

Fiscal Unit/Academic Org	Chemistry - D0628
Administering College/Academic Group	Arts And Sciences
Co-administering 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	40	26.7	25	1.7
	Maximum	55	36.7	37	0.3

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_v4.pdf: Chemistry Minor Proposal
(Program Proposal. Owner: Hadad, Christopher Martin)
- Chemistry minor cover letter.doc: NMS Division of Arts and Sciences cover letter
(Letter from the College to OAA. Owner: Andereck, Claude David)

CommentsWorkflow 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
Revision Requested	Andereck, Claude David	04/05/2011 01:17 PM	College Approval
Submitted	Hadad, Christopher Martin	04/11/2011 02:23 PM	Submitted for Approval
Approved	Hadad, Christopher Martin	04/11/2011 02:23 PM	Unit Approval
Revision Requested	Andereck, Claude David	04/14/2011 10:32 AM	College Approval
Submitted	Hadad, Christopher Martin	04/16/2011 02:06 PM	Submitted for Approval
Approved	Hadad, Christopher Martin	04/16/2011 02:06 PM	Unit Approval
Revision Requested	Andereck, Claude David	04/19/2011 10:50 AM	College Approval
Submitted	Hadad, Christopher Martin	04/19/2011 02:02 PM	Submitted for Approval
Approved	Hadad, Christopher Martin	04/19/2011 02:07 PM	Unit Approval
Revision Requested	Andereck, Claude David	04/19/2011 03:07 PM	College Approval
Submitted	Hadad, Christopher Martin	04/19/2011 03:14 PM	Submitted for Approval
Approved	Hadad, Christopher Martin	04/19/2011 03:14 PM	Unit Approval
Approved	Andereck, Claude David	04/19/2011 03:31 PM	College Approval
Pending Approval	Nolen, Dawn Jenkins, Mary Ellen Bigler Meyers, Catherine Anne Vankeerbergen, Bernadette Chantal Hanlin, Deborah Kay	04/19/2011 03:31 PM	ASCCAO Approval

186 University Hall
230 North Oval Mall
Columbus, OH 43210

Phone (614) 292-8908
Fax (614) 247-7498

April 19, 2011

Larry Krissek
Chair, Arts and Sciences CCI

Dear Larry:

It is a pleasure to forward to you the proposal for the undergraduate minor in Chemistry under semesters. The program has been converted with minimal revision.

Beyond my own review of the documents, the proposal has been discussed by colleagues from other NMS units at a meeting on April 5, 2011. Feedback from these discussions has been incorporated in the proposal.

If you have any questions, I would be happy to address them.

Sincerely,

A handwritten signature in black ink, appearing to read "David Andereck", with a long horizontal flourish extending to the right.

David Andereck
Professor of Physics
Associate Dean of Natural and Mathematical Sciences, College of Arts and Sciences



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

www.chemistry.ohio-state.edu

April 11, 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). While there is some variation from year to year, there are about 450 chemistry majors across all ranks in 2011, and approximately 50% of them are intending on the BA degree while 50% are working towards the BS degree.

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.

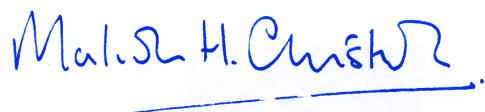
Our program continues to grow, with approximately 200% more chemistry majors as new first quarter freshmen (NFQFs) in autumn 2010 as compared to a typical number of 35–40 incoming students in the 1990s.

The process for the conversion of our undergraduate major and minor 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 the 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 (25x) 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 25x courses.

In our semester conversion plan, many of our one-quarter laboratory offerings have become one-semester courses, so these courses have retained their credit hour values – specifically, Chemistry 221 was converted to 2210 and remains a 5 credit hour course, with 3 hours of lecture, 1 hour of recitation and one 4-hour lab per week.

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 (25xx) 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. Others might take less organic chemistry courses and instead supplement those credit hours with additional courses in chemistry above the 3000 level; for example, students may take courses in analytical (4870, 4880), inorganic (3510, 4550), or physical (4200–4210, 4300–4310, 4410) chemistry.

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

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.

Courses for Chemistry Minor under Semesters

<i>Title</i>	<i>Quarter Course Number</i>	<i>Quarter Credits</i>	<i>Semester Course Number</i>	<i>Semester Credits</i>	<i>Course Information (L = lecture, R = recitation, B = lab)</i>	<i>Comments</i>
Pre-requisite Courses (one of these sequences)						
General Chemistry 1	121	5	1210 1220	5	3 hr L, 1 hr R, 1 x 3 hr B	simple conversion (GEC-lab)
General Chemistry 2	122	5		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 1620	5	3 hr L, 1 hr R, 1 x 3 hr B	simple conversion (GEC-lab)
General Chemistry for Majors 2	162	5		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 1920H	5	3 hr L, 1 hr R, 1 x 3 hr B	simple conversion (GEC-lab)
Honors General Chemistry 2	202H	5		5	3 hr L, 1 hr R, 1 x 3 hr B	
Honors General Chemistry 3	203H	5				
Required Course (standard or Honors version, 5 credit hours)						
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)
Elective Courses (minimum of 12 credit hours, but with only 10 credit hours from Chemistry 25xx)						
Introductory Organic Chemistry	231	3	2310	4	3 hr L, 1 hr R	extension of content (will cover all functional groups)
Organic Chemistry 1	251	4	2510 2520	4	3 hr L, 1 hr R	simple conversion
Organic Chemistry 2	252	4		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 2920H	4	3 hr L, 1 hr R	simple conversion
Honors Organic Chemistry 2	252H	4		4	3 hr L, 1 hr R	
Honors Organic Chemistry 3	253H	4		4	3 hr L, 1 hr R	

