

LSC Use Only No:	LSC Action-Date:	UWUCC USE Only No.	UWUCC Action-Date:	Senate Action
		08-14d.	AP-9/16/08	App-10/7/08

**Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee**

Contact Person Anne Kondo	Email Address akondo@iup.edu
Proposing Department/Unit Chemistry	Phone 74595

Check all appropriate lines and complete information as requested. Use a separate cover sheet for each course proposal and for each program proposal.

1. **Course Proposals (check all that apply)**  
 New Course       Course Prefix Change       Course Deletion  
 Course Revision       Course Number and/or Title Change       Catalog Description Change

---

Current Course prefix, number and full title      Proposed course prefix, number and full title, if changing

2. **Additional Course Designations: check if appropriate**  
 This course is also proposed as a Liberal Studies Course.       Women's Studies,      Other: (e.g.,  
 This course is also proposed as an Honors College Course.      Pan-African)

3. **Program Proposals**      Change       Catalog Description       Program Revision  
 New Degree Program       Program Title Change       Other  
 New Minor Program       New Track

B.A. CHEM

Current program name      Proposed program name, if changing

4. **Approvals**

		Date
Department Curriculum Committee Chair(s)	Wendy Lou Elcesse	11/28/07
Department Chair(s)	John Woodcock	11/28/07
College Curriculum Committee Chair	[Signature]	04/04/08
College Dean	[Signature]	4-4-08
Director of Liberal Studies *	[Signature]	9-23-08
Director of Honors College *	[Signature]	
Provost *	Gerald W. Henon	8/29/08
Additional signatures as appropriate: (include title)	[Signature]	
UWUCC Co-Chairs	Gail Schriest	9/22/08

\* where applicable

Received      Received  
SEP 22 2008      SEP 04 2008      APR 04 2008  
Liberal Studies      Liberal Studies      Liberal Studies

## **Part II. Description of Curriculum Change**

1. Catalog description for the revised program in the appropriate form. This includes both the description about the program and the list of courses and credits for the revised program.

### **Chemistry**

- Bachelor of Arts

Degrees offered by the Department of Chemistry are the Bachelor of Science with a Chemistry major, the Bachelor of Science with a Chemistry/Pre-Medical Track, the Bachelor of Arts with a Chemistry major, and the Bachelor of Science in Education with a Chemistry major. A Pre-Medical concentration is available in the B.A. curricula. Preparatory programs for other professional schools can be developed for either degree. A minor in chemistry is also offered.

The B.S. degree with a Chemistry major is a professional degree and is certified by the American Chemical Society. The student completing this major should be qualified to assume a position in industry or government as a chemist or to pursue graduate studies leading to the M.S. or Ph.D. degree in chemistry, biochemistry, materials science, forensic science, or an associated field. The Pre-Medical Track includes all courses required for entrance into medical school and gives the student the flexibility of choosing medical school or graduate school after graduation.

The curriculum leading to the B.A. degree with a Chemistry major 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. A careful selection of electives will qualify the student for entrance into many fields in which there is an acute need for persons with scientific training, and, at the same time, satisfy the entrance requirements of various professional and graduate schools. This degree may also be of interest to students who have completed a significant number of semester hours in another degree program and decide they want to earn a degree in chemistry. The Pre-Medical concentration includes all courses required for entrance into medical school.

The B.A. degree with a Chemistry major can incorporate a complementary program in almost any other field in the university; some disciplines which 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.

Either degree in chemistry provides excellent preparation for entrance into a variety of professional schools, including dental, veterinary, pharmacy, chiropractic, and law. The student considering going to one of these professional schools after completion of a chemistry degree should work closely with his or her advisor and select additional courses as required by the professional school.

The curriculum leading to the B.S.Ed. degree with a Chemistry major is designed to prepare the student to teach chemistry at the secondary school level. Upon completion of the specified coursework and the requirements of the teacher certification process, the student is eligible for Pennsylvania certification by the Pennsylvania Department of Education. The B.S.Ed. degree with a Chemistry major program is also certified by the American Chemical Society.

