

**Undergraduate Curriculum Committee
Minutes
September 22, 2016
UC 222**

Members Present: Lisa Driskell, Eric Elliott, Sean Flanigan, Keith Fritz, Geoffrey Gurka, Glenn Hoff, Eliot Jennings, Jennifer LaBombard-Daniels, Susan Longest, and Jill Van Brussel.

Members Absent: Diana Bailey, Jennifer Hancock, and Scott Kessler.

Ex-officio members present: Kurt Haas (AVPAA), Rose Petralia (Library), Maggie Bodyfelt (for Holly Teal, Registrar), and Josh Dillinger (ASG).

Guests: James Ayers, Chemistry and David Collins, Physics.

Recording Secretary: Jessie Barnett

Vice Chair Driskell called the meeting to order at 3:35.

I. Announcements

- 8/25/2016 minutes were on Faculty Senate 9/15/16 Consent Agenda

II. Curriculum Proposals

Summary of committee actions on curriculum proposals begins on pg. 2.
(Further details on approved proposals begins on pg. 6).

III. Information Items

The following items are related to proposals approved during AY 2015-16 with further modifications required:

- NURS 107L. Existing 2 credit hour course.
Course modified on 2/25/2016. Dept. intends for course to be 3 credit hour course but an increase in credit hours was not included in the proposal.
Course is listed as 3 credit hour course on the program sheet.
- The Health Sciences department realized different implementation dates were needed on a variety of their course changes from Spring 2016 after UCC approval. The department will submit a request to change effective dates for the appropriate courses, which will include the dates originally approved.

IV. New Business

There was no new business. Meeting adjourned at 4:05.

Summary of UCC Actions on Curriculum Proposals

9/22/2016

Proposal	Committee Action	Members (motion/second)	Effective Date
1 Program Modification: BM Music with Elective Studies in Business and Entrepreneurship: 3281	Approved	Longest, LaBombard- Daniels	Fall 2017
The new program name is "BM, Music with Elective Studies in Business" to align with degree title standards set by the National Association of Schools of Music (NASM). No additional discussion.			
2 Course Modification: PSYC 314 Psychology of Learning	Tabled	Elliot, Flanigan	Spring 2017
Prior to being tabled, a motion to approve the modification to PSYC 314 was made (Longest/Fritz). Gurka pointed out that PSYC 201 is currently listed as a prerequisite for PSYC 314 in the catalog but was not included under the current or proposed prerequisites on the course modification sheet. It was unclear whether or not PSYC 201 would continue to be a pre-requisite or removed as a pre-requisite. Jennings will seek clarification from the program faculty.			
3 Program Modification: BA Political Science: 3718	Approved	Longest, LaBombard- Daniels	Fall 2017
Program sheet revision to reflect the correct prefix for a course, which is POLS 342 rather than PADM 342. PADM 342 does not exist, although PADM is an existing prefix and the current PADM courses are included on page 233 of the 2016-17 Catalog. The program sheet revision also clarifies that majors must pass the foundational courses with a grade of "C" or higher. No additional discussion.			
4 Program Modification: BA Kinesiology-K-12 Education: 3137	Approved	LaBombard- Daniels, Gurka	Fall 2017
Program sheet revision to reflect the field experience hours and Praxis II within the K-12 Licensure requirements section. No additional discussion.			
5 Program Modification: BFA Art-K-12 Education: 3270	Approved	LaBombard- Daniels, Gurka	Fall 2017
Program sheet revision to reflect the field experience hours and Praxis II within the K-12 Licensure requirements section. No additional discussion.			
6 Program Modification: BME Music Education K-12: 3282	Approved	LaBombard- Daniels, Gurka	Fall 2017
Program sheet revision to reflect the field experience hours and Praxis II within the K-12 Licensure requirements section. No additional discussion.			
7 Course Modification: CHEM 100 Chemistry and Society	Approved	Longest, Van Brussel	Spring 2017
New catalog description. No additional discussion.			
8 Course Modification: CHEM 131 General Chemistry	Approved	Longest, Van Brussel	Spring 2017
New course title (General Chemistry I), and new catalog description. No additional discussion.			

Proposal	Committee Action	Members (motion/second)	Effective Date
9 Course Modification: CHEM 131L General Chemistry Laboratory New course title (General Chemistry I Laboratory), and new catalog description. No additional discussion.	Approved	Longest, Van Brussel	Spring 2017
10 Course Modification: CHEM 132 General Chemistry New course title (General Chemistry II), new prerequisite scheme, and new catalog description. No additional discussion.	Approved	Longest, Van Brussel	Spring 2017
11 Course Modification: CHEM 132L General Chemistry Laboratory New course title (General Chemistry II Laboratory), new prerequisite scheme, and new catalog description. No additional discussion.	Approved	Longest, Van Brussel	Spring 2017
12 Course Modification: CHEM 151 Engineering Chemistry New prerequisite scheme, and new catalog description. No additional discussion.	Approved	Longest, Van Brussel	Spring 2017
13 Course Modification: CHEM 151L Engineering Chemistry Laboratory New prerequisite scheme, and new catalog description. The proposed prerequisites (as shown on pg. 39 of the Proposal Summary for the 9/22/16 UCC meeting) will be corrected in the database to add "or higher" after MATH 113.	Approved contingent upon corrections	Longest, Van Brussel	Spring 2017
14 Course Modification: CHEM 311 Organic Chemistry New course title (Organic Chemistry I), new prerequisite scheme, and new catalog description. The course modification submitted indicated that this is a 3 credit course, but it is actually a 4 credit course. This correction will be made in the database.	Approved contingent upon corrections	Longest, Van Brussel	Spring 2017
15 Course Modification: CHEM 311L Organic Chemistry Laboratory New course title (Organic Chemistry I Laboratory), and new catalog description. No additional discussion.	Approved	Longest, Van Brussel	Spring 2017
16 Course Modification: CHEM 312 Organic Chemistry New course title (Organic Chemistry II), and new catalog description. The course modification submitted indicated that this is a 3 credit course, but it is actually a 4 credit course. This correction will be made in the database.	Approved contingent upon corrections	Longest, Van Brussel	Spring 2017
17 Course Modification: CHEM 312L Organic Chemistry Laboratory New course title (Organic Chemistry II Laboratory), and new catalog description. No additional discussion.	Approved	Longest, Van Brussel	Spring 2017

