Fiscal Unit/Academic Org Chemistry - D0628
Administering College/Academic Group Arts And Sciences
Co-adminstering College/Academic Group
Semester Conversion Designation Converted with minimal changes to program goals and/or curricular requirements (e.g., sub-plan/specialization name changes, changes in electives and/or prerequisites, minimal changes in overall structure of program, minimal or no changes in program goals or content)
Current Program/Plan Name Chemistry Minor
Proposed Program/Plan Name Chemistry Minor
Program/Plan Code Abbreviation CHEM-MN
Current Degree Title

Credit Hour Explanation

Program credit hour requirements		A) Number of credit hours in current program (Quarter credit hours)	B) Calculated result for 2/3rds of current (Semester credit hours)	C) Number of credit hours required for proposed program (Semester credit hours)	D) Change in credit hours
Total minimum credit hours required for completion of program		25	16.7	17	0.3
Required credit hours offered by the unit	Minimum	25	16.7	17	0.3
	Maximum	25	16.7	17	0.3
Required credit hours offered outside of the unit	Minimum	0	0.0	0	0.0
	Maximum	0	0.0	0	0.0
Required prerequisite credit hours not included above	Minimum	15	10.0	10	0.0
	Maximum	15	10.0	10	0.0

Program Learning Goals

Note: these are required for all undergraduate degree programs and majors now, and will be required for all graduate and professional degree programs in 2012. Nonetheless, all programs are encouraged to complete these now.

Program Learning Goals

Assessment

Assessment plan includes student learning goals, how those goals are evaluated, and how the information collected is used to improve student learning. An assessment plan is required for undergraduate majors and degrees. Graduate and professional degree programs are encouraged to complete this now, but will not be required to do so until 2012.

Is this a degree program (undergraduate, graduate, or professional) or major proposal? No

Program Specializations/Sub-Plans

If you do not specify a program specialization/sub-plan it will be assumed you are submitting this program for all program specializations/sub-plans.

Pre-Major

Does this Program have a Pre-Major? No

Attachments

- Chemistry_Minor_v1.pdf: Chemistry Minor Proposal

(Program Proposal. Owner: Hadad,Christopher Martin)

Comments

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Hadad,Christopher Martin	03/31/2011 11:32 PM	Submitted for Approval
Approved	Hadad,Christopher Martin	03/31/2011 11:32 PM	Unit Approval
Pending Approval	Andereck,Claude David	03/31/2011 11:32 PM	College Approval

Department of Chemistry
Newman and Wolfrom Laboratory
100 West 18th Avenue
Columbus, OH 43210-1185

www.chemistry.ohio-state.edu

March 31, 2011

To: University Semester Conversion Committees

Re: Conversion of Undergraduate Major (B.A. and B.S.) and Minor Programs in Chemistry

The Department of Chemistry currently offers a Bachelor of Arts (BA) and a Bachelor of Science (BS) degree as part of our majors program, along with a minor in Chemistry. Our currently offered majors programs prepare students for a variety of careers, with the BA degree being less intensive in required chemistry courses, thereby offering opportunities for undergraduate students to expand their schedules with interdisciplinary courses. Historically, our BA degree has been the most popular with students who are intending to pursue pre-professional programs (pre-medicine, pre-dental, pre-veterinary, pre-pharmacy, pre-optometry, pre-law, etc) or for chemistry-related employment, including sales and marketing. The BS degree requires more chemistry and mathematics courses and is better preparation for a student going off to graduate school in a chemically related discipline (chemistry, biochemistry, pharmacy, etc) or for employment in chemistry (pharmaceutical or materials chemistry).

The American Chemical Society (ACS: www.acs.org) provides guidelines for the educational preparation for BS degrees in Chemistry, and the department is currently certified to comply with those guidelines. The ACS only provides guidelines for BS Chemistry degrees. For some institutions, there are significant guidelines as to contact hours by instructors and so on; however, for a large university like Ohio State, the most important aspects of the guidelines are a minimum amount of hours (400) in the chemistry laboratory across the entire BS degree (but excluding first-year general chemistry), a minimum exposure to laboratory experience in 4 of the 5 major areas of chemistry (analytical, biological, inorganic, organic and physical) as well as lecture instruction in all 5 areas.

