

CHEM 130: SEPARATION METHODS IN CHEMISTRY

In Workflow

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Approval Path

1. 2026-04-10T15:09:36Z
Roy Dixon (rdixon): Approved for CHEM Committee Chair
2. 2026-05-04T17:22:12Z
Thomas Savage (tjsavage): Approved for CHEM Chair
3. 2026-05-06T22:23:35Z
Mikkel Jensen (mikkel.jensen): Approved for NSM College Committee Chair
4. 2026-05-06T22:39:10Z
Chris Taylor (ctaylor): Approved for NSM Dean

New Course Proposal

Date Submitted: 2026-04-10T15:08:52Z

Viewing: CHEM 130 : Separation Methods in Chemistry

Last edit: 2026-04-10T15:08:50Z

Changes proposed by: Roy Dixon (101029561)

Contact(s):

Name (First Last)	Email	Phone 999-999-9999
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Catalog Title:

Separation Methods in Chemistry

Class Schedule Title:

Separations Methods Chem

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:

Fall 2027 (2027/2028 Catalog)

Subject Area: (prefix)

CHEM - Chemistry

Catalog Number: (course number)

130

Course ID: (For administrative use only.)

TBD

Units:

3

Is the ONLY purpose of this change to update the term typically offered or the enforcement of existing requisites at registration?

No

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

Fall term only - even years

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:

The Chemistry Department has offered the graduate Chemical Separations class, CHEM 230, for a long time. While undergraduates are allowed (with permission) to take CHEM 230 for credit toward electives in BS/BA degree programs (specifically, BS Chemistry, BS Biochemistry, BA Chemistry (no concentration), and BA Chemistry (Forensic Chemistry concentration, along with a planned change to broaden allowed electives), creating a paired class specifically for undergraduates should increase undergraduate attendance. In fall semester, there typically are not a large number of elective courses available, so adding this class would increase opportunities for students to take chemistry elective courses

Course Description: (Not to exceed 90 words and language should conform to catalog copy.)

Theoretical and practical aspects of separation sciences. Methods of separations that are included are extractions, gas chromatography and liquid chromatography. Lecture three hours.

Are one or more field trips required with this course?

No

Fee Course?

No

Is this course designated as Service Learning?

No

Is this course designated as Curricular Community Engaged Learning?

No

Does this course require safety training?

No

Does this course require personal protective equipment (PPE)?

No

Course Note: (Note must be a single sentence; do not include field trip or fee course notations.)

Students who take CHEM 130 at Sacramento State cannot take CHEM 230 for credit

Does this course have prerequisites?

Yes

Prerequisite:

- o CHEM 31
- o CHEM 142 or CHEM 140B, may be taken concurrently
- o CHEM 125 or CHEM 133

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):

Lecture

Lecture Classification

CS#02 - Lecture/Discussion (K-factor=1WTU per unit)

Lecture Units

3

Is this a paired course?

Yes

Please confirm that it complies with the Paired Courses Policy and enter the course with which it is paired:

CHEM 230

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 and Assessment Strategies:

List the Expected Learning Outcomes and their accompanying Assessment Strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers). Click the plus sign to add a new row.

	Expected Learning Outcome	Assessment Strategies
1	Explain chemical partitioning between phases in simple separations	Homework, group assignments and exam questions related to partitioning covered in lecture and in the text
2	Evaluate partitioning of solute in liquid-liquid extractions between two phases	Homework, group assignments and exam questions related to liquid-liquid partitioning using well-defined theory in lecture and in the text
3	Demonstrate various two phase extraction techniques	Exam questions related to understanding of extraction techniques covered in lecture and in the text
4	Describe stationary phases in gas and liquid chromatographs	Exam questions related to stationary phases covered in lecture and in the text
5	Demonstrate factors affecting solute retention in column chromatography	Homework, group assignments and exam questions related to retention using well-defined theory covered in lecture and in the text
6	Discuss components and their functions in gas and liquid chromatographs	Homework, group assignments and exam questions related to components and their purposes in gas and liquid chromatographs
7	Explain factors affecting selectivity in chromatography	Homework, group assignments and exam questions involving calculation or use of selectivity as covered in class
8	Explain factors affecting band broadening and column efficiency in chromatography	Homework, group assignments and exam questions involving calculation of column efficiency as covered in lecture and in the text

9	Assess resolution in chromatography	Homework, group assignments and exam questions involving calculation of resolution in example problems similar to those covered in lecture and in the text
10	Explain how to optimize a chromatographic separation	Homework, group assignments and exam questions related to improving resolution in example problems similar to those covered in lecture and in the text
11	Describe methods used with chromatographs for quantitation of unknowns	Homework, group assignments and exam questions to determine solute present using a variety of techniques such similar to those covered in lecture and in the text
12	Understand recent and novel technical areas of separations	Homework and exam questions to demonstrate understanding concepts of novel separations

Attach a list of the required/recommended course readings and activities:

CHEM130_Syl040626.pdf

For whom is this course being developed?

Majors in the Dept

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

No

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
 Intellectual and practical skills
 Integrative learning

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

Key: 15544