Proposal	Committee Action	Members (motion/second)	Effective Date
18 Course Modification: PHYS 362 Statistical and Thermal Physics New prerequisite scheme. No additional discussion.	Approved	Longest, Van Brussel	Spring 2017
19 Course Modification: PHYS 494 Seminar New course title (Physics Seminar). No additional discussion.	Approved	Longest, Van Brussel	Spring 2017
20 Program Modification: AAS Mechanical Engineering Technology: 1453 Program sheet revision to reflect the course title change for CHEM 131 /131L and CHEM 132/132L. No additional discussion.	Approved	LaBombard- Daniels, Fritz	Fall 2017
21 Program Modification: BS Environmental Science and Technology: 3443 Program sheet revision to reflect the course title change for CHEM 131 /131L and CHEM 132/132L. No additional discussion.	Approved	LaBombard- Daniels, Fritz	Fall 2017
22 Program Modification: BS Geosciences-Environmental Geology: 3473 Program sheet revision to reflect the course title change for CHEM 131 /131L and CHEM 132/132L. No additional discussion.	Approved	LaBombard- Daniels, Fritz	Fall 2017
23 Program Modification: BS Geosciences-Geology: 3472 Program sheet revision to reflect the course title change for CHEM 131 /131L and CHEM 132/132L. No additional discussion.	Approved	LaBombard- Daniels, Fritz	Fall 2017
24 Program Modification: BS Geosciences-Secondary Education: 3474 Program sheet revision to reflect the course title change for CHEM 131 /131L and CHEM 132/132L. No additional discussion.	Approved	LaBombard- Daniels, Fritz	Fall 2017
25 Program Modification: BS Mechanical Engineering Technology: 3453 Program sheet revision to reflect the course title change for CHEM 131 /131L and CHEM 132/132L. No additional discussion.	Approved	LaBombard- Daniels, Fritz	Fall 2017
26 Program Modification: BS Physics: 3471 Program sheet revision to reflect the course title change for PHYS 494, and that CSCI 110 is being offered as an alternative course to CSCI 111. No additional discussion.	Approved	LaBombard- Daniels, Fritz	Fall 2017
27 Program Modification: Minor Physics: M430 Program sheet revision to reflect the course title change for PHYS 494. No additional discussion.	Approved	LaBombard- Daniels, Fritz	Fall 2017

Proposal	Committee Action Members (motion/second)	Effective Date
28 Program Modification: BS Biological Sciences-Biology: 3410	Approved	Gurka, Flanigan Fall 2017
<p>Program sheet revision to reflect the course title change for CHEM 131 /131L and CHEM 132/132L. Although the course title modifications for CHEM 311/311L and CHEM 312 are being proposed at this time, and are included in this program, the proposed titles were already included in the this program sheet in error, so are not shown as being modified. No additional discussion.</p>		
29 Program Modification: BS Biological Sciences-Cellular, Molecular, and Developmental Biology: 3414	Approved	Gurka, Flanigan Fall 2017
<p>Program sheet revision to reflect the course title change for CHEM 131 /131L and CHEM 132/132L. Although the course title modifications for CHEM 311/311L and CHEM 312 are being proposed at this time, and are included in this program, the proposed titles were already included in the this program sheet in error, so are not shown as being modified. No additional discussion.</p>		
30 Program Modification: BS Biological Sciences-Ecology, Evolution and Organismal Biology: 3409	Approved	Gurka, Flanigan Fall 2017
<p>Program sheet revision to reflect the course title change for CHEM 131 /131L and CHEM 132/132L. No additional discussion.</p>		
31 Program Modification: AAS Medical Laboratory Technician: 1641	Approved contingent upon corrections	Van Brussel, Gurka Fall 2017
<p>Program sheet revision to reflect title change for CHEM 131/131L. The program sheet will be corrected to read "General Chemistry I Lab" instead of "General Chemistry Lab I"</p>		
32 Program Modification: BS Exercise Science: 3138	Approved	Gurka, Van Brussel Fall 2017
<p>Program sheet revision to reflect the course title change for CHEM 131 /131L, CHEM 132/132L, CHEM 311/311L, and CHEM 312. The program sheet will be corrected to read "General Chemistry I Lab" instead of "General Chemistry Lab I". No additional discussion.</p>		

Approved Proposal Summary 9/22/2016

Department: (A)Music

Program Modification

Music with Elective Studies in Business and Entrepreneurship: 3281

Degree Type: BM

Modified Program Name: Music with Elective Studies in Business

Modified Program Name: BMESB

Revision to program sheet: Yes No

Description of modification:

The program is dropping "and Entrepreneurship" from the name so that the full name is Bachelor of Music with Elective Studies in Business. NOTE: The 2016-2017 Program Sheet already reflects the new title pending approval by the CMU Board of Trustees.

Justification:

It was discovered that "and Entrepreneurship" after "with Electives Studies in Business" does not follow the standards for degree titles set forth by the National Association of Schools of Music (NASM) based on the number of credits in the CMU Degree. "Business and Entrepreneurship", according to NASM, implies that 15% of the degree contains studies in Business and 15% of the degree contains studies in Entrepreneurship. This is not the case, and there are not enough credits in the degree to make this happen. Thus, the program name needs to be "with Elective Studies in Business".

Revision to SLOs: Yes No

Other changes: Yes No

Discussions with affected departments:

NA

Proposed by: Calvin Hofer

Director of Teacher Education Signature:

Expected Implementation: Fall 2017

Department: (B)Social and Behavioral Sciences

Course Modifications

PSYC 314

Current

Proposed

Course Prefix: PSYC

Course No.: 314

Credit Hours 3

Course Title: Psychology of Learning

Prerequisites:

Current: Junior or senior status; STAT 215; PSYC 216/216L recommended.

Proposed: Junior or senior status; PSYC 150.

Requirement or listed choice for any program of study: Yes No

Justification:

This change will make the pre-requisites for this course consistent with most of our other upper-division restricted electives for the psychology major.

Discussions with affected departments:

SBS-Psychology, approved during conversation with SBS Dept Head, Jessica Herrick, Aug. 1, 2017.

CSMS-NA. STAT 215 is still a requirement for the program just no longer for that class – so it shouldn't make much difference for enrollment for STAT 215.

