

NATURAL SCIENCES AND MATHEMATICS (NSM)

NSM 12A. Peer-Assisted Learning for CHEM 4. 1 Unit
Corequisite(s): CHEM 4
Term Typically Offered: Fall, Spring

Students concurrently enrolled in CHEM 4 and under the guidance of a trained student leader (PAL leader) work collaboratively through problem sets designed by the CHEM 4 instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in CHEM 4.

Note: May be repeated for credit

Credit/No Credit

NSM 12B. Peer-Assisted Learning for MATH 29. 1 Unit
Corequisite(s): MATH 29
Term Typically Offered: Fall, Spring

Students concurrently enrolled in MATH 29 and under the guidance of a trained student leader (PAL leader) work collaboratively through problem sets designed by the MATH 29 instructor. Pedagogical strategies that encourage active engaged learning are employed to facilitate student success in MATH 29.

Note: May be repeated for credit

Credit/No Credit

NSM 12C. Peer-Assisted Learning for CHEM 1A. 1 Unit
Corequisite(s): CHEM 1A
Term Typically Offered: Fall, Spring

Students concurrently enrolled in CHEM 1A and under the guidance of a trained student leader (PAL leader) work collaboratively through problem sets designed by the CHEM 1A instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in CHEM 1A.

Note: May be repeated for credit

Credit/No Credit

NSM 12D. Peer-Assisted Learning for CHEM 1B. 1 Unit
Corequisite(s): CHEM 1B
Term Typically Offered: Fall, Spring

Students concurrently enrolled in CHEM 1B and under the guidance of a trained student leader (PAL leader) work collaboratively through problem sets designed by the CHEM 1B instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in CHEM 1B.

Note: May be repeated for credit

Credit/No Credit

NSM 12E. Peer-Assisted Learning for MATH 30. 1 Unit
Corequisite(s): MATH 30
Term Typically Offered: Fall, Spring

Students concurrently enrolled in MATH 30 and under the guidance of a trained student leader (PAL leader) work collaboratively through problem sets designed by the MATH 30 instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in MATH 30.

Note: May be repeated for credit

Credit/No Credit

NSM 12F. Peer-Assisted Learning MATH 31. 1 Unit
Corequisite(s): Enrollment in MATH 31
Term Typically Offered: Fall, Spring

NSM 12F Peer-Assisted Learning MATH 31. Discussion, 2 hours. Students concurrently enrolled in MATH 31 and under the guidance of a trained student facilitator work collaboratively through problem sets designed by a MATH 31 instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in MATH 31.

Credit/No Credit

NSM 12G. Peer-Assisted Learning PHYS 11A. 1 Unit
Corequisite(s): Enrollment in PHYS 11A
Term Typically Offered: Fall, Spring

NSM 12G Peer-Assisted Learning Physics 11A. Discussion, 2 hours. Students concurrently enrolled in PHYS 11A and under the guidance of a trained student facilitator work collaboratively through problem sets designed by a PHYS 11A instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in MATH 31.

Credit/No Credit

NSM 12H. Peer-Assisted Learning BIO 121. 1 Unit
Corequisite(s): Enrollment in BIO 121
Term Typically Offered: Fall, Spring

NSM 12F Peer-Assisted Learning BIO 121. Discussion, 2 hours. Students concurrently enrolled in BIO 121 and under the guidance of a trained student facilitator work collaboratively through problem sets designed by a BIO 121 instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in BIO 121.

Credit/No Credit

NSM 12I. Peer-Assisted Learning BIO 22. 1 Unit
Corequisite(s): Enrollment in BIO 22
Term Typically Offered: Fall, Spring

NSM 12I Peer-Assisted Learning BIO 22. Discussion, 2 hours. Students concurrently enrolled in BIO 22 and under the guidance of a trained student facilitator work collaboratively through problem sets designed by the BIO 22 instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in BIO 22.

