

Nikou, Roshan

From: Graduate.Council.Web.Site@www.uky.edu
Sent: Wednesday, November 07, 2007 7:57 AM
To: Nikou, Roshan
Cc: Price, Cleo
Subject: Investigator Report

AnyForm User: www.uky.edu
AnyForm Document: <http://www.research.uky.edu/gc/GCInvestigatorReport.html>
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Client Address: 76.177.3.99

College/Department/Unit: = CHE410G
Category:_ = New
Date_for_Council_Review: = 11/8/2007
Recommendation_is:_ = Approve
Investigator: = Kert Viele
E-mail_Address = viele@ms.uky.edu
1__Modifications: = None
2__Considerations: = Proposal is quite straightfoward. Chemistry is dividing a lecture/lab course into lecture and lab components to provide more efficient use of lab time.
3__Contacts: = John Selengue in Chemistry...again, no issues found. Proposal also moved through Undergraduate Council with no changes.
4__Additional_Information: = This proposal seems straightforward and reasonable.

This should be viewed concurrently with CHE412G.

Chemistry is dividing the lecture and laboratory components of CHE450G into CHE410G (lecture) and CHE412G (lab). The motivation is that the laboratory section has been difficult to manage at the beginning of the semester, thus this new system should allow more efficient use of lab time.

There is a very minor change in prereqs. It now says \"a 400+ physical chemistry\" where previously it specified physical chemistry courses by number.

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APPLICATION FOR NEW COURSE

1. Submitted by College of Arts and Sciences Date February 12, 2007

Department/Division offering course Chemistry

2. Proposed designation and Bulletin description of this course

a. Prefix and Number CHE 410G b. Title* Inorganic Chemistry

*NOTE: If the title is longer than 24 characters (including spaces), write

A sensible title (not exceeding 24 characters) for use on transcripts Inorg Chem

c. Lecture/Discussion hours per week 2 d. Laboratory hours per week 0

e. Studio hours per week 0 f. Credits 2

g. Course description

An overview of inorganic chemistry, including fundamental aspects of structure, bonding, periodicity, spectroscopic properties, reaction mechanisms and applications.

h. Prerequisites (if any)

CHE 231 and 232; prereq or concur: a physical chemistry course at or above the 400 level

i. May be repeated to a maximum of _____ (if applicable)

4. To be cross-listed as

Prefix and Number

Signature, Chairman, cross-listing department

5. Effective Date _____ (semester and year)

6. Course to be offered Fall Spring Summer

7. Will the course be offered each year? Yes No
(Explain if not annually)

8. Why is this course needed?

CHE 410G will serve as partial fulfillment of the inorganic chemistry requirement set for chemistry majors by the Committee on Professional Training of the American Chemical Society. Presently, the Department offers a combined lecture/laboratory course, CHE 450G (Practical Inorganic Chemistry, 4 credit hours), for full fulfillment of the requirement for BS majors. Because most students have had no inorganic chemistry coursework since General Chemistry (CHE 105-107), they are unprepared to undertake laboratory work at the beginning of the semester and it is a struggle for instructors to provide enough background for laboratory work at the beginning of the semester. Converting CHE 450G into separate lecture (CHE 410G, 2 credit hours) and laboratory (CHE 412G, 2 credit hours) solves this problem. CHE 410G will normally be taken during the spring semester of a chemistry major's Junior year, and will be a prerequisite for CHE 412G that is normally taken during the fall semester of the Senior year. In addition, CHE 410G will serve as a stand-alone course in intermediate-level inorganic chemistry that can be used as a Major Field Option for BA chemistry majors, additional 300+ physical science hours for chemistry minors and other science majors, and as an introduction to inorganic chemistry for graduate students from other departments. An application to convert the existing CHE 450G course to CHE 412G is being submitted along with this application.

APPLICATION FOR NEW COURSE

9. a. By whom will the course be taught? The course will cycle among members of the Inorganic Chemistry Division. Preferably, the same instructor will teach CHE 410G in the spring and CHE 412G the following fall. CHE 450G was most recently taught by Prof. Stephen Holmes in Fall 2006, and will be taught by Prof. Fitzgerald Bramwell in Fall 2007.
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- b. Are facilities for teaching the course now available? Yes No
If not, what plans have been made for providing them?
-
-

10. What enrollment may be reasonably anticipated? 15 to 20
-

11. Will this course serve students in the Department primarily? Yes No

Will it be of service to a significant number of students outside the Department? Yes No
If so, explain.