Proposed by: Karen Ford

Expected Implementation: Spring 2017

Program Modification

Political Science: 3718

Degree Type: BA

Revision to program sheet: Yes No

Description of modification:

1. Clarifying that majors must pass the foundational courses with a grade of "C" or higher
2. Correcting course numbering to reflect the approved course number (PADM 342 should be POLS 342).

Justification:

1. It was not clear from the program sheet that students must pass the foundational courses with a grade of "C" or higher.
2. There is no course numbered PADM 342. The course titled Public Administration has a course number of POLS 342.

Revision to SLOs: Yes No

Other changes: Yes No

Discussions with affected departments:

Discussed with POLS department on July 27th. All concurred that we should modify as proposed on this worksheet.

Proposed by: Eliot Jennings

Director of Teacher Education Signature:

Expected Implementation: Fall 2017

Department: (C)Teacher Education

Program Modification

Kinesiology-K-12 Education: 3137

Degree Type: BA

Revision to program sheet: Yes No

Description of modification:

We are modifying the program sheets to reflect the field experience hours and Praxis II within the Required Concentration Courses section.

Justification:

As we review our program sheets for accreditation we would like to have a concise program sheet that documents where each of the 800 hours required by Colorado Department of Education licensure are required for each student and changes to licensure exam requirements.

Revision to SLOs: Yes No

Other changes: Yes No

Discussions with affected departments:

The Center for Teacher Education 8-29-16

Kinesiology Department 8-29-16

Proposed by: Jennifer C LaBombard-Daniels

Director of Teacher Education Signature: Blake Bickham

Expected Implementation: Fall 2017

Program Modification

Art-K-12 Education: 3270

Degree Type: BFA

Revision to program sheet: Yes No

Description of modification:

We are modifying the program sheet to reflect the field experience hours and Praxis II within the K-12 Licensure requirements section.

Justification:

As we review our program sheets for accreditation we would like to have a concise program sheet that documents all of the 800 hours required by Colorado Department of Education licensure are required for each student and changes to licensure exam requirements

Revision to SLOs: Yes No

Other changes: Yes No

Discussions with affected departments:

The Center for Teacher Education 8-29-16

Art Department 8-29-16

Proposed by: Jennifer C LaBombard-Daniels

Director of Teacher Education Signature: Blake Bickham

Expected Implementation: Fall 2017

Program Modification

Music Education K-12: 3282

Degree Type: BME

Modified Program Name: Bachelor of Music Education

Modified Program Name: BME

Revision to program sheet: Yes No

Description of modification:

We are modifying the program sheet to reflect the field experience hours and Praxis II within the music education K-12 requirements section.

Justification:

As we review our program sheets for accreditation we would like to have a concise program sheet that documents where each of the 800 hours required by Colorado Department of Education licensure are required for each student and changes to licensure exam requirements.

Revision to SLOs: Yes No

Other changes: Yes No

Discussions with affected departments:

The Center for Teacher Education 8-29-16 Agreed to the changes

Music Department 9-29-16 Agreed to the changes

Proposed by: Jennifer C LaBombard-Daniels

Director of Teacher Education Signature:

Expected Implementation: Fall 2017

Department: (D)Physical and Environmental Sciences

Course Modifications

CHEM 100

Current

Proposed

Course Prefix: CHEM

Course No.: 100

Credit Hours 3

Course Title: Chemistry and Society

Description for catalog:

Current: Introduction to selected topics in chemistry. Nonmathematical approach with frequent lecture demonstrations and particular attention to chemical technology and its impact on society.

Proposed: Introduction to selected topics in chemistry with particular attention to chemistry in society. Minimal use of elementary mathematics is required.

Requirement or listed choice for any program of study: Yes No

SBS BA, Liberal Arts-Elementary Education, Social Science: 3251

CSMS BA, Liberal Arts-Elementary Education, Mathematics: 3251

LLMC BA, Liberal Arts-Elementary Education, English: 3251

Justification:

Although this course currently does not have what many chemists would consider math, there are some important concepts that involve counting, comparing numbers, and very basic arithmetic that are necessary. For example, chemical reactions often involve transfer of atoms from one molecule to another; counting, addition, subtraction, and multiplication are important to understanding how chemical reactions work. Simple arithmetic and graph interpretation are currently done in this class; the nonmathematical language clause in the old description can be interpreted by students as absolutely no numbers. Furthermore, because CHEM 100 is in gtPathways, statewide regulations require the use of some math in all natural sciences courses approved for guaranteed transfer.

Student Learning Outcomes, current:

1. Predict the relationship between energy, wavelength, and frequency in terms of the various types of electromagnetic ratio. (Specifically IR and UV interactions with matter in terms of climate change and ozone hole chemistry);
2. Draw electron dot structures for covalent molecules and determine the shape and polarity of molecules;
3. Relate intermolecular forces and states of matter to air and water quality issues;
4. Write chemical names and formulas for ionic, covalent, and simple organic compounds;
5. Explain trends within the periodic table and why certain elements are very reactive;
6. Write balanced chemical equations;
7. Explain energy changes of chemical reactions, specifically related to fossil fuel combustion reactions;
8. Explain the relationship between common concentration units as discussed in new articles.

Student Learning Outcomes, proposed:

Proposed by: James Ayers

Expected Implementation: Spring 2017

Course Modifications

CHEM 131

Current

Course Prefix: CHEM

Course No.: 131

Credit Hours 4

Course Title: General Chemistry

Proposed

General Chemistry I

Description for catalog:

Current: Fundamental principles of chemistry. Designed for students planning a major in science. Topics include atomic structure, bonding, periodic law, kinetic theory, gas laws, stoichiometry, phase relationships, solutions, oxidation-reduction, electrochemistry, and equilibrium.

Proposed: Fundamental principles of chemistry. Designed for students planning a major in science. Topics include dimensional analysis, atomic and molecular structure, stoichiometry, simple chemical reactions, thermochemistry, and gases.

Requirement or listed choice for any program of study: Yes No

PES BS, Mechanical Engineering Technology: 3453

PES BS, Geosciences-Secondary Education: 3474

PES BS, Geosciences-Geology: 3472

PES BS, Geosciences-Environmental Geology: 3473

Kinesiology BS, Exercise Science: 3138

PES BS, Environmental Science and Technology: 3443

Biology BS, Biological Sciences-Ecology, Evolution and Organismal Biology: 3409

Biology BS, Biological Sciences-Cellular, Molecular, and Developmental Biology: 3414

Biology BS, Biological Sciences-Biology: 3410

Biology AS, Liberal Arts-Biology: 2411

PES AAS, Mechanical Engineering Technology: 1453

Health Sciences AAS, Medical Laboratory Technician: 1641

We are seeking to update Chemistry course descriptions for many of our courses. In the past, CHEM131L has not had its own course description. We want to update the course description for this lab, so that the purpose and role of the lab course is clear to students seeking to register for CHEM 131/CHEM 131L. The only proposed change to the program sheets is to change the title of the course to "General Chemistry Lab I."

