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

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

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

**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

**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

**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

**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

**NSM 12P. Peer-Assisted Learning STAT 1.**  1 Unit
**Corequisite(s):** STAT 1
**Term Typically Offered:** Fall, Spring

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

**NSM 12Q. Peer-Assisted Learning STAT 50.**  1 Unit
**Corequisite(s):** STAT 50
**Term Typically Offered:** Fall, Spring

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

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

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

**NSM 12S. Peer-Assisted Learning CHEM 124.**  1 Unit
**Corequisite(s):** CHEM 124
**Term Typically Offered:** Fall, Spring

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

**NSM 12T. Peer-Assisted Learning PHYS 5A.**  1 Unit
**Corequisite(s):** PHYS 5A
**Term Typically Offered:** Fall, Spring

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

**NSM 12U. Peer-Assisted Learning Bio 39.**  1 Unit
**Corequisite(s):** BIO 39
**Term Typically Offered:** Fall, Spring

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

**NSM 12V. Peer-Assisted Learning BIO 25.**  1 Unit
**Corequisite(s):** BIO 25
**Term Typically Offered:** Fall, Spring

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

**NSM 12W. Peer-Assisted Learning BIO 26.**  1 Unit
**Corequisite(s):** BIO 26
**Term Typically Offered:** Fall, Spring

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
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Units</th>
<th>Term Typically Offered</th>
<th>Prerequisite(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSM 21</td>
<td>First Year Seminar: Becoming an Educated Person.</td>
<td>3</td>
<td>Fall, Spring</td>
<td></td>
<td>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.</td>
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<tr>
<td>NSM 86A</td>
<td>STEM Learning Practices for Future Teachers.</td>
<td>3</td>
<td>Fall only</td>
<td></td>
<td>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.</td>
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<tr>
<td>NSM 86B</td>
<td>Advanced STEM Learning Practices for Future Teachers.</td>
<td>3</td>
<td>Spring</td>
<td></td>
<td>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.</td>
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<tr>
<td>NSM 88</td>
<td>Exploring Health Careers.</td>
<td>1</td>
<td>Fall, Spring</td>
<td></td>
<td>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</td>
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<tr>
<td>NSM 90</td>
<td>Biomedical Research Seminars.</td>
<td>1</td>
<td>Fall, Spring</td>
<td></td>
<td>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</td>
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<tr>
<td>NSM 96</td>
<td>Peer-Assisted Learning MATH 32.</td>
<td>1</td>
<td>Fall, Spring</td>
<td></td>
<td>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</td>
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<tr>
<td>NSM 100A</td>
<td>Transfer Seminar I.</td>
<td>1</td>
<td>Fall only</td>
<td>first-semester transfer student</td>
<td>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</td>
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<tr>
<td>NSM 100B</td>
<td>Transfer Seminar II.</td>
<td>1</td>
<td>Spring</td>
<td>second-semester transfer student</td>
<td>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</td>
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<tr>
<td>NSM 175</td>
<td>Summer Undergraduate Research Experience Seminar.</td>
<td>1</td>
<td>Summer only</td>
<td></td>
<td>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</td>
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<tr>
<td>NSM 190</td>
<td>Senior Thesis Seminar.</td>
<td>3</td>
<td>Spring</td>
<td></td>
<td>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.</td>
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NSM 193. STEM Leadership, Ethics, and Social Change. 3 Units
Prerequisite(s): WJP 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 Next 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 as 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