CHE 410G will serve as a stand-alone course in intermediate-level inorganic chemistry that can be used as additional 300+ physical science hours for chemistry minors and other science majors, and as an introduction to inorganic chemistry for graduate students from other departments.

Will the course serve as a University Studies Program course? Yes No

If yes, under what Area? _____

12. Check the category most applicable to this course

- traditional; offered in corresponding departments elsewhere;
 relatively new, now being widely established
 not yet to be found in many (or any) other universities

13. Is this course applicable to the requirements for at least one degree or certificate at the University of Kentucky? Yes No

14. Is this course part of a proposed new program: Yes No
If yes, which?
-

15. Will adding this course change the degree requirements in one or more programs? Yes No
If yes, explain the change(s) below (NOTE – If “yes,” a program change form must also be submitted.)

BS Chemistry requirement will change from the current CHE 450G (Practical Inorganic Chemistry, 4 credit hours) to CHE 410G (Inorganic Chemistry, 2 credit hours) plus CHE 412G (Inorganic Chemistry Laboratory, 2 credit hours).

APPLICATION FOR NEW COURSE

16. Attach a list of the major teaching objectives of the proposed course and outline and/or reference list to be used.
18. If the course is 400G or 500 level, include syllabi or course statement showing differentiation for undergraduate and graduate students in assignments, grading criteria, and grading scales. Check here if 400G-500.
19. Within the Department, who should be contacted for further information about the proposed course?

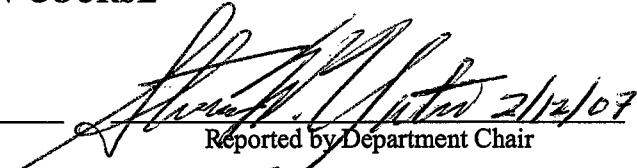
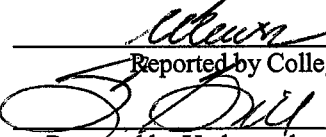

Name

John Selegue

Phone Extension 257-3484

APPLICATION FOR NEW COURSE

Signatures of Approval:

<u>2/10/07</u> Date of Approval by Department Faculty	 Reported by Department Chair
<u>2/20/07</u> Date of Approval by College Faculty	 Reported by College Dean
<u>10-2-07</u> *Date of Approval by Undergraduate Council	 Reported by Undergraduate Council Chair
 *Date of Approval by Graduate Council	 Reported by Graduate Council Chair
 *Date of Approval by Health Care Colleges Council (HCCC)	 Reported by HCCC Chair
 *Date of Approval by Senate Council	 Reported by Senate Council Office
 *Date of Approval by University Senate	 Reported by Senate Council Office

*If applicable, as provided by the Rules of the University Senate

ARTS AND SCIENCES
EDUCATIONAL POLICY COMMITTEE
INVESTIGATOR REPORT

INVESTIGATING AREA: Natural & Math. Sci. COURSE, MAJOR, DEGREE or PROGRAM: CHE 410G , Inorganic chemistry

DATE FOR EPC REVIEW: 2/20/07

CATEGORY: NEW, CHANGE, DROP

INSTRUCTIONS: This completed form will accompany the course application to the Graduate/Undergraduate Council(s) in order to avoid needless repetition of investigation. The following questions are included as an outline only. Be as specific and as brief as possible. If the investigation was routine, please indicate this. The term "course" is used to indicate one course, a series of courses or a program, whichever is in order. Return the form to Leonidas Bachas Associate Dean, 275 Patterson Office Tower for forwarding to the Council(s). ATTACH SUPPLEMENT IF NEEDED.

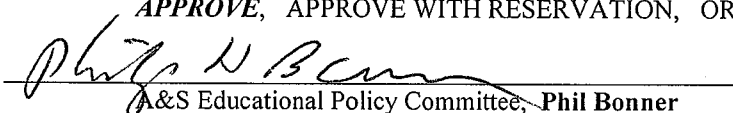
1. List any modifications made in the course proposal as submitted originally and why. **Chemistry proposes to divide a current course, CHE 530G (lab and lecture in inorganic chemistry) into two separate courses. One (CHE 410G) is to be a 2-credit lecture course; the other (CHE 412G) a 2-credit laboratory. No modifications were made to the proposal; it appears to be a logical and necessary change.**
2. If no modifications were made, review considerations that arose during the investigation and the resolutions. **Discussions within the Nat & Math Sci group quickly came to consensus that this is a good proposal and should be approved.**
3. List contacts with program units on the proposal and the considerations discussed therein. **None**
4. Additional information as needed. **None**
5. A&S Area Coordinator Recommendation:

APPROVE, APPROVE WITH RESERVATION, OR DISAPPROVE

6. A&S Education Policy Committee Recommendation:

APPROVE, APPROVE WITH RESERVATION, OR DISAPPROVE

7.