Student Learning Outcomes, current:

CHEM 131

1. Perform multi-step unit conversions;
2. Describe the nuclear and electronic structures of elements and ions;
3. Assess the shapes and electronic structures of molecules;
4. Evaluate chemical reactions using stoichiometry.
5. Quantify heat transfers involved in chemical and physical processes;
6. Qualitatively and quantitatively assess the properties of gases under various conditions.

CHEM 131L

1. Identify and use common pieces of chemical lab equipment;
2. Make careful observations of chemical phenomena;
3. Perform calculations based on measurements made in lab;
4. Work safely in a chemical lab environment.

Student Learning Outcomes, proposed:

Course Modifications

CHEM 131L

Current

Course Prefix: CHEM

Course No.: 131L

Credit Hours 1

Course Title: General Chemistry Laboratory

Proposed

General Chemistry Laboratory I

Description for catalog:

Current: Fundamental principles of chemistry. Designed for students planning a major in science. Topics include atomic structure, bonding, periodic law, kinetic theory, gas laws, stoichiometry, phase relationships, solutions, oxidation-reduction, electrochemistry, and equilibrium. Four lectures and one three-hour laboratory per week.

Proposed: Laboratory course to accompany CHEM 131. Designed for students planning a major in science. Basic chemistry laboratory techniques will be introduced. Experimental topics include: basic measurements and significant figures, determining the electronic structure of atoms, chromatography basics, determining empirical formulas, and calorimetry.

Requirement or listed choice for any program of study: Yes No

PES BS, Mechanical Engineering Technology: 3453

PES BS, Geosciences-Geology: 3472

PES BS, Geosciences-Secondary Education: 3474

PES BS, Geosciences-Environmental Geology: 3473

Kinesiology BS, Exercise Science: 3138

PES BS, Environmental Science and Technology: 3443

Biology BS, Biological Sciences-Ecology, Evolution and Organismal Biology: 3409

Biology BS, Biological Sciences-Cellular, Molecular, and Developmental Biology: 3414

Biology BS, Biological Sciences-Biology: 3410

Biology AS, Liberal Arts-Biology: 2411

PES AAS, Mechanical Engineering Technology: 1453

Health Sciences AAS, Medical Laboratory Technician: 1641

Justification:

We are seeking to update Chemistry course descriptions for many of our courses. In the past, CHEM131L has not had its own course description. We want to update the course description for this lab, so that the purpose and role of the lab course is clear to students seeking to register for CHEM 131/CHEM 131L. The only proposed change to the program sheets is to change the title of the course to "General Chemistry Lab I."

Student Learning Outcomes, current:

CHEM 131

1. Perform multi-step unit conversions;
2. Describe the nuclear and electronic structures of elements and ions;
3. Assess the shapes and electronic structures of molecules;
4. Evaluate chemical reactions using stoichiometry.
5. Quantify heat transfers involved in chemical and physical processes;
6. Qualitatively and quantitatively assess the properties of gases under various conditions.

CHEM 131L

Upon completion of this course, a student should be able to:

1. Identify and use common pieces of chemical lab equipment;
2. Make careful observations of chemical phenomena;
3. Perform calculations based on measurements made in lab;

Course Modifications

4. Work safely in a chemical lab environment.

Student Learning Outcomes, proposed:

Proposed by: Sam Lohse

Expected Implementation: Spring 2017

Course Modifications

CHEM 132

Current

Course Prefix: CHEM

Course No.: 132

Credit Hours 4

Course Title: General Chemistry

Prerequisites:

Current: CHEM 131 and CHEM 131L

Proposed: CHEM 131 and CHEM 131L or CHEM 151 and CHEM 151L

Description for catalog:

Current: Fundamental principles of chemistry. Designed for students planning a major in science. Topics include atomic structure, bonding, periodic law, kinetic theory, gas laws, stoichiometry, phase relationships, solutions, oxidation-reduction, electrochemistry, and equilibrium.

Proposed: Continuation of the material in CHEM 131. Topics include states of matter, solutions, kinetics, equilibrium, thermodynamics, and electrochemistry.

Requirement or listed choice for any program of study: Yes No

PES BS, Geosciences-Geology: 3472

PES BS, Geosciences-Environmental Geology: 3473

Kinesiology BS, Exercise Science: 3138

PES BS, Environmental Science and Technology: 3443

Biology BS, Biological Sciences-Ecology, Evolution and Organismal Biology: 3409

Biology BS, Biological Sciences-Cellular, Molecular, and Developmental Biology: 3414

Biology BS, Biological Sciences-Biology: 3410

Biology AS, Liberal Arts-Biology: 2411

Justification:

We are updating the course descriptions and course titles for many of our core chemistry courses. In this case, we want to emphasize in the catalog that CHEM 132 is a continuation of the material in CHEM 131. The only change to the program sheets associated with this course is formally changing the name of the course to "General Chemistry II"

Student Learning Outcomes, current:

CHEM 132

1. Quantitatively and qualitatively assess the effects of intermolecular forces in solids, liquids, and solutions.
2. Mathematically and qualitatively describe the kinetics of chemical reactions, including initial rates, integrated rate laws, and reaction mechanisms.
3. Predict the predominant chemical processes occurring in gas-phase equilibria and aqueous phase acid-base and solubility equilibria.
4. Create mathematical models of simple equilibria processes, and use these models to determine quantitative properties of systems in equilibria.
5. Relate thermodynamics to chemical equilibria and the spontaneity of chemical processes by quantitatively and qualitatively applying the concepts of entropy and Gibbs energy.
6. Describe the processes occurring in an electrochemical cell, and perform simple calculations related to these processes.