Credit/No Credit

<p>NSM 12J. Peer-Assisted Learning Math 32. 1 Unit Corequisite(s): MATH 32 Students concurrently enrolled in MATH 32 and under the guidance of a trained student facilitator work collaboratively through problem sets designed by a MATH 32 instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in MATH 32. Credit/No Credit</p>	<p>NSM 12R. Peer-Assisted Learning MATH 12. 1 Unit Corequisite(s): MATH 12 Term Typically Offered: Fall, Spring</p> <p>NSM 12R Peer-Assisted Learning MATH12. Discussion, 2 hours. Students concurrently enrolled in MATH 12 and under the guidance of a trained student facilitator work collaboratively through problem sets designed by a MATH 12 instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in MATH 12. Credit/No Credit</p>
<p>NSM 12K. Peer-Assisted Learning BIO 139. 1 Unit Corequisite(s): BIO 139 Students concurrently enrolled in BIO 139 and under the guidance of a trained student facilitator work collaboratively through problem sets designed by a BIO 139 instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in BIO 139. Credit/No Credit</p>	<p>NSM 12S. Peer-Assisted Learning CHEM 124. 1 Unit Corequisite(s): CHEM 124 Term Typically Offered: Fall, Spring</p> <p>NSM 12S Peer-Assisted Learning CHEM 124. Discussion, 2 hours. Students concurrently enrolled in CHEM 124 and under the guidance of a trained student facilitator work collaboratively through problem sets designed by a CHEM 124 instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in CHEM 124. Credit/No Credit</p>
<p>NSM 12L. Peer-Assisted Learning BIO 184. 1 Unit Corequisite(s): BIO 184 Students concurrently enrolled in BIO 184 and under the guidance of a trained student facilitator work collaboratively through problem sets designed by a BIO 184 instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in BIO 184. Credit/No Credit</p>	<p>NSM 12T. Peer-Assisted Learning PHYS 5A. 1 Unit Corequisite(s): PHYS 5A Term Typically Offered: Fall, Spring</p>
<p>NSM 12M. Peer-Assisted Learning CHEM 5. 1 Unit Corequisite(s): CHEM 5 Students concurrently enrolled in CHEM 5 and under the guidance of a trained student facilitator work collaboratively through problem sets designed by a CHEM 5 instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in CHEM 5. Credit/No Credit</p>	<p>NSM 12T Peer-Assisted Learning PHYS 5A. Discussion, 2 hours. Students concurrently enrolled in PHYS 5A and under the guidance of a trained student facilitator work collaboratively through problem sets designed by a PHYS 5A instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in PHYS 5A. Credit/No Credit</p>
<p>NSM 12N. Peer-Assisted Learning CHEM 24. 1 Unit Corequisite(s): CHEM 24 Students concurrently enrolled in CHEM 24 and under the guidance of a trained student facilitator work collaboratively through problem sets designed by a CHEM 24 instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in CHEM 24. Credit/No Credit</p>	<p>NSM 12U. Peer-Assisted Learning Bio 39. 1 Unit Term Typically Offered: Fall, Spring</p> <p>NSM 12U Peer-Assisted Learning BIO 39. Discussion, 2 hours. Students concurrently enrolled in BIO 39 and under the guidance of a trained student facilitator work collaboratively through problem sets designed by a BIO 39 instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in BIO 39. Credit/No Credit</p>
<p>NSM 12P. Peer-Assisted Learning STAT 1. 1 Unit Corequisite(s): STAT 1 Term Typically Offered: Fall, Spring</p> <p>NSM 12P Peer-Assisted Learning STAT 1. Discussion, 2 hours. Students concurrently enrolled in STAT 1 and under the guidance of a trained student facilitator work collaboratively through problem sets designed by a STAT 1 instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in STAT 1. Credit/No Credit</p>	<p>NSM 12V. Peer-Assisted Learning BIO 25. 1 Unit Corequisite(s): BIO 25 Term Typically Offered: Fall, Spring</p> <p>NSM 12V Peer-Assisted Learning BIO 25. Discussion, 2 hours. Students concurrently enrolled in BIO 25 and under the guidance of a trained student facilitator work collaboratively through problem sets designed by a BIO 25 instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in BIO 25. Credit/No Credit</p>
<p>NSM 12Q. Peer-Assisted Learning STAT 50. 1 Unit Corequisite(s): STAT 50 Term Typically Offered: Fall, Spring</p> <p>NSM 12Q Peer-Assisted Learning STAT 50. Discussion, 2 hours. Students concurrently enrolled in STAT 50 and under the guidance of a trained student facilitator work collaboratively through problem sets designed by a STAT 50 instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in STAT 50. Credit/No Credit</p>	<p>NSM 12W. Peer-Assisted Learning BIO 26. 1 Unit Corequisite(s): BIO 26 Term Typically Offered: Fall, Spring</p> <p>NSM 12W Peer-Assisted Learning BIO 26. Discussion, 2 hours. Students concurrently enrolled in BIO 26 and under the guidance of a trained student facilitator work collaboratively through problem sets designed by a BIO 26 instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in BIO 26. Credit/No Credit</p>