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	expanded content
Fundamentals of Physical Chemistry 2	521	3	4210	3	3 hr L, 1 hr R	expanded content
Physical Chemistry 1	530	3	4300 4310	3	3 hr L, 1 hr R 3 hr L, 1 hr R	simple conversion
Physical Chemistry 2	531	3				
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 Org. Chem.	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
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 _____ Name # _____

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 25xx. 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

The Ohio State University
College of Arts and Sciences

Chemistry Minor (CHEM-MN)

Department of Chemistry
100 Celeste Laboratory, 120 West 18th Avenue
Columbus, OH 43210-1106
614-292-1204
<http://www.chemistry.ohio-state.edu>

The minor in chemistry consists of a minimum of 17 credit hours of course work: Chemistry 2210 (5) and an additional 12 hours of chemistry courses above 2210. The minimum mathematics and physics courses required to support this program are Mathematics 1151 and Physics 1200 and 1201 or 1250 and 1251, but many chemistry courses at the 3000 level and above also require the completion of Mathematics 1152 (or higher as indicated).

After the Department of Chemistry advisor has approved your Minor Program Form, you should file the form with your college or school counselor. For further information about the minor program, contact the department.

Chemistry minor program guidelines

The following guidelines govern this minor.

Required for graduation No

Credit hours required A minimum of 17

Transfer credit hours allowed A maximum of 6

Overlap with the GEC Permitted, unless specifically disallowed by an individual minor program.

Overlap with the major Not allowed and

- The minor must be in a different subject than the major.
- The same courses cannot count on the minor and on the major.

Overlap between minors Each minor completed must contain 12 unique hours.

Grades required

- Minimum C– for a course to be listed on the minor.
- Minimum 2.00 cumulative point-hour ratio required for the minor.
- Course work graded Pass/Non-Pass cannot count on the minor.

Approval required The minor program description sheet indicates if the minor course work must be approved by:

- The academic unit offering the minor

Filing the minor program form The minor program form must be filed at least by the time the graduation application is submitted to a college or school counselor.

Changing the minor Once the minor program is filed in the college office, any changes must be approved by:

- The academic unit offering the minor

The Ohio State University
College of Arts and Sciences

Chemistry Minor (CHEM-MN)

Department of Chemistry
100 Celeste Laboratory, 120 West 18th Avenue
Columbus, OH 43210-1106
614-292-1204
<http://www.chemistry.ohio-state.edu>

The minor in chemistry consists of a minimum of 25 credit hours of course work: Chemistry 211 (5) or 221 (5) and an additional 20 hours of chemistry courses above 221. The minimum mathematics and physics courses required to support this program are Mathematics 151-152 and Physics 111-113 or 131-133, but many chemistry courses at the 500 level and above also require the completion of Mathematics 153 (or higher as indicated).

After the Department of Chemistry advisor has approved your Minor Program Form, you should file the form with your college or school counselor. For further information about the minor program, contact the department.

Chemistry minor program guidelines

The following guidelines govern this minor.

Required for graduation No

Credit hours required A minimum of 25

Transfer credit hours allowed A maximum of 10

Overlap with the GEC Permitted, unless specifically disallowed by an individual minor program.

Overlap with the major Not allowed and

- The minor must be in a different subject than the major.
- The same courses cannot count on the minor and on the major.

Overlap between minors Each minor completed must contain 20 unique hours.

Grades required

- Minimum C- for a course to be listed on the minor.
- Minimum 2.00 cumulative point-hour ratio required for the minor.
- Course work graded Pass/Non-Pass cannot count on the minor.

100-level course: For every five credit hours of 100-level course work on the minor, the minimum total required for the minor is increased by five.

Approval required The minor program description sheet indicates if the minor course work must be approved by:

- The academic unit offering the minor

Filing the minor program form The minor program form must be filed at least by the time the graduation application is submitted to a college or school counselor.

Changing the minor Once the minor program is filed in the college office, any changes must be approved by:

- The academic unit offering the minor

College of Arts and Sciences
Curriculum and Assessment Services
154 Denney Hall, 164 W. 17th Ave.
<http://artsandsciences.osu.edu>
KDH 8/27/09
Update 8/10/10 DH

Transition Policy for the Department of Chemistry

Students who begin their training under quarters will not be penalized as we transition to semesters. Our two chemistry advisors are available to help design the ideal program for our chemistry minors 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 minors 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.

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.

There will be 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-semester. Students who have credit for Chemistry 121–122 under quarters will be very prepared for the second semester of general chemistry (1220). Similarly, students who have credit for Chemistry 251–252 will be prepared for the second semester (Chemistry 2520). Bridge or transition courses will be available for students who have not taken the middle quarter of a three-quarter sequence in order for those students to be successful in the second semester of the year-long sequence. However, these options for general chemistry courses will depend heavily on laboratory utilization as anticipated enrollment increases for the onset of semesters will require some assessment of priorities.