CHEM 132L

1. Make careful observations of chemical phenomena;
2. Perform calculations based on measurements made in lab;

3. UCS Minutes Approved via email, 10/4/2016

Course Modifications

4. Perform kinetic and equilibrium measurements;
5. Work safely in a chemical lab environment.

Student Learning Outcomes, proposed:

Proposed by: Sam Lohse

Expected Implementation: Spring 2017

Course Modifications

CHEM 132L

Current

Course Prefix: CHEM

Course No.: 132L

Credit Hours 1

Course Title: General Chemistry Laboratory

Proposed

General Chemistry Laboratory II

Prerequisites:

Current: CHEM 131 and CHEM 131L

Proposed: CHEM 131 and CHEM 131L or CHEM 151 and CHEM 151L

Description for catalog:

Current: Fundamental principles of chemistry. Designed for students planning a major in science. Topics include atomic structure, bonding, periodic law, kinetic theory, gas laws, stoichiometry, phase relationships, solutions, oxidation-reduction, electrochemistry, and equilibrium. Four lectures and one three-hour laboratory per week.

Proposed: Laboratory course to accompany CHEM 132. Designed for students planning a major in science. Freshman-level chemistry laboratory techniques will continue to be introduced. Experimental topics include: identification of chemical unknowns by qualitative analysis, colligative properties, acid-base titration, reaction kinetics, equilibrium constant determinations, and electrochemistry.

Requirement or listed choice for any program of study: Yes No

PES BS, Geosciences-Geology: 3472

PES BS, Geosciences-Environmental Geology: 3473

Kinesiology BS, Exercise Science: 3138

Biology BS, Biological Sciences-Ecology, Evolution and Organismal Biology: 3409

Biology BS, Biological Sciences-Cellular, Molecular, and Developmental Biology: 3414

Biology BS, Biological Sciences-Biology: 3410

Biology AS, Liberal Arts-Biology: 2411

Justification:

We are seeking to update Chemistry course descriptions for many of our courses. In the past, CHEM132L has not had its own course description. We want to update the course description for this lab, so that the purpose and role of the lab course is clear to students seeking to register for CHEM 132/CHEM 132L. In addition, we want to update the course prerequisites, so that students who complete the new CHEM 151 (Engineering Chemistry) course can register for CHEM 132/CHEM 132L directly if they wish. The only proposed change to the program sheets is to change the title of the course to "General Chemistry Lab II."

Student Learning Outcomes, current:

CHEM 132

1. Quantitatively and qualitatively assess the effects of intermolecular forces in solids, liquids, and solutions.
2. Mathematically and qualitatively describe the kinetics of chemical reactions, including initial rates, integrated rate laws, and reaction mechanisms.
3. Predict the predominant chemical processes occurring in gas-phase equilibria and aqueous phase acid-base and solubility equilibria.
4. Create mathematical models of simple equilibria processes, and use these models to determine quantitative properties of systems in equilibria.
5. Relate thermodynamics to chemical equilibria and the spontaneity of chemical processes by quantitatively and qualitatively applying the concepts of entropy and Gibbs energy.
6. Describe the processes occurring in an electrochemical cell, and perform simple calculations related to these processes.

Course Modifications

CHEM 132L

1. Make careful observations of chemical phenomena;
2. Perform calculations based on measurements made in lab;
3. Synthesize a compound;
4. Perform kinetic and equilibrium measurements;
5. Work safely in a chemical lab environment.

Student Learning Outcomes, proposed:

Proposed by: Sam Lohse

Expected Implementation: Spring 2017

Course Modifications

CHEM 151

Current

Course Prefix: CHEM

Course No.: 151

Credit Hours 4

Course Title: Engineering Chemistry

Prerequisites:

Current: High school chemistry and satisfactory entrance examination scores or CHEM 121; MATH 113 or higher

Proposed:

MATH 113 or higher or concurrently enrolled in MATH 119, 135, or 151; CHEM 121 or a passing score on the chemistry assessment exam

Proposed

Description for catalog:

Current: Selected fundamentals of inorganic chemistry. Topics include stoichiometry, gas laws, phase relations, solutions, electrochemistry, and equilibrium. Designed for students of physics and engineering (except chemical engineering). Four lectures and one three-hour laboratory per week.

Proposed: General chemistry for engineering majors. Topics include stoichiometry, thermodynamics, states of matter, acids and bases, oxidation-reduction, equilibrium, and kinetics. Examples and problems chosen to illustrate the application of chemistry to engineering.

Requirement or listed choice for any program of study: Yes No

Justification:

We are changing the prerequisites to clarify them. The math requirement has been modified to allow incoming freshmen without credit for MATH 113 to enroll if they are placed in an appropriately high math course. The chemistry requirement wording has been modified to make clear the chemistry program's intention that students either take CHEM 121 (as in the previous course description) or have a passing exam on the chemistry assessment exam (entrance examination scores in the previous description is unclear).
- The description is modified to better align with the CU-Boulder engineering chemistry course description.

Student Learning Outcomes, current:

1. Perform multi-step unit conversions;
2. Describe the nuclear and electronic structures of elements and ions;
3. Assess the shapes and electronic structures of molecules;
4. Evaluate chemical reactions using stoichiometry;
5. Quantify heat transfers involved in chemical and physical processes;
6. Qualitatively and quantitatively assess the properties of gases under various conditions;
7. Use kinetic and equilibrium concepts to quantitatively describe the behavior of a chemical system.

Student Learning Outcomes, proposed:

Proposed by: James Ayers

Expected Implementation: Spring 2017

Course Modifications

CHEM 151L

Current

Course Prefix: CHEM

Course No.: 151L

Credit Hours 1

Course Title: Engineering Chemistry Laboratory

Prerequisites:

Current: High school chemistry and satisfactory entrance examination scores or CHEM 121; MATH 113 or higher

Proposed:

MATH 113 or higher or concurrently enrolled in MATH 119, 135, or 151; CHEM 121 or passing score on the chemistry assessment exam.

Proposed

Description for catalog:

Current: Selected fundamentals of inorganic chemistry. Topics include stoichiometry, gas laws, phase relations, solutions, electrochemistry, and equilibrium. Designed for students of physics and engineering (except chemical engineering). Four lectures and one three-hour laboratory per week.

Proposed: Laboratory course to accompany CHEM 151. Freshman-level chemistry laboratory techniques will be introduced. Experimental topics include basic measurement techniques, stoichiometry, chemical reaction observation, titrations, and reaction kinetics.

