Wilkes University Curriculum Committee
PROPOSAL SUBMITTAL FORM

Directions:
- Use this set of forms for all proposals sent to the Curriculum Committee.
- Pages 1-3 of this document are required. Any unnecessary forms should be deleted from the packet before submissions. If multiple forms are needed (course addition, course deletion, etc), simply copy and paste additional forms into this packet.
- Note that all new programs (majors and minors), program eliminations, significant program revisions and all general education core revisions must be reviewed and approved by the Provost and Academic Planning Committee (APC) prior to submission to the Curriculum Committee. The Provost will make the decision if a program revision requires APC review.
- Completed and signed forms are due no later than the second Tuesday of every month. Submit one signed original hard copy and a scanned electronic copy with all signatures to the Chair of the Curriculum Committee.

1. Originator: Megan Youmans
Department of Chemistry and Biochemistry
(507) 408-5005; megan.youmans@wilkes.edu

2. Proposal Title: Re-Introduction of Advanced Inorganic Chemistry Laboratory Course, 1 credit

3. Check only one type of proposal: (double click on the appropriate check box and change default value to “checked”). Each different type of proposal must be submitted on a separate form.

☐ New Program. (Major or Minor Degree Programs). This requires prior review and approval by the Provost and APC. Major = minimum of 30 credits, minor = minimum of 18 credits.

☐ New Concentration, Track, or Certificate. The Provost determines if review and approval by APC is necessary. Concentration – minimum of 12 credits, certification, endorsement and track are discipline specific.

☐ Elimination of Program. (Major or Minor Degree Programs). This requires prior review and approval by the Provost and APC.

☐ Elimination of Concentration, Track, or Certificate. The Provost determines if review and approval by APC is necessary.

☒ Program Revision. Significant revisions to a program require review and approval by the Provost. The Provost determines if review and approval by APC is necessary.

☐ General Education Revision. Submissions only accepted from the General Education Committee (GEC). Must be reviewed and approved by the Provost.

☐ Creation of new departments, elimination of existing department. This requires prior review and approval by the Provost and APC.

☐ Course additions or deletions not affecting programs (such as elective courses, transition of “topics” courses to permanent courses).

☐ Change in course credit or classroom hours.

☐ Incidental Changes. Includes changes in course/program title, course descriptions, and course prerequisites. (Although these changes do require approval by the Curriculum Committee, they do not go before the full faculty for approval).

☐ Other (Specify)

Indicate the number of course modification forms that apply to this proposal:
- Course Addition Form (Attach Syllabi: refer to Faculty Handbook for requirements)
- Course Deletion Form
- Course Change Form

Revised 4/30/2018
4. Executive Summary of Proposal.

Briefly summarize this proposal. The breadth and depth of this executive summary should reflect the complexity and significance of the proposal. Include an overview of the proposal, background and reasoning behind the proposal and a description of how the proposal relates to the mission and strategic long-range plan of the unit and/or university. For incidental changes a one or two sentence explanation is adequate.

Inorganic chemistry is a broad subdiscipline covering the chemistry of essentially the entire periodic table. Because of its breadth, a range of experimental techniques are used with far-reaching applications. For example, the handling of air-sensitive compounds traditionally learned in inorganic chemistry laboratory has applications in advanced organic synthesis. And the spectroscopic techniques introduced in Instrumental Analysis are re-introduced with for a more rigorous treatment using group and ligand field theories. Here, the re-introduction of CHM 323: Advanced Inorganic Chemistry Laboratory is proposed. The proposed course intends to build upon the success of experiments currently incorporated into CHM 322: Inorganic Chemistry. By setting aside the desired time and resources for an associated inorganic chemistry laboratory experience, chemistry and biochemistry students will receive a more complete inorganic chemistry experience as they will focus on the chemical theories in the lecture while learning critical chemical techniques in the lab. Indeed, many inorganic techniques are not formerly learned under the current curriculum. Rather students needing air-free synthesis for research or Integrated Laboratory experiments must seek out a capable professor to learn the required skills. This can be difficult to schedule. Additionally, students first working with air-sensitive or pyrophoric materials need more supervision than is often available during an informal setting. In addition to learning new experimental techniques, students will also cover new topics in the laboratory, building on the foundational concepts learned in lecture. This will help to mitigate the consolidation of a two-semester inorganic chemistry sequence to a one semester course (circ. 2008-9).