## Bachelor of Arts–Chemistry

<b>Liberal Studies:</b> As outlined in Liberal Studies section with the following specifications: <b>Mathematics:</b> MATH 125 <b>Natural Science:</b> PHYS 111-121 and 112-122 <i>or</i> PHYS 131-141 and 132-142 <b>Liberal Studies Electives:</b> 3cr, no courses with CHEM prefix		48
<b>Major:</b>		30-33
<b>Required Courses:</b>		
CHEM 113	Concepts in Chemistry I	4cr
CHEM 114	Concepts in Chemistry II (1)	4cr
CHEM 214	Intermediate Inorganic Chemistry	2cr
CHEM 231	Organic Chemistry I	4cr
CHEM 232	Organic Chemistry II	4cr
CHEM 321	Quantitative Analysis	4cr
CHEM 341	Physical Chemistry I	4cr
CHEM 343	Physical Chemistry Laboratory I	1cr
<b>Controlled Electives:(2)</b>		
At least 3cr from the following: CHEM 301, 322, 335, 342, 351, 410, 411, BIOC 301, 302, 311		3-6cr
<b>Other Requirements:</b>		21-24
MATH 126	Calculus II for Physics, Chemistry, and Mathematics	3cr
MATH 225	Calculus III for Physics, Chemistry, and Mathematics	3cr
Planned program (with advisor approval) in complementary field of at least 15cr, with at least 6cr of 300/400-level courses (3)		15cr
Foreign Language Intermediate Level (4)		0-3cr
<b>Free Electives:</b>		11-21
<b>Total Degree Requirements:</b>		120
<p>(1) CHEM 111 and 112 can be substituted for CHEM 113 and 114.</p> <p>(2) Students electing a concentration in Pre-Medicine must take CHEM 351 (4cr) or BIOC 301 and 302 (6cr).</p> <p>(3) Students electing a concentration in Pre-Medicine must take BIOL 111, 151, 263, 331 and a 300-level BIOL elective.</p> <p>(4) Intermediate-level foreign language may be included as Liberal Studies elective.</p>		

2. Summary of changes: (a) Table comparing old and new programs.

**Bachelor of Arts—  
Chemistry (Current)**

**Liberal Studies:** As outlined in Liberal Studies section with the following specifications:  
**Mathematics:** MATH 123  
**Natural Science:** PHYS 111-121 and 112-122 *or* PHYS 131-141 and 132-142  
**Liberal Studies Electives:** 3cr, no courses with CHEM prefix

**Major:** 30-33

**Required Courses:**  
 CHEM 113 Concepts in Chemistry I 4cr  
 CHEM 114 Concepts in Chemistry II 4cr (1)  
 CHEM 214 Intermediate Inorganic Chemistry 2cr  
 CHEM 231 Organic Chemistry I 4cr  
 CHEM 232 Organic Chemistry II 4cr  
 CHEM 321 Quantitative Analysis 4cr  
 CHEM 341 Physical Chemistry I 4cr  
 CHEM 343 Physical Chemistry Laboratory I 1cr

**Controlled Electives (2)**  
 At least 3cr from the following:  
 CHEM 301, 322, 342, 351, 410, 411, BIOC 301, 302, 311 3-6cr

**Other Requirements:** 19-22  
 MATH 124 Calculus I for Physics, Chemistry, and Mathematics 4cr  
 Planned Program (with adviser approval) in complementary field of at least 15cr, with at least 6cr of 300/400 level courses (3)

Foreign Language Intermediate Level (4) 0-3cr

**Free Electives:** 16-22

**Total Degree Requirements:** 120

- (1) CHEM 111 and 112 can be substituted for CHEM 113 and 114.
- (2) Students electing a concentration in Pre-Medicine must take CHEM 351 (4cr) or BIOC 301 and 302 (6cr).
- (3) Students electing a concentration in Pre-Medicine must take BIOL 111, BIOL 151, 263, 331, and a 300-level BIOL elective.
- (4) Intermediate-level foreign language may be included as Liberal Studies elective.