Requirement or listed choice for any program of study: Yes No

Justification:

The chemistry program is updating its course descriptions for 100-level courses and separating the lectures and lab course descriptions. A new course description for the lab was needed.

Student Learning Outcomes, current:

1. Identify and use common pieces of chemical lab equipment;
2. Make careful observations of chemical phenomena;
3. Perform calculations based on measurements made in lab;
4. Work safely in a chemical lab environment.

Student Learning Outcomes, proposed:

Proposed by: James Ayers

Expected Implementation: Spring 2017

Course Modifications

CHEM 311

Current

Course Prefix: CHEM

Course No.: 311

Credit Hours 4

Course Title: Organic Chemistry

Prerequisites:

Current: CHEM 132 or consent of instructor

Proposed: CHEM 132 and CHEM 132L

Description for catalog:

Current: Chemical and physical properties of the major classes of organic compounds. Three lectures and two three-hour laboratories per week.

Proposed: This course is the first semester of a two-semester introduction to basic organic chemistry. The nomenclature, structure, properties, and reactions of important classes of organic compounds are examined. The relationship of structure and bonding in organic compounds to reactivity is emphasized. Reactions are examined from mechanistic and synthetic perspectives.

Requirement or listed choice for any program of study: Yes No

Kinesiology BS, Exercise Science: 3138

Biology BS, Biological Sciences-Cellular, Molecular, and Developmental Biology: 3414

Justification:

Modernization of description to differentiate lab and lecture courses and first and second semester courses in a two-semester series. Modification of prerequisite to remove "consent of instructor" and formally require CHEM 132 and the associated lab. There are no changes to course content.

Student Learning Outcomes, current:

- o Interpret and depict various representations of organic compounds
- o Name structures using IUPAC systematic nomenclature
- o Understand atomic structure and bonding models as applied to organic chemistry
- o Understand the concepts of acidity and basicity as applied to organic chemistry
- o Understand the concepts and consequences of the three-dimensionality of molecules
- o Understand the concepts of nucleophilicity and electrophilicity as applied to organic chemistry
- o Identify potential nucleophiles and electrophiles
- o Interpret patterns of reactivity on the basis of mechanistic reasoning
- o Interpret and depict reaction mechanisms using curved arrows
- o Understand the basic concepts of thermodynamics and kinetics as applied to organic chemistry
- o Predict the mechanisms and products of fundamental addition reactions of alkenes and alkynes
- o Predict the mechanisms and products of fundamental substitution and elimination reactions of haloalkanes, alcohols, ethers, and epoxides
- o Predict the products of fundamental reactions involving organometallic reagents
- o Predict the mechanisms and products of fundamental radical substitution reactions of alkanes
- o Design syntheses of organic molecules of moderate complexity

Student Learning Outcomes, proposed:

Discussions with affected departments:

Kinesiology: Email with Jeremy Hawkins 30 Aug 16 (no issues noted)

Biology: Email with Carrie McVean Wearing 30 Aug 16 (no response yet)

UCC Minutes: Approved via email, 10/4/2016

Course Modifications

Proposed by: Kimberly N. White

Expected Implementation: Spring 2017

Course Modifications

CHEM 311L

Current

Course Prefix: CHEM

Course No.: 311L

Credit Hours 1

Course Title: Organic Chemistry Laboratory

Proposed

Organic Chemistry Laboratory I

Description for catalog:

Current: Chemical and physical properties of the major classes of organic compounds. Three lectures and two three-hour laboratories per week.

Proposed: This lab is the first semester of a two-semester sequence. It introduces common organic lab techniques (including chromatography, extraction, recrystallization, and distillation) used for separating and analyzing organic compounds.

Requirement or listed choice for any program of study: Yes No

Kinesiology BS, Exercise Science: 3138

Biology BS, Biological Sciences-Cellular, Molecular, and Developmental Biology: 3414

Justification:

Modernization of description to differentiate lab and lecture courses and first and second semester courses in a two-semester series.

Student Learning Outcomes, current:

- o Practice safe organic laboratory techniques.
- o Routinely perform stoichiometric calculations (limiting reagent, theoretical yield).
- o Understand and be able to use the basic operations of an organic laboratory including gravity and vacuum filtration, liquid-liquid extraction, distillation, reflux, recrystallization, drying of solids and solutions, and the theories behind these techniques.
- o Identify and assess the purity of organic compounds using analytical techniques like melting point, thin layer chromatography (TLC), and gas chromatography (GC).
- o Follow a detailed procedure, and construct a flow diagram to illustrate it.
- o Understand the theory behind the operations performed, as demonstrated by the ability to explain deviation from the theoretically optimum results (which is the usual case), and suggest improvements to the procedures employed.
- o Learn to keep contemporaneous notes - writing down what you do and what you see directly in the lab notebook as you do it and see it, as you would in normal professional environments, in sufficient detail that another person not familiar with the particular experiment could reproduce your work.

Student Learning Outcomes, proposed:

Proposed by: Kimberly N. White

Expected Implementation: Spring 2017

Course Modifications

CHEM 312

Current

Course Prefix: CHEM

Course No.: 312

Credit Hours 4

Course Title: Organic Chemistry

Proposed

Organic Chemistry II

Description for catalog:

Current: Chemical and physical properties of the major classes of organic compounds. Three lectures and two three-hour laboratories per week.

Proposed: This course is the second semester of a two-semester introduction to basic organic chemistry. The nomenclature, structure, properties, and reactions of important classes of organic compounds are examined. The relationship of structure and bonding in organic compounds to reactivity is emphasized. Reactions are examined from mechanistic and synthetic perspectives. Spectroscopic analysis of organic compounds is also introduced.

Requirement or listed choice for any program of study: Yes No

Kinesiology BS, Exercise Science: 3138

Biology BS, Biological Sciences-Cellular, Molecular, and Developmental Biology: 3414

Justification:

Modernization of description to differentiate lab and lecture courses and first and second semester courses in a two-semester series.