5. Other specific information. (Not applicable for incidental changes.)

What other programs, if any, will be affected by this proposal? Describe what resources are available for this proposal. Are they adequate? What would be the effect on the curriculum of all potentially affected programs if this proposal were adopted? Include any potential effects to the curriculum of current programs, departments and courses.

Students majoring in chemistry or biochemistry will have the option of taking CHM 323 in place of one credit of Integrated Laboratory (CHM 37X) of which three (B.S. BIOC) or four (B.S. CHM) credits are currently required. Students wishing to complete a minor in chemistry may also choose to take this course after completion of CHM 322: Inorganic Chemistry toward their six credit hours of chemistry electives. This course would carry a course fee commensurate with other CHM laboratory courses to offset the cost of materials.

6. Program Outline. (Not applicable for incidental changes).

A semester-by-semester program outline as it would appear in the bulletin for a new program or any modified program with all changes clearly indicated.

NA

7. New Program Assessments: (For new programs ONLY)
8. Signatures and Recommendations. (please date)
   - Signatures of involved Department chair(s) and Dean(s) indicate agreement with the proposal
     and that adequate resources (library, faculty, technology) are available to support proposal.
   - If a potential signatory disagrees with a proposal he/she should write "I disagree with this
     proposal" and a signed statement should be attached to this submission.

Print Name/Title: Donald E. Mencer / Co-Chair
Signature: ____________________________
Date: 11-Mar'19
Department chair(s) of all potentially affected programs

Print Name/Title: Amy Bradley / Co-Chair
Signature: ____________________________
Date: 3/12/19
Department chair(s) of all potentially affected programs

Print Name/Title: Prahlad Murthy
Signature: ____________________________
Date: March 11, 19
Interim Dean, CSE
Dean (s) of any potentially affected College/School.

Print Name: Susan Hritzak
Signature: ____________________________
Date: 3-12-19
Registrar

Print Name: Jonathan Ferrucci
Signature: ____________________________
Date: 3-13-19
Provost
 Provost should check here if this proposal is a program revision AND the significance of
 the revision requires review and approval by APC prior to Curriculum Committee.

Print Name: ____________________________
Signature: ____________________________
Date: ____________________________
Chair, Academic Planning Committee. For new programs, program revisions sent via the provost.
Signature indicates that the proposal has been reviewed and approved by APC.

Print Name: ____________________________
Signature: ____________________________
Date: ____________________________
Chair, General Education Committee. For revisions to General Education program only.
(Signature indicates that the proposal has been approved by GEC).

Revised 4/17/2018
Wilkes University Curriculum Committee
COURSE ADDITION FORM – page 1

1. Course Title: **Advanced Inorganic Chemistry Laboratory**

2. Course Number: CHM 323
   
   Coordinate with Registrar to insure course number is available

3. Course Credits: _1____
   
   Classroom Hours ______ Lab Hours _3____ Other ______

4. Course Pre-requisites: Completion of CHM 322 with a 2.0 or better

5. Course Co-requisites:

6. Effective Date of Addition (semester/year) **spring 2020**

7. Course Description (as proposed for the Bulletin):  
   Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.

   **CHM 323: Advanced Inorganic Chemistry Laboratory** is the complimentary laboratory to **CHM 322: Inorganic Chemistry**. Students will build upon the foundational concepts first explored in CHM 322. An emphasis will be placed on the synthesis and characterization of transition metal complexes. Coordination chemistry reactions and mechanisms will be introduced as well as the chemistry of lanthanides. Students will gain experience in the handling of air-sensitive materials. Laboratory, three hours per week. Fee: $XXX. Prerequisite: CHM 322

