLO #	How outcome is assessed using Distance Education Technologies	1		2		3	
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2									
3									
<b>How will the instructor-student and student-student interaction take place? (if applicable)</b>									
<b>How will student achievement be evaluated?</b>									
<b>How will academic honesty for tests and assignments be addressed?</b>									

## Liberal Studies Section

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

<b>If Completing this Section, Check the Box to the Right:</b>	<b>NOTE: you must check this box if the Course/Program has previously been approved for Liberal Studies</b>
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<b>Liberal Studies Course Designations (Check all that apply)</b>	
<b>Section 1</b>	
<b>Learning Skills:</b>	
<b>Knowledge Area:</b>	

<b>Liberal Studies Elective</b>	<i>Please mark the competencies(s) that apply - must meet at least one</i>																																			
<b>How does this course fit into the designation you indicated above?</b>																																				
<p><b>Expected Undergraduate Student Learning Outcomes (EUSLOs)</b></p> <p>Map the Course Outcome to the EUSLO's</p>	<p><i>Map each course outcome to the appropriate EUSLO's that apply. Fill in the course outcome number. See <a href="https://www.iup.edu/liberal/faculty-and-staff/euslos/">https://www.iup.edu/liberal/faculty-and-staff/euslos/</a> for additional information regarding mapping EUSLOs</i></p> <table border="1" data-bbox="540 470 1446 1927"> <thead> <tr> <th data-bbox="540 470 1268 525"><b>Informed Learners demonstrate:</b></th> <th data-bbox="1268 470 1446 525"><b>Course SLO #</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="540 525 1268 615"> <ul style="list-style-type: none"> <li>the ways of modeling the natural, social and technical worlds</li> </ul> </td> <td data-bbox="1268 525 1446 615"></td> </tr> <tr> <td data-bbox="540 615 1268 705"> <ul style="list-style-type: none"> <li>The aesthetic facets of human experience</li> </ul> </td> <td data-bbox="1268 615 1446 705"></td> </tr> <tr> <td data-bbox="540 705 1268 795"> <ul style="list-style-type: none"> <li>the past and present from historical, philosophical and social perspectives</li> </ul> </td> <td data-bbox="1268 705 1446 795"></td> </tr> <tr> <td data-bbox="540 795 1268 886"> <ul style="list-style-type: none"> <li>the human imagination, expression and traditions of many cultures</li> </ul> </td> <td data-bbox="1268 795 1446 886"></td> </tr> <tr> <td data-bbox="540 886 1268 976"> <ul style="list-style-type: none"> <li>the interrelationships within and across cultures &amp; 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	<ul style="list-style-type: none"> <li>• intellectual honesty</li> </ul>	
	<ul style="list-style-type: none"> <li>• concern for social justice</li> </ul>	
	<ul style="list-style-type: none"> <li>• civic engagement</li> </ul>	
	<ul style="list-style-type: none"> <li>• an understanding of the ethical and behavioral consequences of decisions and actions on themselves, on society, and on the physical world</li> </ul>	
	<ul style="list-style-type: none"> <li>• an understanding of themselves and a respect for the identities, histories and cultures of others</li> </ul>	

<p>How will each outcome be measured (note should mirror (O) Student Learning</p> <p>Outcomes* (SLO) from the course proposal</p>	<table border="1"> <thead> <tr> <th>Course SLO #</th> <th>Assessment Tool to be used to measure the outcome</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> </tr> <tr> <td>2</td> <td></td> </tr> <tr> <td>3</td> <td></td> </tr> </tbody> </table>		Course SLO #	Assessment Tool to be used to measure the outcome	1		2		3	
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	2									
	3									

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

**Please answer the following questions.**

<p>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.</p>	
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<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>	
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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><b>NOTE: you must check this box if the Course/Program has previously been approved for Teacher Education related items</b></p>
<p>Course Designations:</p>	

<b>Key Assessments</b>							
	<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> <table border="1" data-bbox="326 352 1474 531"> <thead> <tr> <th data-bbox="326 352 1274 394"><b>File</b></th> <th data-bbox="1274 352 1474 394"><b>Modified</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="326 394 1274 464">Microsoft Word Document Letter_BIOC 402_502.docx Letter of support from the Biochemistry/Cell &amp; Molecular Biology Group</td> <td data-bbox="1274 394 1474 464">Mar 23, 2018 by Ronald F. See</td> </tr> <tr> <td data-bbox="326 464 1274 531">PDF File BIOC 302 Syl_S18.pdf Syllabus for BIOC 402 and 502 will be the same, other than the extra requirements specified in the dual-listing form.</td> <td data-bbox="1274 464 1474 531">Apr 09, 2018 by Ronald F. See</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>• Drag and drop to upload or <a href="#">browse for files</a>  <a href="#">Download All</a></li> </ul>	<b>File</b>	<b>Modified</b>	Microsoft Word Document Letter_BIOC 402_502.docx Letter of support from the Biochemistry/Cell & Molecular Biology Group	Mar 23, 2018 by Ronald F. See	PDF File BIOC 302 Syl_S18.pdf Syllabus for BIOC 402 and 502 will be the same, other than the extra requirements specified in the dual-listing form.	Apr 09, 2018 by Ronald F. See
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<b>Narrative Description of the Required Content</b>	<i>How the proposal relates to the Education Major</i>						

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