Student Learning Outcomes, current:

- o Understand the foundational chemistry and physics of spectroscopic techniques
- o Interpret spectroscopic data for structure determination and confirmation
- o Name structures using IUPAC systematic nomenclature
- o Understand the concepts of nucleophilicity and electrophilicity as applied to organic chemistry
- o Identify potential nucleophiles and electrophiles
- o Interpret patterns of reactivity on the basis of mechanistic reasoning
- o Interpret and depict reaction mechanisms using curved arrows
- o Understand and predict the mechanisms and products of fundamental substitution reactions of carboxylic acids and carboxylic acid derivatives
- o Understand and predict the mechanisms and products of fundamental addition reactions of aldehydes and ketones
- o Understand and predict the reactivity of α -carbons
- o Understand and predict the mechanisms and products of fundamental substitution reactions of benzene and benzene derivatives/analogs
- o Understand and predict the products of fundamental pericyclic reactions
- o Understand and predict the mechanisms and products of fundamental polymerization reactions
- o Design syntheses of organic molecules of moderate complexity

Student Learning Outcomes, proposed:

Proposed by: Kimberly N. White

Expected Implementation: Spring 2017

Course Modifications

CHEM 312L

Current

Course Prefix: CHEM

Course No.: 312L

Credit Hours 1

Course Title: Organic Chemistry Laboratory

Proposed

Organic Chemistry Laboratory II

Description for catalog:

Current: Chemical and physical properties of the major classes of organic compounds. Three lectures and two three-hour laboratories per week.

Proposed: This lab is the second semester of a two-semester sequence. Common organic lab techniques, including spectroscopy, are used to carry out and analyze organic reactions.

Requirement or listed choice for any program of study: Yes No

Kinesiology BS, Exercise Science: 3138

Biology BS, Biological Sciences-Cellular, Molecular, and Developmental Biology: 3414

Justification:

Modernization of description to differentiate lab and lecture courses and first and second semester courses in a two-semester series.

Student Learning Outcomes, current:

- o Practice safe organic laboratory techniques.
- o Routinely perform stoichiometric calculations (limiting reagent, theoretical yield).
- o Understand and be able to use the basic operations of an organic laboratory including gravity and vacuum filtration, liquid-liquid extraction, distillation, reflux, recrystallization, drying of solids and solutions, and the theories behind these techniques.
- o Identify and assess the purity of organic compounds using analytical techniques like melting point, thin layer chromatography (TLC), and gas chromatography (GC).
- o Follow a detailed procedure, and construct a flow diagram to illustrate it.
- o Understand the theory behind the operations performed, as demonstrated by the ability to explain deviation from the theoretically optimum results (which is the usual case), and suggest improvements to the procedures employed.
- o Learn to keep contemporaneous notes - writing down what you do and what you see directly in the lab notebook as you do it and see it, as you would in normal professional environments, in sufficient detail that another person not familiar with the particular experiment could reproduce your work.
- o Generate and interpret spectroscopic data.
- o Write reports using currently accepted formats.

Student Learning Outcomes, proposed:

Proposed by: Kimberly N. White

Expected Implementation: Spring 2017

Course Modifications

PHYS 362

Current

Course Prefix: PHYS

Course No.: 362

Credit Hours 3

Course Title: Statistical and Thermal Physics

Prerequisites:

Current: PHYS 230, 231 and MATH 260 or MATH 236

Proposed: PHYS 230 or CHEM 321, and MATH 236 or MATH 260

Requirement or listed choice for any program of study: Yes No

Justification:

The current physics prerequisites for this course are typically only met by Physics majors; very few students who are not intending to major in Physics take both PHYS 230 and PHYS 231. The modification would open the course to most Physics minors and also Chemistry majors. In terms of content, PHYS 230 covers necessary thermodynamics and CHEM 321 would cover this just as well. The existing prerequisite of PHYS 231 is intended to cover aspects of quantum theory that arise in PHYS 362, but these can be taught adequately within PHYS 362 without prerequisite.

Discussions with affected departments:

PES - Physics - faculty agree on proposal.

Proposed by: David Collins

Expected Implementation: Spring 2017

Course Modifications

PHYS 494

Current

Course Prefix: PHYS

Course No.: 494

Credit Hours 1

Course Title: Seminar

Proposed

Physics Seminar

Requirement or listed choice for any program of study: Yes No

PES BS, Physics: 3471

PES Minor, Physics: M430

Justification:

The change to the course title will resolve an issue that has arisen with the calendar that appears on the CMU website and is available to the public. With the current catalog entry, the CMU calendar merely lists "Seminar" at the time which the course meets. With the change, it will automatically list "Physics Seminar" at that time. This will better advertise the weekly physics seminars to the broader CMU community and the public.

Discussions with affected departments:

PES -Physics - faculty agree on proposal.

Proposed by: David Collins

Expected Implementation: Spring 2017

Program Modification

Mechanical Engineering Technology: 1453

Degree Type: AAS

Revision to program sheet: Yes No

Description of modification:

Course title change for CHEM 131 and 131L from General Chemistry to General Chemistry I and CHEM 132 and 132L from General Chemistry to General Chemistry II.

Justification:

Clarify general chemistry progression of coursework.

Revision to SLOs: Yes No

Other changes: Yes No

Discussions with affected departments:

NA

Proposed by: Scott Kessler

Director of Teacher Education Signature:

Expected Implementation: Fall 2017

Program Modification

Environmental Science and Technology: 3443

Degree Type: BS

Revision to program sheet: Yes No

Description of modification:

Course title change for CHEM 131 and 131L from General Chemistry to General Chemistry I and CHEM 132 and 132L from General Chemistry to General Chemistry II.

Justification:

Clarify general chemistry progression of coursework.

Revision to SLOs: Yes No

Other changes: Yes No

Discussions with affected departments:

NA

Proposed by: Scott Kessler

Director of Teacher Education Signature:

Expected Implementation: Fall 2017

Program Modification

Geosciences-Environmental Geology: 3473

Degree Type: BS

Revision to program sheet: Yes No

Description of modification:

Course title change for CHEM 131 and 131L from General Chemistry to General Chemistry I and CHEM 132 and 132L from General Chemistry to General Chemistry II.

Justification:

Clarify general chemistry progression of coursework.

Revision to SLOs: Yes No

Other changes: Yes No

Discussions with affected departments:

NA

Proposed by: Scott Kessler

Director of Teacher Education Signature:

Expected Implementation: Fall 2017

Program Modification

Geosciences-Geology: 3472

Degree Type: BS

Revision to program sheet: Yes No

Description of modification:

Course title change for CHEM 131 and 131L from General Chemistry to General Chemistry I and CHEM 132 and 132L from General Chemistry to General Chemistry II.

Justification:

Clarify general chemistry progression of coursework.