- NSM 21. First Year Seminar: Becoming an Educated Person. 3 Units**
General Education Area/Graduation Requirement: Understanding Personal Development (E)
Term Typically Offered: Fall, Spring
- Introduction to the nature and possible meanings of higher education and the functions and resources of the university. Designed to help students develop academic success strategies and improve academic skills. Students will interact with fellow students to build a community of academic and personal support. Introduces science and math as academic disciplines by requiring students to interpret scientific literature.
- NSM 86A. STEM Learning Practices for Future Teachers. 3 Units**
Prerequisite(s): Three years of high school mathematics and three years of high school science preferred.
Term Typically Offered: Fall only
- The first course in a two-course pairing. The course is for freshmen intending to be elementary/junior high school teachers with special skills and knowledge in science curriculum and science pedagogy for the K-9 grade span. Students will learn course content through activities, tasks, and assignments that require them to expand their knowledge of science and mathematics concepts and skills as well as synthesize them in relation to real-world issues and problems.
Note: Field Trip. Observations in local public K-8 schools
- Field trip(s) may be required.
- NSM 86B. Advanced STEM Learning Practices for Future Teachers. 3 Units**
Prerequisite(s): NSM 86A
Term Typically Offered: Spring only
- The second course in a two-course pairing, intended for future elementary/junior high school teachers especially interested in science. This course extends the learning of mathematics and science content knowledge and disciplinary practices from NSM 86A by integrating engineering content and the engineering design cycle. Students will learn course content through activities, tasks, and assignments that require them to synthesize and apply their knowledge of science, engineering, and mathematics concepts and skills to complex and inter-disciplinary real-world issues and problems.
Note: Field trip. Observations in local public K-8 schools.
- Field trip(s) may be required.
- NSM 88. Exploring Health Careers. 1 Unit**
Term Typically Offered: Fall, Spring
- Designed for pre-professional students, this self exploration course will assist students in determining whether a career in the health professions is suitable to their interest, skills, and values. In addition to exploring the traditional health professions medicine, pharmacy, etc., students will have opportunity to explore alternative health professions and career options. This active learning course will include lectures, discussions, individual and group projects, informational interviews, and guest speakers. One hour per week.
 Credit/No Credit
- NSM 90. Biomedical Research Seminars. 1 Unit**
Term Typically Offered: Fall, Spring
- Professional scientists, graduate students and senior undergraduate researchers in biomedical sciences will present their research. Students will develop critical skills to become active participants in dialogs with seminar presenters. Students will explore and cultivate their interest towards biomedical research careers and compile a portfolio to archive their course achievements. During their senior year, undergraduate researchers will also deliver presentations of their own work.
 Credit/No Credit
- NSM 96. Peer-Assisted Learning MATH 32. 1 Unit**
Corequisite(s): MATH 32
Term Typically Offered: Fall, Spring
- Students concurrently enrolled in MATH 32 and under the guidance of a trained student facilitator work collaboratively through problem sets designed by the MATH 32 instructor. Pedagogical strategies that encourage active, engaged learning are employed to facilitate student success in MATH 32.
 Credit/No Credit
- NSM 100A. Transfer Seminar I. 1 Unit**
Prerequisite(s): first-semester transfer student
 Designed for first-semester transfer students in the College of NSM. Series of at least 10 seminars related to campus and career-based opportunities, integration with peers, and promotion of academic mindset.
 Credit/No Credit
- NSM 100B. Transfer Seminar II. 1 Unit**
Prerequisite(s): second-semester transfer student
 Designed for second-semester transfer students in the College of NSM. Series of at least 10 seminars related to campus and career-based opportunities for employment, preparation for entering the STEM workforce, and integration with peers and colleagues.
 Credit/No Credit
- NSM 175. Summer Undergraduate Research Experience Seminar. 1 Unit**
Term Typically Offered: Summer only
- This seminar supports students who have received a Summer Undergraduate Research Experience Award through the College of Natural Sciences and Mathematics. Seminar topics will include laboratory safety, research ethics and dissemination of research results. These sessions will prepare students to disseminate their research at the NSM Student Research Symposium.
 Credit/No Credit
- NSM 190. Senior Thesis Seminar. 3 Units**
Term Typically Offered: Spring only
- Develops the ability of undergraduate researchers to search, interpret, and add to the biomedical research literature. Students develop a senior thesis or proposal and an oral presentation. Includes analysis of primary research articles, peer review of student writing samples, and presentation of scientific information. These activities improve students' understanding of how scientific questions are developed, posed, and answered through proposals and dissemination of research results.