**Bachelor of Arts—  
Chemistry (Revised)**

**Liberal Studies:** As outlined in Liberal Studies section with the following specifications:  
**Mathematics:** MATH 125  
**Natural Science:** PHYS 111-121 and 112-122 *or* PHYS 131-141 and 132-142  
**Liberal Studies Electives:** 3cr, no courses with CHEM prefix

**Major:** 30-33

**Required Courses:**  
 CHEM 113 Concepts in Chemistry I 4cr  
 CHEM 114 Concepts in Chemistry II 4cr (1)  
 CHEM 214 Intermediate Inorganic Chemistry 2cr  
 CHEM 231 Organic Chemistry I 4cr  
 CHEM 232 Organic Chemistry II 4cr  
 CHEM 321 Quantitative Analysis 4cr  
 CHEM 341 Physical Chemistry I 4cr  
 CHEM 343 Physical Chemistry Laboratory I 1cr

**Controlled Electives (2)**  
 At least 3cr from the following:  
 CHEM 301, 322, 342 3-6cr  
 335, 351, 410, 411, BIOC 301, 302, 311

**Other Requirements:** 21-24  
 MATH 126 Calculus II for Physics, Chemistry, and Mathematics 3cr  
 MATH 225 Calculus III for Physics, Chemistry, and Mathematics 3cr  
 Planned Program (with adviser approval) in complementary field of at least 15cr, with at least 6cr of 300/400 level courses (3) 15cr  
 Foreign Language Intermediate Level (4) 0-3cr

**Free Electives:** 15-21

**Total Degree Requirements:** 120

- (1) CHEM 111 and 112 can be substituted for CHEM 113 and 114.
- (2) Students electing a concentration in Pre-Medicine must take CHEM 351 (4cr) or BIOC 301 and 302 (6cr).
- (3) Students electing a concentration in Pre-Medicine must take BIOL 111, BIOL 151, 263, 331, and a 300-level BIOL elective.
- (4) Intermediate-level foreign language may be included as Liberal Studies electives

- 2b. List of all associated course changes (new or revised courses, number, title, or description changes, and deletions).

Replaced: MATH 123 (4cr Liberal Studies Math) with MATH 125 (3 cr Liberal Studies Math)

Replaced: MATH 124 (4 cr Other Requirement) with MATH 126 and MATH 225 (two 3cr Other Requirements)

Added: CHEM 335 as a controlled elective.

3. Rationale for Changes

The Math Department replaced its two four credit calculus courses with three three-credit calculus courses. Since these courses are required in our program, we revised it accordingly.

CHEM 335 (Advanced Organic Chemistry) is a controlled elective in the BS CHEM, and is also appropriate for the BA CHEM.

**Part III. Implementation. Provide answers to the following questions:**

1. How will the proposed revision affect students already in the existing program?

MATH 123 and MATH 124 were offered again this year. Existing students are being advised to complete their calculus requirements Fall 2007 and Spring 2008. Those who fail to do so will have to take the new calculus sequence.

2. Are faculty resources adequate? If you are not requesting or have not been authorized to hire additional faculty, demonstrate how this course will fit into the schedule(s) of current faculty.

This change has no impact on our faculty resources.

3. Are other resources adequate? (Space, equipment, supplies, travel funds)

This change has no impact on our resources.

4. Do you expect an increase or decrease in the number of students as a result of these revisions? If so, how will the department adjust?

We hope that the calculus change, which may better prepare students for upper level chemistry courses, will help with student retention. We do not expect a better retention level to require an increase in course sections.

**Part IV. Periodic Assessment**

Departments are responsible for an on-going review of curriculum. Include information about the department's plan for program evaluation:

1. Describe the evaluation plan. Include evaluation criteria. Specify how student input will be incorporated into the evaluation process.

This revision is not expected to change the existing evaluation process, which includes the department student learning outcomes assessment survey, the five-year department evaluation and the American Chemical Society accreditation review.

2. Specify the frequency of the evaluations.

Evaluations occur annually as part of our department student learning outcomes assessment plan.

3. Identify the evaluating entity.

Student Learning Outcomes assessment survey.

**Part V. Course Proposals**

CHEM 341 has a revised catalogue description due to the change in prerequisites from the old calculus courses, MATH 123 and MATH 124 to MATH 125, 126 and 225.

**Part VI. Letters of Support or Acknowledgement**

Letter from Gary Stoudt, Chair, Mathematics.