8. Required Documentation:

   **Proposed Syllabus** Attach proposed syllabi immediately after this document. In some situations the official syllabus may contain information which is beyond the review needs of the Curriculum Committee (such as extensive rubrics, etc). It is permissible to attach an

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abbreviated syllabus. In general, syllabi (whether full or abbreviated) should contain the following information: Course Title, Course Number, Credit hours, Faculty Information (name contact information, office hours), Course Description, Course Outcomes or Objectives, Assessment (grading) informations, required texts (or other things such as tools, software, etc), pertinent policies and a proposed schedule of topics.

Wilkes University Curriculum Committee
COURSE CHANGE FORM

Directions: Use this form to change information relating to an existing course. Please note, changes to course number require separate course addition/deletion forms (not this form!). Only indicate changes that are proposed (existing and proposed), other fields should be left blank.

Course Number: CHM 370, CHM 371, and CHM 372
Course Title: Integrated Chemistry Laboratory
Effective Date of Course Change (semester/year) Spring 2020

| Course Title | Existing Course Credit hours. (Indicate classroom, lab or “other” hours.) | Proposed
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 credits (B.S. CHM)</td>
<td>If completing proposed CHM 323: 3 credits (B.S. CHM) and 2 credits (B.S. BIOC) If completing CHM 323 &amp; CHM 363: 2 credits (B.S. CHM) and 1 credit (B.S. BIOC)</td>
</tr>
<tr>
<td></td>
<td>3 credits (B.S. BIOC)</td>
<td></td>
</tr>
</tbody>
</table>

Course Prerequisites

| Completion of CHM 232 with a 2.0 or better, CHM 234 with a 2.0 or better, CHM 341 with a 2.0 or better, and CHM 343 with a 2.0 or better | Completion of CHM 232 with a 2.0 or better, CHM 234 with a 2.0 or better, CHM 341 with a 2.0 or better, and CHM 343 with a 2.0 or better |

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<table>
<thead>
<tr>
<th>Course Description (as proposed for Bulletin)¹</th>
<th>To remain unchanged.</th>
<th>To remain unchanged.</th>
</tr>
</thead>
</table>

¹ Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.
CHM 323: Advanced Inorganic Chemistry Laboratory

Instructor
Dr. Megan Youmans
Cohen Science Center 311
(570) 408-5005
megan.youmans@wilkes.edu

Laboratory
CSC 4XX
X:00p – X:50p

Office Hours
TBA
or by appointment

Course Description
CHM 323: Advanced Inorganic Chemistry Laboratory is the complimentary laboratory to CHM 322: Inorganic Chemistry. Students will build upon the foundational concepts first explored in CHM 322. An emphasis will be placed on the synthesis and characterization of transition metal complexes. Coordination chemistry reactions and mechanisms will be introduced as well as the chemistry of lanthanides. Students will gain experience in the handling of air-sensitive materials.

Prerequisites
The successful completion of CHM 322 with a 2.0 or better is required as a prerequisite for this course.

Required Materials
A laboratory notebook capable of producing removable duplicate pages, safety glasses or goggles, and a scientific calculator are required for this laboratory. A manual of experiments will be provided. As illegible notebooks will not be graded, front-page perforated is preferred.

Grade Breakdown
Laboratory grades will be calculated according to the following weighted average.

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Lab Quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Laboratory Notebooks</td>
<td>15%</td>
</tr>
<tr>
<td>Post-Lab Reports</td>
<td>50%</td>
</tr>
<tr>
<td>Technique, Performance, and Safety</td>
<td>5%</td>
</tr>
<tr>
<td>Lab Final</td>
<td>20%</td>
</tr>
</tbody>
</table>

Grading Scale
Laboratory course grades will be tentatively assigned on the following scale. A curve will not be used unless deemed necessary by the instructor. Grades in the laboratory are intended to reflect the level of mastery of the skills and material covered.