On a yearly basis, the department provides an update report to the ACS as to our current program and its requirements, and on a 5-year schedule, we re-apply for re-certification of our major programs. Thus, upon graduation, our BS majors can receive a certified ACS degree if they comply with the ACS requirements. Between 25 – 50% of our BS majors per year receive ACS certified degrees.

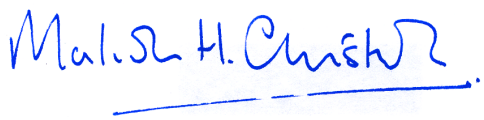
Our program continues to grow, with approximately 200% more chemistry majors as new first quarter freshmen (NFQFs) in autumn 2010 as compared to a typical number of 35–40 incoming students in the 1990s.

The process for the conversion of our undergraduate major programs began in summer 2010 with many discussions with our faculty and teaching staff. The courses were discussed at numerous meetings of the faculty at large as well as the Undergraduate Curriculum Committee, chaired by the Vice Chair for Undergraduate Studies (Christopher Hadad). On December 10, 2010, the Undergraduate Curriculum Committee unanimously voted to adopt the envisioned programs presented here for the revised undergraduate programs under semesters. Then, the faculty voted on the same programs at a January 19, 2011 faculty meeting and voted 25 in favor, 0 against and 0 abstain to adopt these revisions to our programs.

The details of these revised programs are provided in the accompanying documentation.

If you have any questions, please contact Christopher Hadad at (614) 292–1204 or hadad.1@osu.edu.

Sincerely,



Malcolm H. Chisholm
Chair and Distinguished University Professor
Department of Chemistry

Christopher M. Hadad
Vice Chair for Undergraduate Studies
Department of Chemistry

Program Rationale Statement (Chemistry Minor)

The revised program for the minor degree in Chemistry is a relatively straightforward conversion of our existing minor under quarters.

Typically, a student pursuing a Chemistry minor would have taken general chemistry (121–122–123, or the honors versions), analytical chemistry (221 or 221H), organic chemistry (251–252–253 and 254–255, or honors) along with one 3 credit hour elective in chemistry.

Under quarters, the minor required analytical chemistry (5 credit hours) and often students would have taken the organic chemistry sequences for a total of 18 credit hours, of which only 15 credit hours would count towards the minor. (This change was implemented when the organic chemistry lecture courses, 251–252–253, were converted from 3 to 4 credit hours each.) Thus, at least one additional course at the 500 level was required to complete the chemistry minor. Moreover, we occasionally have a Chemistry minor who takes a number of Chemistry 500 level classes and only a small number of organic chemistry (25*x*) courses. So, for the chemistry minor under quarters, we have required 25 quarter credit hours of chemistry classes, of which only 15 quarter credit hours could come from Chemistry 25*x* courses.

For semesters, we maintain these requirements: analytical chemistry (2210 or 2210H, 5 credit hours) along with 12 additional credit hours above Chemistry 2210. Of those credit hours, only 10 credit hours can be obtained from the organic chemistry (25*xx*) courses.

For many students who wish to obtain the chemistry minor (17 credit hours), they would take analytical chemistry (2210, 5 credit hours), then a maximum of 10 credit hours from organic chemistry lecture (2510–2520) and laboratory (2540–2550) courses, and 2 additional credit hours (1 course) in chemistry above 3000 level.

Thus, the number of courses for the chemistry minor is consistent with our previous expectations under quarters.

While we show a typical sequence of courses, we will offer many of these course offerings in both the autumn and spring quarters so that students can adjust their schedules for their particular needs. We anticipate little to no impact on student progress.