A&S Educational Policy Committee, **Phil Bonner**

Date: 3/7/07

UNIVERSITY SENATE ROUTING LOG

Proposal Title: CHE 410G: Inorganic Chemistry
Name/email/phone for proposal contact: Carolyn P. Brock, Director of Undergraduate Studies
 257-1959, cpbrock@uky.edu

Instruction: To facilitate the processing of this proposal please identify the groups or individuals reviewing the proposal, identify a contact person for each entry, provide the consequences of the review (specifically, approval, rejection, no decision and vote outcome, if any) and please attach a copy of any report or memorandum developed with comments on this proposal.

Reviewed by: (Chairs, Directors, Faculty Groups, Faculty Councils, Committees, etc)	Contact person Name (phone/email)	Consequences of Review:	Date of Proposal Review	Review Summary Attached? (yes or no)
Department Faculty	Carolyn P. Brock, DUS 257-1959 cpbrock@uky.edu	Approved after review and revision by the Undergraduate Committee	2/1/07	No
Department Chair	Steven W. Yates 257-7082 yates@uky.edu	Approved after unanimous vote of the faculty	2/8/07	No

OCT 17 2007

Outline

1. Introduction to Inorganic Chemistry.
2. Atomic Structure and Periodicity.
3. Symmetry and Group Theory.
4. Bonding Theories, including Basic Molecular Orbital Theory.
5. Acid-Base and Donor-Acceptor Chemistry.
6. The Solid State.
7. Main Group Elements.
8. Coordination Chemistry
9. Organometallic Chemistry and its Applications.
10. Bioinorganic Chemistry.

Reference list

Textbooks

1. *Essentials of Inorganic Chemistry 1* (Oxford Chemistry Primers 28), D. M. P. Mingos; Oxford University Press (1995).
2. *Essentials of Inorganic Chemistry 2* (Oxford Chemistry Primers 66), D. M. P. Mingos; Oxford University Press (1998).
3. *Inorganic Chemistry, 3rd edition*, G. L. Miessler and D. A. Tarr; Prentice Hall (2004).
4. *Basic Inorganic Chemistry*, Third Edition, F. A. Cotton, G. Wilkinson and P. L. Gaus; Wiley-Interscience (1995).
5. *Introduction to Modern Inorganic Chemistry, 6th Edition*, K. M. MacKay, R. A. MacKay, and W. Henderson, Nelson Thornes Ltd. (2002).

Additional resources

1. Other volumes of the *Oxford Chemistry Primers* series.
2. *Chemistry of the Elements, Second Edition*, N. N. Greenwood and A. Earnshaw; Butterworth-Heinemann (1997).
3. *Advanced Inorganic Chemistry, 6th Edition*, F. A. Cotton, G. Wilkinson, C. A. Murillo, M. Bochmann; John Wiley & Sons (1999). Latest edition of a classic text.
4. *Descriptive Inorganic Chemistry, Third Edition*, G. Rayner-Canham and Tina Overton, W. H. Freeman and Company, New York, 2002.
5. *Organometallics: A Concise Introduction, Second Edition*, Ch. Elschenbroich and A. Salzer; VCH Publishers (1992). Includes main group and transition metals.
6. *The Inorganic Chemistry of Materials: How to Make Things Out of Elements*, P. J. Van Der Put; Plenum Publishing Corp. (1998).
7. *Basic Solid State Chemistry Second edition*, A. R. West; John Wiley & Sons, Inc. (1999).

Differentiation between undergraduate and graduate students

Graduate students enrolled in CHE 410G will:

1. be assigned additional problems with greater depth than the standard sets. These additional problems will require the use of supplementary readings and a search of the chemical literature.
2. upon consultation with the instructor, choose a topic from the course, research it in textbooks and the chemical literature, and present the topic to the class.

The grading scale for graduate students will include these exercises in addition to the problem sets, examinations and other assignments given to undergraduates.

UNIVERSITY OF KENTUCKY
DEPARTMENT OF CHEMISTRY

CHE 410G, Inorganic Chemistry

Meeting Times:

Classroom:

Instructor:

Office Hours:

Course Description: An overview of inorganic chemistry, including fundamental aspects of structure, bonding, periodicity, spectroscopic properties, reaction mechanisms and applications. Prerequisites: CHE 231 and 232; prereq or concur: a physical chemistry course at or above the 400 level. This course serves as preparation for CHE 412G, for which it is a prerequisite.

