CM Program Code
B.S. Chemistry and M.S. Nanoscience & Microsystems Engineering Shared Credit Program

Under Review | Fall 2023

Proposal Information

Workflow Status

In Progress

Faculty Senate Approval, Faculty Senate

expand ▲

Waiting for Approval | Faculty Senate Approval

Rick Holmes
Nancy Middlebrook

Proposal Information

Sponsoring faculty/staff member

Jeremy Edwards & Nathan Jackson

Sponsoring faculty/staff email

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College

College of Arts & Sciences

Department

Chemistry

Campus

Main Campus

Effective Term and Year

Proposed Effective Term and Year

Fall 2023

Justification

Program Justification

The Nanoscience and Microsystems Engineering (NSME) interdisciplinary graduate program currently participates in the School of Engineering (SOE) Shared-Credit Undergraduate/Graduate Degrees Program. This program allows SOE courses to be shared between B.S. and M.S. degrees within SOE. Since NSME is an interdisciplinary program with collaborative effort between the College of Arts and Sciences (A&S) and SOE, NSME would like to extend this shared-credit opportunity to B.S. Chemistry students who are excellent candidates for the NSME graduate program.

Program Category and Level

Program Category
Program

Program Level
Undergraduate & Graduate (dual degree/ shared credit program)

Degree, Minor, or Certificate Name
B.S. Chemistry and M.S. Nanoscience & Microsystems Engineering Shared Credit Program

Degree Type
Shared Credit

Degree/Certificate Level
Shared Credit or Dual Degree

CIP Code
401001

CIP Title
Nanoscience & Microsystems

Is this program also offered online?
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New program courses

Composition of new program

Existing courses	Revised courses	New Courses	Total Credits

Pre-proposal (new degrees/certificates only)

Pre-proposal Executive Summary

- Generic Pre Proposal upload.docx

Program Duplication
N/A

Correspondence

Pre-proposal Approved?
Approved

File uploads

Proposal File Upload

- Roadmap BS-CHEM MS-NSME Shared Credit.pdf

Associated Forms

Select any associated course forms that exist

Select any associated program forms that exist

Shared Credit and Dual Degree information

Interdepartmental Program
No

Catalog Information

Program Description
Shared-Credit Undergraduate/Graduate Degrees Program

Undergraduate students in the B.S. in Chemistry (BS-CHEM) program may seek admission to the M.S. in Nanoscience and Microsystems Engineering (MS-NSME) program under the Shared-Credit Undergraduate/Graduate Degrees Program.

This program is designed to allow students to complete their BS-CHEM and MS-NSME in five years (depending upon the student's mathematics preparation upon entering UNM as a first-year student). To accomplish this, the student's BS-CHEM upper division electives are replaced by 500-level graduate courses that count towards both degrees.

Admission to the graduate portion of this program is provisional, and is not finalized until the student satisfactorily completes the requirements for the B.S. degree.

Students who either choose not to complete or are removed from the graduate portion of the program are awarded the undergraduate degree when all undergraduate requirements are met.

Note: Please review the B.S. in Chemistry listing in this catalog for a full description of the undergraduate program. Please see the M.S. in Nanoscience and Microsystems Engineering program for a full description of the graduate program.

Admissions Requirements
Students seeking admission to the BS-CHEM/MS-NSME shared-credit program should contact their BS-CHEM academic advisor in the Fall semester of their junior year to apply. The following requirements must be met:

1. Be admitted to the BS-CHEM degree program
2. Complete at least 75 credits hours applicable to the BS-CHEM degree before applying to the shared credit program
3. Have a minimum GPA of 3.0
4. Receive a grade of "B" or better in MATH 316

Students pursuing an interdisciplinary Shared-Credit Undergraduate/Graduate Degrees program may be required to take prerequisite courses for the graduate level courses in the M.S. program. Thus, an interdisciplinary Shared-Credit Undergraduate/Graduate Degrees program may require more than the nominal five years to complete.

Graduation Requirements

After acceptance to the shared-credit program, and with appropriate departmental approval, a student will complete NSME graduate-level core or elective coursework to satisfy upper division electives in their undergraduate degree. A grade of "B" or better must be earned in order to receive graduate credit in these courses. The BS-CHEM degree will be awarded after all remaining undergraduate degree requirements are fulfilled.

Once the student is formally admitted to the MS-NSME graduate program, the approved graduate-level credits completed in undergraduate status will also apply to the student's approved graduate program of studies. Students must begin the MS-NSME graduate program immediately following the conferral of the undergraduate degree.