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Grade</th>
<th>Grade Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>x ≥ 90</td>
<td>4.0</td>
<td>academic achievement of outstanding quality</td>
</tr>
<tr>
<td>85 ≤ x &lt; 90</td>
<td>3.5</td>
<td>academic achievement above high quality</td>
</tr>
<tr>
<td>80 ≤ x &lt; 85</td>
<td>3.0</td>
<td>academic achievement of high quality</td>
</tr>
<tr>
<td>75 ≤ x &lt; 80</td>
<td>2.5</td>
<td>academic achievement above acceptable quality</td>
</tr>
<tr>
<td>70 ≤ x &lt; 75</td>
<td>2.0</td>
<td>academic achievement of acceptable quality</td>
</tr>
<tr>
<td>65 ≤ x &lt; 70</td>
<td>1.5</td>
<td>achievement above minimum quality required for credit</td>
</tr>
<tr>
<td>60 ≤ x &lt; 65</td>
<td>1.0</td>
<td>academic achievement of minimum quality required for credit</td>
</tr>
<tr>
<td>60 &gt; x</td>
<td>0.0</td>
<td>academic achievement below minimum quality required for credit</td>
</tr>
</tbody>
</table>
Laboratory Notebooks

A duplicate laboratory notebook is required for CHM 323. Your notebook serves two purposes. First, you will be completing the experiment based on the procedure written in your notebook. You are not permitted to bring the laboratory manual into lab with you. Second, you will record all data and observations in your notebook. Any mistakes should be crossed out with a single line and remain legible. Do not scratch out or white out mistakes.

Prior to the start of lab: write (1) the name of the experiment, (2) a list of materials used including names, formula, and concentrations, (3) safety precautions, and (4) procedure. Prior to the start of the experiment, you must have your instructor initial your procedure. **Students arriving to lab without a completed procedure and pre-lab will be asked to leave.**

During the lab: record all data and observations, including exact experimental measurements. Your lab manual describes some examples of observations on page xii. *When working in pairs, each partner should record all data before leaving the lab.* In addition to data, you should also record any procedural changes.

As you leave the lab: remove your perforated pages, staple them together, and hand them to your instructor. These will not be returned to you until after your report form is graded. You will use your duplicate pages to complete any post-lab work. If your duplicate pages are illegible, you may wish to take a picture of your original pages before submitting them.

Pre-Lab Quizzes

Pre-lab quizzes will be administered at the start of lab. These quizzes will cover general topics introduced in the lab. Students arriving late to lab (but before the pre-lab lecture) will receive a zero on the pre-lab quiz.

Post-Lab Report Forms

Post-lab reports should follow a standard *JACS* format with an abstract, an introduction, an experimental procedure incorporating relevant observations, results (experimental data), a discussion of those results, a conclusion, and references. Figures, tables, and schemes are also required. An appendix showing required calculations should also be included. Please incorporate any post-lab questions into your discussion.

Laboratory Final

A written, laboratory final exam will be administered during the last lab meeting prior to check out. The exam may consist of multiple choice and short answer questions and long answer calculations.

Laboratory Decorum

It is expected that you will arrive to lab on time, dressed appropriately, and prepared to conduct the experiment. The rules stated in the *Laboratory Safety Policy* found in the laboratory manual must be followed. Some important safety rules include:

1. Safety glasses must be worn at all times during lab unless otherwise instructed.
2. Proper attire is mandatory. This includes long pants/skirts, closed-toed shoes, and tied-back hair. You must be completely covered from the chest down, and you must have sleeves.
3. Belongings must be placed in the designated area. Aisles must be kept clear.
4. Do not eat, drink, or smoke in lab. This includes gum.
5. Cell phones are not permitted in the lab.
6. No running.
7. Do not leave boiling solutions unattended. Use caution when moving hot glassware.
8. Do not directly smell chemicals. Work in a fume hood when necessary.
9. Report any injuries or accidents to the instructor or teaching assistant immediately.
10. Dispose of all chemicals correctly into the proper containers in the waste hood.
11. Know your emergency exits and safety equipment.