Required Text: *Inorganic Chemistry, 3rd edition*, G. L. Miessler and D. A. Tarr; Prentice Hall (2004).

Optional Text: *Chemistry of the Elements, Second Edition*, N. N. Greenwood and A. Earnshaw; Butterworth-Heinemann, Oxford, 1997.

Course Coverage: The course will selectively follow the required text. Emphasis will placed on the following topics:

11. Introduction to Inorganic Chemistry.
12. Atomic Structure and Periodicity.
13. Symmetry and Group Theory.
14. Bonding Theories, including Basic Molecular Orbital Theory.
15. Acid-Base and Donor-Acceptor Chemistry.
16. The Solid State.
17. Main Group Elements.
18. Coordination Chemistry
19. Organometallic Chemistry and its Applications.
20. Bioinorganic Chemistry.

Supplemental readings will be placed on reserve in the Chemistry-Physics Library.

Grading:

Undergraduate students:

Three examinations	30% each
Problem sets:	10%

Graduate students:

Three examinations	25% each
Topic presentation	10%
Problem sets:	15%

Grading scale for undergraduate students:

A = 89.6 – 100.0%; B = 79.6 – 89.5%; C = 69.6 – 79.5%; D = 59.6 – 69.5%; E ≤ 59.5%.

Grading scale for graduate students:

A = 89.6 – 100.0%; B = 79.6 – 89.5%; C = 64.6 – 89.5%; E ≤ 64.5%.

Plus/minus grading is not used in this course.

Examinations: During the fifth week, and tenth week of the semester, and during the scheduled final exam period. The final exam will not be comprehensive.

Problem Sets: Assigned *approximately* every three weeks. To provide the required differentiation in course content for undergraduate vs. graduate students, some problem sets will include “beyond the textbook” questions, required for graduate students but optional for undergraduate students. These additional problems will probe at greater depth than the standard problems, requiring the use of supplementary readings and a search of the chemical literature.

Topic presentation (graduate students only): Upon consultation with the instructor, each graduate student will choose a topic from the course, research it in textbooks and the chemical literature, and present the topic to the class. This exercise will count for 10% of the student's final grade.

Attendance: Because some course material is from sources other than the textbook, chronic non-attendance will adversely affect grades. Students are responsible for all content and instructions given in class, and may obtain any missed information from classmates, electronic resources or (for excused absences according to S.R. 5.2.4.2) the instructor. Attendance is not explicitly graded. Students must inform the instructor of an absence preferably in advance, but no later than one week after it in order to arrange the opportunity to make up missed work and/or exams.

Submission of Assignments: Assignments are accepted in class or in the instructor's mailbox by 4:00 p.m. on the due date. E-mailed homework is accepted by the same deadline under exceptional circumstances. Problem sets can be hand-written or typed. Separate instructions will be provided for the term paper. Late assignments will lose 10% per day.

Academic Integrity, Cheating, Plagiarism, and Student Collaboration: Although group work on problem sets is acceptable, each student should turn in his or her individual work, not a copy of another student's work. Answers quoted verbatim from outside sources should cite the source. Examinations must be a student's individual work. No plagiarism will be tolerated on term papers. Plagiarism in the optional first draft will result in a warning, but in the final version will result in a penalty. Further details will be provided separately for the term paper. The penalty for plagiarism in this course has included an E in the course; suspension and dismissal are possible.

Grading Writing Skills: Students must use English properly in all aspects of the course (S.R.5.2.4.3). As long as problem sets and examinations are understandable, writing style will not be a grading criterion. However, writing quality, clarity of expression and proper format will be grading criteria for the term paper. Feedback on the optional first draft will give students an opportunity to improve their writing quality.

Electronic resources:

Course website, <http://www.chem.uky.edu/courses/che514/welcome.html>, includes syllabus, term paper instructions, literature outline and problem set keys.

Students must provide the instructor with a working email address, preferably @uky.edu.

Student Learning Outcomes:

Students in CHE 410G will gain an intermediate-level overview of inorganic chemistry, including an introduction to:

- a. concepts of periodicity beyond the general-chemistry level.
- b. major features of structure and bonding in inorganic compounds.
- c. organometallic chemistry.
- d. applications of spectroscopic properties in inorganic chemistry.
- e. inorganic reaction mechanisms
- f. applications of inorganic compounds.

In addition, CHE 410G students will be prepared for CHE 412G, Inorganic Chemistry Laboratory