

# CHEM 1B: GENERAL CHEMISTRY II

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## In Workflow

1. CHEM Committee Chair (tjsavage@csus.edu)
2. CHEM Chair (rdixon@csus.edu)
3. NSM College Committee Chair (tsk@csus.edu)
4. NSM Dean (datwyler@csus.edu)
5. Academic Services (torsetj@csus.edu;%20212408496@csus.edu;%20cnewsome@skymail.csus.edu)
6. Senate Curriculum Subcommittee Chair (curriculum@csus.edu)
7. Dean of Undergraduate (james.german@csus.edu;%20celena.showers@csus.edu)
8. Dean of Graduate (cnewsome@skymail.csus.edu)
9. Catalog Editor (212408496@csus.edu;%20torsetj@csus.edu;%20cnewsome@skymail.csus.edu)
10. Registrar's Office (w lindsey@csus.edu)
11. PeopleSoft (PeopleSoft@csus.edu)

## Approval Path

1. Tue, 28 Jan 2020 20:33:02 GMT  
Benjamin Gherman (ghermanb): Approved for CHEM Committee Chair
2. Tue, 25 Feb 2020 22:05:08 GMT  
Roy Dixon (rdixon): Approved for CHEM Chair
3. Wed, 04 Mar 2020 23:20:12 GMT  
Thomas Krabacher (tsk): Approved for NSM College Committee Chair
4. Tue, 10 Mar 2020 16:38:24 GMT  
Shannon Datwyler (datwyler): Approved for NSM Dean
5. Wed, 08 Apr 2020 18:34:15 GMT  
Janett Torset (torsetj): Approved for Academic Services

Date Submitted: Fri, 06 Dec 2019 18:00:25 GMT

**Viewing: CHEM 1B : General Chemistry II**

**Last edit: Fri, 06 Dec 2019 18:00:24 GMT**

Changes proposed by: Jacqueline Houston (204090644)

### Contact(s):

Name (First Last)	Email	Phone 999-999-9999
Jacqueline Houston	jhouston@csus.edu	916-2782583

### Catalog Title:

General Chemistry II

### Class Schedule Title:

General Chemistry II

### Academic Group: (College)

NSM - Natural Sciences & Mathematics

### Academic Organization: (Department)

Chemistry

### Will this course be offered through the College of Continuing Education (CCE)?

No

### Catalog Year Effective:

Spring 2021 (2021/2022 Catalog)

### Subject Area: (prefix)

CHEM - Chemistry

### Catalog Number: (course number)

1B

**Course ID: (For administrative use only.)**

108601

**Units:**

5

**In what term(s) will this course typically be offered?**

Fall, Spring

**Does this course require a room for its final exam?**

Yes, final exam requires a room

**Does this course replace an existing experimental course?**

No

**This course complies with the credit hour policy:**

Yes

**Justification for course proposal:**

Due to a change in requirements for Area B5, this course no longer is an Area B5 course. The main purpose of this proposal is to remove that designation from the catalog.

**Course Description: (Not to exceed 80 words and language should conform to catalog copy.)**

Continuation of the development of fundamental principles of chemistry and application of principles developed in CHEM 1A. The laboratory work emphasizes applications of equilibrium principles, including some qualitative analysis, coordination chemistry and bioinorganic chemistry. Lecture three hours, laboratory six hours. Knowledge of word processing and spreadsheet software is recommended.

**Are one or more field trips required with this course?**

No

**Fee Course?**

No

**Is this course designated as Service Learning?**

No

**Does this course require safety training?**

Yes

**Does this course require personal protective equipment (PPE)?**

Yes

**Does this course have prerequisites?**

Yes

**Prerequisite:**

CHEM 1A with a passing grade of C or better.