Attendance

Arrive on time and properly prepared. You will be asked to leave class if you: (1) arrive more than 5 minutes late (or after the pre-lab lecture); (2) have not completed your pre-lab notebook write-up, or (3) are not dressed appropriately. In these instances, no make-up lab is permitted, and a grade of zero will be assigned for the associated report and notebook.

If you need to miss class for a religious or sports event, contact your instructor at least one week ahead of the class you will be missing. If you are sick or are unable to attend class due to an emergency, email the lab instructor before the start of the lab to arrange a make-up lab. Make-ups will only be granted with a valid, documented excuse. See your lab manual for more information. A permitted make-up does not alter the due date for any report form. Failure to make-up an experiment will result in a grade of zero assigned for the associated report and notebook.

Late Work

Post-lab reports are due at the beginning of the lab period following the completed experiment. Late work will be penalized 25% of the total possible points for each day (or fraction thereof) they are late. Work later that four days late will NOT be accepted. Late notebook pages will not be accepted for credit. However, notebook pages are required to receive credit for the associated report. Work received after the due date may not be returned in a timely fashion.

Academic Dishonesty

Academic dishonesty will not be tolerated. Students’ work must be their own. Lab partners may share raw data but not tables, graphs, or figures derived from them. The sharing of computer files, co-authorship (except when expressly permitted), or paraphrasing from another student or other source without citation is plagiarism. The manufacturing or falsification of data is also not permitted. Violations of the academic honesty policy will be reported to the Dean of Students and the Provost as described in the Wilkes University Undergraduate Student Handbook. A zero grade will be given on the first occurrence. A second occurrence will result in the automatic failure of the course.

Accommodations

Wilkes University is committed to providing an equal educational experience for all students. If you are an individual with a disability that requires accommodations, it is your responsibility to notify both your instructor as well as the Disability Support Office. Accommodations include assistance with note-taking, providing a quiet environment in which to take exams, and extra time on examinations. Sandra Rendina, the Disability Support Coordinator, can be contacted by phone at (570) 408-4150, email at sandra.rendina@wilke.edu, or in person in room 311 Conyngham Hall.

Drop Dates

The last day to drop this course without academic prejudice is January X. The last day to drop with a “W” is March X.

Course Calendar

The following is a tentative schedule of the experiments to be conducted in CHM 114. Students will be given prior notice should changes occur.

Week 1          Lab Check-In
Week 2          Spectrochemical Series of Cobalt(III)
Week 3          Visible Absorption Spectra of Transition Metal Compounds
Week 4 & 5      Synthesis and Characterization of linkage isomers: 
                 \([\text{Co(NH}_3]^2\text{ONO}]\text{Cl}_2\) and \([\text{Co(NH}_3]^2\text{NO}_2]\text{Cl}_2\) linkage isomers
Week 6 & 7      Synthesis and \text{O}_2\text{ Absorption of Co(salen)}
Week 8 & 9  Synthesis of Dichlorophosphinenickel(II) Compounds and Their Catalytic Activity in Suzuki Cross-Coupling Reactions

Week 10 & 11  Synthesis and Characterization of Europium(III) and Terbium(III) Complexes

Week 13  Make-up (snow)

Week 14  Check Out and Final

Course Outcomes

At the conclusion of the course, students are expected to be able
1. To demonstrate proficiency in analysis, organization, interpretation, and presentation of chemical data
2. To express chemical concepts with quantitative relationships and to interpret the results obtained from the use of these quantitative relationships in terms of the chemical concepts conveyed in this format
3. To use written communication in a cogent and coherent form that demonstrates understanding of chemical concepts
4. To develop critical thinking skills in synthesizing information

Course Learning Objectives

1. Develop critical problem solving and quantitative reasoning.
2. Understand the handling and manipulation of air-sensitive materials.
3. Incorporate inorganic concepts into other subdisciplines of chemistry.
4. Synthesis and characterize coordination compounds.
5. Analyze and interpret spectroscopic data