Chemistry Courses for Semesters

Title	*Quarter Course Number*	*Quarter Credits*	*Semester Course Number*	*Semester Credits*	*Course Information (L = lecture, R = recitation, B = lab)*	*Comments*
Chemistry and Society	100	5	1100	5	3 hr L, 2 hr R	extension of content (GEC)
Elementary Chemistry 1	101	5	1110	5	3 hr L, 1 hr R, 1 x 3 hr B	selected content from 101-102 qtr courses (GEC-lab)
Elementary Chemistry 2	102	5				
General Chemistry 1	121	5	1210	5	3 hr L, 1 hr R, 1 x 3 hr B	simple conversion (GEC-lab)
General Chemistry 2	122	5	1220	5	3 hr L, 1 hr R, 1 x 3 hr B	
General Chemistry 3	123	5				
General Chemistry for Engineers	125	4	1250	4	3 hr L, 1 x 3 hr B	selected content from 121-125 qtr courses
General Chemistry for Majors 1	161	5	1610	5	3 hr L, 1 hr R, 1 x 3 hr B	simple conversion (GEC-lab)
General Chemistry for Majors 2	162	5	1620	5	3 hr L, 1 hr R, 1 x 3 hr B	
General Chemistry for Majors 3	163	5				
Honors General Chemistry 1	201H	5	1910H	5	3 hr L, 1 hr R, 1 x 3 hr B	simple conversion (GEC-lab)
Honors General Chemistry 2	202H	5	1920H	5	3 hr L, 1 hr R, 1 x 3 hr B	
Honors General Chemistry 3	203H	5				
Analytical Chemistry 1: Quantitative Analysis	221	5	2210	5	3 hr L, 1 hr R, 1 x 4 hr B	simple conversion (2 x 4 hr B, qtr to 1 x 4 hr B, sem)
Honors Analytical Chemistry 1: Quantitative Analysis	221H	5	2210H	5	3 hr L, 1 hr R, 1 x 4 hr B	simple conversion (2 x 4 hr B, qtr to 1 x 4 hr B, sem)
Introductory Organic Chemistry	231	3	2310	4	3 hr L, 1 hr R	extension of content (will cover all functional groups)
~~Organic Chemistry Laboratory 1~~	~~245~~	~~2~~	---			~~*to be deleted*~~
~~Organic Chemistry Laboratory 2~~	~~246~~	~~2~~	---			~~*to be deleted*~~
Organic Chemistry 1	251	4	2510	4	3 hr L, 1 hr R	simple conversion
Organic Chemistry 2	252	4	2520	4	3 hr L, 1 hr R	
Organic Chemistry 3	253	4				
Organic Chemistry Laboratory 1	254	3	2540	2	1.5 hr L, 1 x 4 hr B	simple conversion
Organic Chemistry Laboratory 2	255	3	2550	2	1.5 hr L, 1 x 4 hr B	simple conversion
Organic Chemistry for Majors 1	---	---	2610	4	3 hr L, 1 hr R	NEW course sequence for majors
Organic Chemistry for Majors 2	---	---	2620	4	3 hr L, 1 hr R	
Honors Organic Chemistry 1	251H	4	2910H	4	3 hr L, 1 hr R	simple conversion

Honors Organic Chemistry 1	251H	4	2920H	4	3 hr L, 1 hr R	simple conversion
Honors Organic Chemistry 2	252H	4				
Honors Organic Chemistry 3	253H	4				
Honors Organic Chemistry Laboratory 1	254H	3	2940H	2	1.5 hr L, 1 x 4 hr B	simple conversion
Honors Organic Chemistry Laboratory 2	255H	3	2950H	2	1.5 hr L, 1 x 4 hr B	simple conversion
Fundamentals of Physical Chemistry 1	520	3	4200	3	3 hr L, 1 hr R	cross-listed with Biochemistry 5721; expanded content (BA)
Fundamentals of Physical Chemistry 2	521	3	4210	3	3 hr L, 1 hr R	cross-listed with Biochemistry 5722; expanded content (BA)
Physical Chemistry 1	530	3	4300	3	3 hr L, 1 hr R	simple conversion (BS)
Physical Chemistry 2	531	3	4310	3	3 hr L, 1 hr R	
Physical Chemistry 3	532	3				
Physical Chemistry Laboratory 1	541	3	4410	3	1 hr L, 2 x 3 hr B	simple conversion
Physical Chemistry Laboratory 2	542	3				
Analytical Chemistry 2: Instrumental Analysis	587	3	4870	3	3 hr L	simple conversion
Laboratory Practice in Instrumental Analysis	588	3	4880	2	2 x 3 hr B	simple conversion
Nanochemistry	611	3	5520	3	3 hr L	simple conversion
Spectroscopic Methods in Organic Chemistry	632	3	5420	3	3 hr L	simple conversion
Carbohydrate Chemistry	635	3	5430	3	3 hr L	simple conversion
Atmospheric Chemistry	641	3	6550	1.5	3 hr L	simple conversion
Introduction to Computational Chemistry	644	3	5440	3	3 hr L	simple conversion
Inorganic Chemistry 1	651	3	3510	3	3 hr L, 1 hr R	selected content
Inorganic Chemistry 2	652	3				
Inorganic Chemistry Laboratory	755	3	4550	2	2 x 3 hr B	simple conversion (undergraduate only)
Introduction to Quantum Chemistry and Spectroscopy	673	3	5730	3	3 hr L	simple conversion