**Prerequisites Enforced at Registration?**

Yes

**Does this course have corequisites?**

No

**Graded:**

Letter

**Approval required for enrollment?**

No Approval Required

**Course Component(s) and Classification(s):**

Laboratory  
Lecture

**Laboratory Classification**

CS#16 - Science Laboratory (K-factor=2 WTU per unit)

**Laboratory Units**

2

**Lecture Classification**

CS#01 - Large Lecture (K-factor=1 WTU per unit)

**Lecture Units**

3

**Is this a paired course?**

No

**Is this course crosslisted?**

No

**Can this course be repeated for credit?**

No

**Can the course be taken for credit more than once during the same term?**

No

**Description of the Expected Learning Outcomes: Describe outcomes using the following format: "Students will be able to: 1), 2), etc."**

Students will be able to:

1. Describe the nature and characteristics of chemical equilibria.
2. Identify acids and bases and types of electrolytes, and write net ionic equations for acid-base reactions.
3. Predict products of aqueous acid-base, single displacement and double displacement reactions and write net ionic equations.
4. Apply the principles of chemical equilibria to aqueous solutions, including qualitative and quantitative problems involving acids and bases, salts, common-ions and buffers.
5. Apply the principles of chemical equilibria to titration problems.
6. Apply the principles of chemical equilibria to solutions of slightly soluble salts, including qualitative and quantitative problems.
7. Describe the principles of thermodynamics, in particular entropy and free energy, know the three laws of thermodynamics and apply the concepts of entropy and free energy changes to characterizing reactions as spontaneous or at equilibrium.
8. Balance oxidation-reduction reactions and identify reactants as oxidizing or reducing agents.
9. Describe the principles of voltaic and electrolytic cells, diagram these cells and calculate cell potentials at standard and non-standard state conditions.
10. Learn about aqueous systems in the environment and role of selected pollutants in the environment.
11. Identify and characterize the chemical and physical properties of selected transition elements.
12. Know the concepts of composition, structure and bonding in metal complex compounds.
13. Apply concepts of crystal field theory and other bonding models to the magnetism and spectra of metal complex compounds
14. Know the basic characteristics of hydrocarbons, name hydrocarbons and draw their structures.
15. Know the basic characteristics of selected functional groups and how they are used in naming organic compounds.

**Assessment Strategies: A description of the assessment strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above.**

Assessment strategies include:

1. Homework assignments (L.O.#1-#15)
2. Quizzes (L.O. #1-15)
3. Exams (L.O.#1-#15)
4. Final exam (L.O.#1-#15)
5. Lab Experiments (L.O. #1-15)

**Is this course required in a degree program (major, minor, graduate degree, certificate?)**

Yes

**Has a corresponding Program Change been submitted to Workflow?**

No

**Identify the program(s) in which this course is required:****Programs:**

BA in Chemistry (Forensic Chemistry)  
 BA in Chemistry (Biochemistry)  
 BA in Chemistry (General)  
 BS in Chemistry  
 BS in Biochemistry  
 BS in Biological Science (Biomedical Sciences)  
 BS in Biological Science (Cell and Molecular Biology)  
 BS in Biological Science (Clinical Laboratory Sciences)  
 BS in Biological Science (Ecology, Evolution, and Conservation)  
 BS in Biological Science (Forensic Biology)  
 BS in Biological Science (General Biology)  
 BS in Biological Science (Microbiology)  
 BA in Biological Science  
 BA in Physics  
 BA in Physics (Teacher Preparation)  
 BS in Kinesiology (Exercise Science)  
 BS in Nutrition and Food (Dietetics)  
 BS in Exercise Science  
 BS in Kinesiology (Physical Education Teacher Education)  
 BS in Health Science  
 BS in Kinesiology (Exercise Science)  
 BS in Kinesiology (Athletic Training)  
 Subject Matter Program (Biology)  
 Subject Matter Program (Chemistry)  
 BS in Physics  
 BS in Family and Consumer Sciences (Fashion Merchandising and Design)  
 BS in Family and Consumer Sciences (Nutrition and Food)

**Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer)?**

No

**Will there be any departments affected by this proposed course?**

No

**I/we as the author(s) of this course proposal agree to provide a new or updated accessibility checklist to the Dean's office prior to the semester when this course is taught utilizing the changes proposed here.**

I/we agree

**University Learning Goals****Undergraduate Learning Goals:**

Competence in the disciplines  
 Integrative learning  
 Intellectual and practical skills

**Is this course required as part of a teaching credential program, a single subject, or multiple subject waiver program (e.g., Liberal Studies, Biology) or other school personnel preparation program (e.g., School of Nursing)?**

No

## **GE Course and GE Goal(s)**

**Is this a General Education (GE) course or is it being considered for GE?**

No

**Please attach any additional files not requested above:**

CHEM 1BSyllabus\_F\_2019\_FINAL.pdf

Chevelle\_Newsome\_email.pdf

Key: 680