NSM 193. STEM Leadership, Ethics, and Social Change. ✍ 3 Units**Prerequisite(s):** WPJ Score of 70+ or equivalent.**General Education Area/Graduation Requirement:** Writing Intensive Graduation Requirement (WI)**Term Typically Offered:** Fall, Spring

A writing intensive exploration of leadership and ethical theory applied to literature, film, and history with special attention to the kinds of leadership and ethical dilemmas experienced by STEM leaders. Students will employ critical thinking and writing skills to apply leadership and ethical theory to humanities texts; to inquire into specific problems and dilemmas in leadership; and to critically reflect on one's own values and ethics in one's own development as a leader.

Cross listed: ENGR 193.

NSM 195A. STEM Pedagogical Practices. 1 Unit**Prerequisite(s):** All lower division coursework for a NSM major must be completed.**Term Typically Offered:** Fall, Spring

STEM Pedagogical Practices. Students will be introduced to research-supported pedagogical practices appropriate to Technology, Engineering, and Mathematics (STEM) instruction in secondary schools. Topics include: the Common Core Math Standards, the New Generation Science Standards (NGSS), classroom questioning strategies, active learning strategies, and different forms of assessment.

Note: NSM 195A will provide pedagogical context to support students in their field experience (NSM 195B).

Credit/No Credit

NSM 195B. Field Experience in Secondary STEM Classrooms. 1 Unit**Prerequisite(s):** NSM 195A. NSM 195A may be taken concurrently.**Term Typically Offered:** Fall, Spring

Field Experience in Secondary STEM Classrooms. Orientation to high quality Science, Technology, Engineering, and Mathematics (STEM) instruction in secondary schools. Coursework is divided into two components: field experience in either middle or high-school STEM classroom; and weekly meetings to reflect on field experiences.

Credit/No Credit

NSM 196. Conceptual Understanding of Science for Teachers. 1 - 3 Units**Prerequisite(s):** Instructor permission.**Term Typically Offered:** Fall, Spring

Intensive examination of selected topics in science for teachers. The goal is to develop a deep conceptual understanding of the science under consideration, knowledge of common misconceptions about the concept, and effective ways to guide student learning of the selected topic.

Cross Listed: NSM 296; only one may be counted for credit.

Credit/No Credit

NSM 196A. Science Topics for Middle School. 1 - 3 Units**Prerequisite(s):** Multiple Subject Credential and instructor permission**Term Typically Offered:** Fall, Spring

Intensive examination of selected topics in science for teachers pursuing subject matter knowledge needed for a general science credential.

The goal is to deepen and broaden students' conceptual and factual knowledge base for selected topics. Course will involve hands-on tasks designed to enhance conceptual understanding as well as lectures, small group work and independent tasks necessary for learning the subject matter.

NSM 197. Seminar in Peer-Assisted Learning. 2 Units**Prerequisite(s):** Instructor permission**Corequisite(s):** Acceptance as PAL facilitator**Term Typically Offered:** Fall, Spring

Specific classroom training for advanced students who are concurrently serving as PAL facilitators within NSM. Action research on learning theory as applied to classroom setting with culminating research presentation.

NSM 197B. Advanced Seminar in Peer-Assisted Learning. 2 Units**Prerequisite(s):** NSM 197**Term Typically Offered:** Fall, Spring

Specific classroom training for advanced students who are concurrently serving as PAL facilitators within NSM. Action research on learning theory as applied to classroom settings with culminating research presentation. Instructor permission required for enrollment. Lecture & Discussion, 2 hours.

NSM 197C. Seminar for Lead & Supervisory Facilitators. 2 Units**Prerequisite(s):** NSM 197A or NSM 197B

Specific classroom training for advanced students who are concurrently serving Lead or Supervisory PAL facilitators within NSM. Leadership and assessment of program effectiveness with a culminating research presentation. Instructor permission required for enrollment.

NSM 198. Co-curricular Activities in Natural Sciences and Mathematics. 1 - 3 Units**Prerequisite(s):** Admission to this course requires approval of instructor.**Term Typically Offered:** Fall, Spring

Earned credit by participating as tutor or teacher assistant in public schools, volunteering as an instructor or tutor in K-12 courses or programs offered by other community organizations, or engagement in community education programs, which are based in one or more disciplines in NSM. Participation requires three to twelve hours weekly. **Note:** May be taken more than once but no more than three units may be applied toward the baccalaureate degree.

Credit/No Credit

NSM 296. Conceptual Understanding of Science for Teachers. 1 - 3 Units**Prerequisite(s):** Instructor permission.**Term Typically Offered:** Fall, Spring

Intensive examination of selected topics in science for teachers. The goal is to develop a deep conceptual understanding of the science under consideration, knowledge of common misconceptions about the concept, and effective ways to guide student learning of the selected topic.

Note: May be repeated for credit. Cross listed: NSM 196.

Credit/No Credit