Individual Studies	693	0-15	5193	0-15	arranged	simple conversion
Undergraduate Research	699	1-10	4998	1-10	arranged	undergraduate research (letter grade)
Undergraduate Research (thesis)	699	1-10	4999	1-10	arranged	undergraduate thesis (letter grade)
Honors Research	783H	3-10	4998H	1-10	arranged	honors undergraduate research (letter grade)
Honors Research (thesis)	783H	3-10	4999H	1-10	arranged	honors undergraduate thesis (letter grade)

Minor Program Form
College of the Arts and Sciences

Department of Chemistry

Name _____

Student ID Number _____ Telephone _____

Local Address _____

E-Mail _____

Minor **Chemistry**

This form should be submitted to your college or school office.

College/School of enrollment _____ Major _____

Expected date of graduation _____

Have you filed a degree application in your college office? Yes ☐ No ☐

Chemistry minor program guidelines

- The minor in chemistry consists of a minimum of **17 credit hours** of chemistry course work: **Chem 2210 (5)** and an additional **12 credit hours** of chemistry courses above Chem 2210, with a maximum of 10 credit hours of Chem 25*xx*. Honors variants of these courses are acceptable.
- Minimum C– for a course to be listed on the minor.
- Minimum 2.00 cumulative point-hour ratio required for the minor.

Course	Hours	Final Grade

Total Hours _____ **Original** ☐ **Revision** ☐

_____

Signature of Faculty Adviser Date

_____

Please Print Name of Faculty Adviser

_____

Academic Unit Campus Telephone and/or E-Mail

Transition Policy for the Department of Chemistry

Students who begin their degree training under quarters should not be penalized as we transition to semesters. Our two chemistry advisors are available to help design the ideal program for each student in order to facilitate an optimum transition.

In general, our current quarter courses are typically either a one-quarter class or a three-quarter sequence across an entire academic year. These courses will be converted to one-semester or two-semester courses, respectively. The few two-quarter course sequences have been converted to one-semester courses.

Also, our chemistry majors are typically successful in completing an entire sequence of either general or organic chemistry in the autumn-winter-spring academic year. As was evident with the various quarter and semester plans provided with this package, most sequences would normally end in the spring term of any academic year.

In general and organic chemistry, we will continue our current practice of offering multiple courses in the summer term – for example, general chemistry (121–122–123) courses are offered in each of the four quarters. We anticipate continuing these trends for general chemistry and also continuing to offer some organic chemistry in the summer session. Moreover, in the normal academic year, we will offer general and organic chemistry courses in both semesters.

While we have created majors-only versions of general and organic chemistry, chemistry majors are eligible to take the Honors or the regular sequences instead of the majors-only version. Students who are off-sequence for whatever reason are not penalized in any way.

If space is available and enrollment demand is sufficiently evident, we plan on offering multiple sections of high enrollment courses in both semesters.

For advanced science electives, there will be multiple 5000-level and above courses for students to select. As our graduate program is sizeable, we will continue to offer graduate-level courses for our upper-level undergraduate students to select as electives.

We are also currently considering bridge or transition courses for general chemistry and organic chemistry for a short period of time, and these may be offered in alternate formats, including 7-week half-semesters. These choices will depend heavily on laboratory utilization as anticipated enrollment increases for the onset of semesters will require some assessment of priorities.