

Bachelor of Science Chemistry Pre-pharmacy Track- NewTrk-2015-10-21

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

Form Information



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

**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) Track Title: *	Pre-pharmacy Track
(B) Degree Designation:*	Bachelor of Science
(C) Program Name:*	Chemistry
(D) List number of credits:*	60
(E) Course Level:*	undergraduate-level

<p>(F) Narrative Catalog Description:*</p>	<p>Degree programs offered by the Department of Chemistry are the Bachelor of Science (BS) in chemistry, the Bachelor of Arts (BA) in chemistry and the BS in education in chemistry. Additionally, pre-medical and pre-pharmacy tracks are available in the BS program. Preparatory programs for other professional schools can also be developed, using the BA degree, and a chemistry minor is offered.</p> <p>Chemistry is a field that has historically enjoyed very strong career possibilities. Many students are employed directly after their undergraduate education by the chemical, pharmaceutical or related industries, in jobs that have excellent career prospects. Graduate school in chemistry or biochemistry usually includes very generous financial support, and can lead to outstanding career paths in industry, government or academic areas. These opportunities are available to students completing any of the degree programs offered by the IUP Department of Chemistry, and graduates of these programs have gone on to industrial leadership positions, and some of the most prestigious graduate programs in the country.</p> <p>The BS degree in Chemistry is designed for a student intending a career in chemistry and is certified by the American Chemical Society. The advanced courses and strong laboratory component in this degree program gives the student excellent preparation for the challenges of employment or graduate school.</p> <p>The Pre-medical and Pre-pharmacy tracks of the BS degree allow students to take all courses required for entrance into their intended professional health program, and gives them the flexibility to tailor their program to meet their individual needs. Students in these tracks retain the option of: a) attending medical or pharmacy school; b) attending graduate school in chemistry, biochemistry, pharmacology, or a variety of medically-related Ph.D. programs; c) employment in the chemistry or pharmaceutical industry. Additionally, the flexibility of these tracks allows students to change the focus of their degree program during their undergraduate experience.</p> <p>The curriculum leading to the BA degree in chemistry is designed to allow for the workable union of other disciplines with chemistry in such a way as to retain the fundamental science and mathematics requirements needed for a career in chemistry. The BA degree in chemistry also provides excellent preparation for entrance into a variety of professional schools, including dental, veterinary, chiropractic, and law. The student considering going to one of these professional schools after completion of a chemistry degree should work closely with their advisor and select additional courses as required by the professional school. This degree may also be of interest to students who have completed a significant number of credits in another degree program and decide they want to earn a degree in chemistry. The BA degree program in chemistry can incorporate a complementary program in almost any other field in the university; some disciplines that make useful combinations include biology, business administration, computer science, criminology (forensic science), English (technical writing), geoscience, government, physics, and safety science. In particular, a student seeking a career in forensic science should major in chemistry.</p> <p>The curriculum leading to the BSEd degree in chemistry is designed to prepare the student to teach chemistry at the secondary school level. Upon completion of the specified course work and the requirements of the teacher certification process, the student is eligible for Pennsylvania certification by the Pennsylvania Department of Education.</p>
<p>(G) List of Program Requirements in</p> <p>catalog layout including course</p> <p>numbers, titles, credits and any</p> <p>footnotes.*</p>	<p>Bachelor of Science – Chemistry/Pre-Pharmacy Track</p>