Revision to SLOs: Yes No

Other changes: Yes No

Discussions with affected departments:

NA

Proposed by: Scott Kessler

Director of Teacher Education Signature:

Expected Implementation: Fall 2017

Program Modification

Geosciences-Secondary Education: 3474

Degree Type: BS

Revision to program sheet: Yes No

Description of modification:

Course title change for CHEM 131 and 131L from General Chemistry to General Chemistry I.

Justification:

Clarify general chemistry progression of coursework.

Revision to SLOs: Yes No

Other changes: Yes No

Discussions with affected departments:

NA

Proposed by: Scott Kessler

Director of Teacher Education Signature: Blake Bickham

Expected Implementation: Fall 2017

Program Modification

Mechanical Engineering Technology: 3453

Degree Type: BS

Revision to program sheet: Yes No

Description of modification:

Course title change for CHEM 131 and 131L from General Chemistry to General Chemistry I.

Justification:

Clarify general chemistry progression of coursework.

Revision to SLOs: Yes No

Other changes: Yes No

Discussions with affected departments:

NA

Proposed by: Scott Kessler

Director of Teacher Education Signature:

Expected Implementation: Fall 2017

Program Modification

Physics: 3471

Degree Type: BS

Revision to program sheet: Yes No

Description of modification:

The title of PHYS 494 will be modified. Additionally, CSCI 110 is being offered as an alternative course to CSCI 111. The program sheet is modified to reflect these changes.

Justification:

We are adding the option of CSCI 110 and CSCI 110L as an alternative to CSCI 111. CSCI 111 provides a fundamental introduction to computer programming based on the C++ programming language and is a good all around programming course. CSCI 110 has just begun to use python as it's primary language. Python is a freely available, interpreted programming language which has a variety of numerical and graphical packages which allows for the language to serve both as a programming language and tool to easily manipulate and visualize data. Python is fast becoming the go to language for programming tasks which do require the full power of an interpreted language such as C++ in the physics and astrophysics community. Additionally, Dr. Jared Workman is planning on developing a course in computational physics which will be taught using the Python programming language. If the computer science department formally adopts Python as the ONLY language it uses for the course the physics department will likely drop CSCI 111 and make CSCI 110 the default computer course for it's majors. At present CSCI is sometimes taught using Visual Basic. The physics department is small and actively advises each student throughout the course of their time at CMU. When CSCI 110 is taught using Python we will require our students to take it, when it is taught using Visual Basic we will require CSCI 111 as the course to take.

Revision to SLOs: Yes No

Other changes: Yes No

Discussions with affected departments:

PES - Physics agree on proposal.

CSMS- Dr. Payne agrees. 9/12/16 email.

Proposed by: David Collins

Director of Teacher Education Signature:

Expected Implementation: Fall 2017

Program Modification

Physics: M430

Degree Type: Minor

Revision to program sheet: Yes No

Description of modification:

The title of PHYS 494 will be modified. The program sheet is modified to reflect this.

Justification:

Change in title of a required course.

Revision to SLOs: Yes No

Other changes: Yes No

Discussions with affected departments:

PES - Physics agree on proposal.

Proposed by: David Collins

Director of Teacher Education Signature:

Expected Implementation: Fall 2017

Department: (E)Biological Sciences

Program Modification

Biological Sciences-Biology: 3410

Degree Type: BS

Revision to program sheet: Yes No

Description of modification:

Course title change for CHEM 131 and 131L from General Chemistry to General Chemistry I and CHEM 132 and 132L from General Chemistry to General Chemistry II.

Justification:

Clarify general chemistry progression of coursework.

Revision to SLOs: Yes No

Other changes: Yes No

Discussions with affected departments:

NA

Proposed by: Scott Kessler

Director of Teacher Education Signature:

Expected Implementation: Fall 2017

Program Modification

Biological Sciences-Cellular, Molecular, and Developmental Biology: 3414

Degree Type: BS

Revision to program sheet: Yes No

Description of modification:

Course title change for CHEM 131 and 131L from General Chemistry to General Chemistry I and CHEM 132 and 132L from General Chemistry to General Chemistry II. Although the course title modifications for CHEM 311 and CHEM 311L (Organic Chemistry to Organic Chemistry I) and CHEM 312 (from Organic Chemistry to Organic Chemistry II) are being proposed at this time, the proposed titles were already included in the this program sheet in error, so are not shown as being modified.

Justification:

Clarify general and organic chemistry progression of coursework.

Revision to SLOs: Yes No

Other changes: Yes No

Discussions with affected departments:

NA

Proposed by: Scott Kessler

Director of Teacher Education Signature:

Expected Implementation: Fall 2017

Program Modification

Biological Sciences-Ecology, Evolution and Organismal Biology: 3409

Degree Type: BS

Revision to program sheet: Yes No

Description of modification:

Course title change for CHEM 131 and 131L from General Chemistry to General Chemistry I and CHEM 132 and 132L from General Chemistry to General Chemistry II.

Justification:

Clarify general chemistry progression of coursework.

Revision to SLOs: Yes No

Other changes: Yes No

Discussions with affected departments:

NA

Proposed by: Scott Kessler

Director of Teacher Education Signature:

Expected Implementation: Fall 2017

Department: (F)Health Sciences

Program Modification

Medical Laboratory Technician: 1641

Degree Type: AAS

Revision to program sheet: Yes No

Description of modification:

Course title change for CHEM 131 and 131L from General Chemistry to General Chemistry I.

Justification:

Clarify general chemistry progression of coursework.

Revision to SLOs: Yes No

Other changes: Yes No

Discussions with affected departments:

NA

Proposed by: Scott Kessler

Director of Teacher Education Signature:

Expected Implementation: Fall 2017

Department: (G)Kinesiology

Program Modification

Exercise Science: 3138

Degree Type: BS

Revision to program sheet: Yes No

Description of modification:

Course title change for CHEM 131 and 131L from General Chemistry to General Chemistry I and CHEM 132 and 132L from General Chemistry to General Chemistry II, Additionally, change titles for CHEM 311 and CHEM 311L Organic Chemistry to Organic Chemistry I and CHEM 312 from Organic Chemistry to Organic Chemistry II.

Justification:

Clarify general and organic chemistry progression of coursework.

Revision to SLOs: Yes No

Other changes: Yes No

Discussions with affected departments:

NA

Proposed by: Scott Kessler

Director of Teacher Education Signature:

Expected Implementation: Fall 2017