Professional Credential/Licensure Program Information

License/Certification associated with program

No

Degree Information

Degree Hours

30-36

Minimum Major Hours

Professional Accrediting Bodies

Degree Requirements

Requirements

120

Total Credits

- Complete all of the following
  - Complete the following:
    - CHEM1215 - General Chemistry I for STEM Majors (3)
    - CHEM1215L - General Chemistry I for STEM Majors Laboratory (1)
    - CHEM1225 - General Chemistry II for STEM Majors (3)
    - CHEM1225L - General Chemistry II for STEM Majors Laboratory (1)
    - CHEM2310C - Quantitative Analysis Lecture and Laboratory (4)
    - CHEM301 - Organic Chemistry (3)
    - CHEM302 - Organic Chemistry (3)
    - CHEM303L - Organic Chemistry Laboratory (1)
    - CHEM304L - Organic Chemistry Laboratory (1)
    - CHEM311 - Physical Chemistry (3)
    - CHEM312 - Physical Chemistry (3)
    - CHEM411L - Laboratory Methods in Physical Chemistry (3)
    - CHEM431 - Advanced Inorganic Chemistry (3)
    - CHEM453L - Analytical Instrumentation: Theory and Application (4)
  - Earn at least 7 credits from the following types of courses:
    7 additional credit hours selected from courses numbered CHEM **325-498 (at least 3 of the 7 credit hours must be a laboratory course). Up to 3 credit hours of CHEM 495-498 or 2 credit hours of 495-498 and 1 credit hour of **325-**326 may be counted toward the B.S. degree.
  - Complete the following:
    - PHYS1310 - Calculus-Based Physics I (3)
    - PHYS1310L - Calculus-Based Physics I Laboratory (1)
    - PHYS1320 - Calculus-Based Physics II (3)
    - PHYS1320L - Calculus-Based Physics II Laboratory (1)
  - Complete the following:
    - MATH2531 - Calculus III (4)
  - Complete at least 1 courses from MATH 311 - 316
  - Earn at least 65 credits from the following types of courses:
    In addition to the program-specific requirements outlined here, all undergraduate students are required to fulfill UNM's General Education Program requirements and other general undergraduate degree requirements to earn a minimum of 120 credits. In some instances, courses included in an undergraduate degree program's requirement may also fulfill a General Education requirement. Please review the General Education Program in this Catalog for General Education information. Students within the College of Arts and Sciences must also complete 1) a major and a minor; or 2) two majors; or 3) one of the special curricula of the College that requires no minor. In lieu of a specific minor, a student in the B.S. program may obtain a distributed minor.
    Requirements: Completion of the Chemistry B.S. requirements. One additional course from MATH 311, **314 or **316. ENGL 2210.

1 - 12

Total Credits

- Completed between 1 and 12 credits from the following types of courses:
  Shared Credit Courses - Up to 12 credit hours of graduate-level coursework numbered 500+ may be counted as technical electives toward the B.S. in Chemistry and again toward the M.S. in Nanoscience and Microsystems Engineering. Eligible courses include NSME core courses identified below plus STEM related technical electives.

30 - 36

Total Credits

- Complete all of the following
  - Complete the following:
    - NSME510 - Chemistry and Physics at the Nanoscale (3)
    - NSME512 - Characterization Methods for Nanostructures (3)
    - NSME518 - Synthesis of Nanostructures (3)
    - NSME519 - Advanced Micro- and Nanosystems Engineering (4)
  - Earn at least 1 credits from the following:
    - Course Not Found
  - Complete one of the following MS Plans: Plan I (Thesis), Plan II (Project), or Plan III (Coursework only) Plan I: At least 6 credits NSME 599 Thesis, plus 10 credits of electives approved by advisor. Plan II: At least 3 credits problems/research for Master's Project, plus at least 15 credits of electives or concentration approved by advisor. Plan III: At least 22 credits of electives approved by advisor.
  - Completed between 16 and 22 credits from the following types of courses:
    General Electives - Any non-NSME electives taken for the satisfaction of degree requirements must be technical in nature and further the study of NSME subject areas. Electives must be approved by the faculty advisor and confirmed by the Graduate Program Director. Course offerings from Computer Science, Mathematics, Physics, Chemistry, Biology, or other departments in the School of Engineering are typically approved as electives, however, students may propose electives from any department.

Grand Total Credits: 151 - 168

Concentrations

Program Concentrations

Code	Title

Concentration Required

No

Emphases

Emphasis required

No

Emphasis Hours

Emphasis Rules

No Rules

Program Learning Outcomes

Learning Outcomes

NA