Liberal Studies: As outlined in the Liberal Studies section with the following specifications:		44
Mathematics: MATH 125 (1)		
Natural Sciences: PHYS 111/121 and 112/122 or 131/141 and 132/142		
Philosophy/Religious Studies: PHIL 122		
Social Science: PSYC 101, and ECON 101 or 122 (2,3)		
Liberal Studies Elective: 3cr, MATH 126 (1), no course with CHEM prefix		
Major:		49
Required Courses:		
CHEM 111 General Chemistry I or CHEM 113 Advanced General Chemistry I		4cr
CHEM 112 General Chemistry II or CHEM 114 Advanced General Chemistry II		4cr
CHEM 214	Intermediate Inorganic Chemistry (3)	3cr
CHEM 231	Organic Chemistry I	4cr
CHEM 232	Organic Chemistry II	4cr
CHEM 290	Chemistry Seminar I	1cr
CHEM 325	Analytical Chemistry I (3)	4cr
CHEM 341	Physical Chemistry I (3)	4cr
CHEM 390	Chemistry Seminar II	1cr
CHEM 490	Chemistry Seminar III	1cr
Controlled Electives: (2, 3, 4)		
At least 19 cr, consisting of:		19cr
1) BIOC 301 and 302 (6cr) or CHEM 351 (4cr)		
2) Courses from the following list:		
BIOC: 311, 312, 481		
BIOL: 150, 240, 241, 250		
CHEM: 326, 331, 342, 343, 344, 411, 481, 498		
BCOM 321 or ENGL 310		
MATH: 225		
Other Requirements:		11
BIOL 202	Principles of Cell and Molecular Biology	4cr
BIOL 203	Principles of Genetics and Development	4cr
MATH 216	Probability and Statistics for Natural Sciences	3cr
Free Electives: (2, 3)		16
Total Degree Requirements:		120

- (1) For students transferring into the program, MATH 121 and 122 may be substituted for MATH 125 and 126, respectively.
- (2) The application requirements of specific Schools of Pharmacy may result in the need to take additional courses. Students should be aware of the requirements at each program in which they are interested, and plan to take courses accordingly to meet these requirements.
- (3) Students enrolled at an accredited School of Pharmacy after three years at IUP may count the following toward the requirements for the Bachelor of Science – Chemistry/Pre-Pharmacy Track: 3cr of LS social science; 11cr of required CHEM courses (see below); 13cr of free electives (total 27cr). Upon completing the first year of Pharmacy School, students electing this option are not required to take CHEM 214, 325 and 341. If these CHEM courses are taken, they may be counted toward the controlled elective requirement.
- (4) To qualify for an ACS-certified degree in chemistry, students must take BIOC 311 and CHEM 498. Additionally, they must take three lecture courses and one lab course from the following list: BIOC 302, 312, 481, CHEM 326, 331, 342, 343, 411, 481. CHEM 326 and 411 count as both a lecture and a lab course.

(H) Student Learning Outcomes*

Student Learning Outcomes for the Bachelor of Science – Chemistry / Pre-pharmacy Track

Students graduating from this program will:

Objective 1:

demonstrate preparation for application to pharmacy school, graduate school in chemistry or employment in the chemical industry.

Rationale:

Curriculum has been designed with emphasis on meeting the specific expectations of medical schools, but also incorporates the courses expected by graduate schools of chemistry and chemical employers.

Objective 2:

demonstrate the ability to analyze data and scientific arguments.

Rationale:

Course content throughout the program, in both lecture and laboratory courses, support this objective by requiring students to respond to questions at the application, analysis and synthesis levels.

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 breath 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.

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.

Five-year Review– 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 means of assessment.

Rationale for Proposal

(I) Why is this track being proposed?*

The BS in Chemistry / Pre-pharmacy Track is intended for students who are possibly interested in going to pharmacy school, but also desire the option of a career track in chemistry and related sciences. Research has shown that over 50% of students change their majors from matriculation to graduation, so it is highly advantageous to the student to follow a pre-pharmacy degree program that also includes the possibilities of graduate school in chemistry, or employment in the chemical industry. This program has been developed after careful analysis of the courses required by pharmacy schools in the region, and includes the flexibility necessary to allow students to apply to pharmacy schools while still preserving the opportunity of a career path in chemistry. There is also a 3+1 option, so that students accepted to an accredited pharmacy school in their junior year can receive an IUP undergraduate diploma.

(J) What role, if any, does it serve the College /University above and beyond the role it serves in the department?*

none noted

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 <http://ihelp.iup.edu>