Duluth Campus

Teaching Physical Science B.A.Sc.

Chemistry and Biochemistry, Education, UMD-Physics & Astronomy

College of Education and Human Service Professions

- Program Type: Baccalaureate
- Requirements for this program are current for Spring 2019
- Required credits to graduate with this degree: 136 to 140
- Required credits within the major: 118 to 122
- This program is 9 terms (4½ years) long.
- Degree: Bachelor of Applied Science

Students can choose to complete the chemistry emphasis or the physics emphasis.

Program Delivery

This program is available:

- via classroom (the majority of instruction is face-to-face)

Admission Requirements

Students must complete 45 credits before admission to the program.

Freshman and transfer students students are usually admitted to pre-major status before admission to this major

A GPA above 2.0 is preferred for the following:

- 2.50 already admitted to the degree-granting college
- 2.50 transferring from another University of Minnesota college
- 2.50 transferring from outside the University

Students entering the Secondary (5-12) & K-12 licensure programs are bound by the policies in effect at the time of application; admission is based on criteria established by the Dept. of Educ, consistent with MN policies as established by the MN Professional Educator Licensing and Standards Board (PELSB). Students must meet the admission requirements to the blocks. They can be found online at: https://z.umn.edu/stepapplication.

For information about University of Minnesota admission requirements, visit the Office of Admissions website.

Required prerequisites

Introductory Course (1 cr)

This course will be waived for transfer students with 24 credits taken post high school or students who change to CEHSP from a collegiate unit where it is not required.

Register course for one credit.

UST 1000 - Learning in Community (1.0 - 2.0 cr)

General Requirements

The Board of Regents, on recommendation of the faculty, grants degrees from the University of Minnesota. Requirements for an undergraduate degree from University of Minnesota Duluth include the following:

1. Students must meet all course and credit requirements of the departments and colleges or schools in which they are enrolled including an advanced writing course. Students seeking two degrees must fulfill the requirements of both degrees. However, two degrees cannot be awarded for the same major.
2. Students must complete all requirements of the Liberal Education Program.
3. Students must complete a minimum of 120 semester credits.
4. At least 30 of the last 60 degree credits earned immediately before graduation must be awarded by UMD.
5. Students must complete at least half of their courses at the 3xxx-level and higher at UMD. Study-abroad credits earned through courses taught by UM faculty and at institutions with which UMD has international exchange programs may be used to fulfill this requirement.
6. If a minor is required, students must take at least three upper division credits in their minor field from UMD.
7. The minimum cumulative UM GPA required for graduation will be 2.00 and will include only University of Minnesota coursework. A minimum UM GPA of 2.00 is required in each UMD undergraduate major and minor. No academic unit may impose higher grade

© 2005 by the Regents of the University of Minnesota
The University of Minnesota is an equal opportunity educator and employer.

point standards to graduate.

8. Diploma, transcripts, and certification will be withheld until all financial obligations to the University have been met.

Program Requirements

1. Compliance with general regulations governing granting of degrees. Students are required to review their degree status in the CEHSP Advising & Academic Services Office early in their senior year.

2. Students must make satisfactory academic progress and demonstrate acceptable professional performance in field experiences.

3. Students that complete the program must pass all tests required by PELSB to be recommended for licensure.

4. Students are expected to: a) make satisfactory progress each semester, including grades of C- or better in all courses required in the major; b) demonstrate acceptable professional performance in applied learning settings (e.g., laboratory, field experiences, clinical experiences); and c) obtain an approved background check before being placed in clinical, field, intern, or student teaching experiences. Students who do not meet program expectations can be dismissed from the major. Details on these requirements are available from the department office.

Program Sub-plans

Students are required to complete one of the following sub-plans.

Chemistry

The BASc degree in teaching physical science, chemistry emphasis, is offered by the Department of Education in conjunction with the Department of Chemistry and Biochemistry. This major (116 - 117 cr) prepares students to teach all science areas in grades 5 through 8 and to teach chemistry in grades 9 through 12.

Lower Division Requirements (61 cr)

Astronomy

AST 1040 - Introductory Astronomy [LE CAT, NAT SCI] (3.0 cr)

Biology

BIOL 1011 - General Biology I [LE CAT, NAT SCI] (5.0 cr)
BIOL 1012 - General Biology II [SUSTAIN] (5.0 cr)

Chemistry

CHEM 1153 - General Chemistry I [LE CAT, NAT SCI] (4.0 cr)
CHEM 1154 - General Chemistry Lab I [LE CAT, NAT SCI] (1.0 cr)
CHEM 1155 - General Chemistry II (4.0 cr)
CHEM 1156 - General Chemistry Lab II (1.0 cr)
CHEM 2222 - Quantitative Analysis (3.0 cr)
CHEM 2223 - Quantitative Analysis Laboratory (1.0 cr)
CHEM 2541 - Organic Chemistry I (3.0 cr)
CHEM 2542 - Organic Chemistry II (3.0 cr)
CHEM 2543 - Organic Chemistry I Laboratory (1.0 cr)
CHEM 2544 - Organic Chemistry II Laboratory (1.0 cr)

Education

EDUC 1101 - Education in Modern Society [LE CAT7, HUMANITIES] (3.0 cr)

Geology

EES 1110 - Geology and Earth Systems [LE CAT, NAT SCI, SUSTAIN] (4.0 cr)
EES 2110 - Reconstructing Earth's Climate History (4.0 cr)

Math

MATH 1290 - Calculus for the Natural Sciences [LE CAT2, LOGIC & QR] (5.0 cr)
or MATH 1296 - Calculus I [LE CAT, LOGIC & QR] (5.0 cr)

Physics

PHYS 1001 - Introduction to Physics I [LE CAT, NAT SCI] (5.0 cr)
PHYS 1002 - Introduction to Physics II (5.0 cr)

Upper Division Requirements (16 cr)

CHEM 3322 - Biochemistry (3.0 cr)
CHEM 3324 - Biochemistry Laboratory (1.0 cr)
EDUC 3412 - The Computer in Education (3.0 cr)
EDUC 4234 - Science, Technology, and Society [SUSTAIN] (3.0 cr)
HLTH 3202 - Drug Education (2.0 cr)

Advanced Writing Requirement

WRIT 3140 - Advanced Writing: Human Services (3.0 cr)

© 2005 by the Regents of the University of Minnesota
The University of Minnesota is an equal opportunity educator and employer.
Information current as of March 28, 2024

or WRIT 3150 - Advanced Writing: Science (3.0 cr)

Block Requirements (40 cr)

Application for admission to the blocks can only be completed spring semester for fall semester admission. Application for admission to the blocks must be submitted by the 6th Friday of the semester. Applications are available from the Department of Education website.

Block 1 (12 cr)

All courses must be taken concurrently. Consult advisor for additional upper division science course.

EDSE 4204 - Designing Learning Environments and Lessons (3.0 cr)
EDSE 4100 - Teaching in a Diverse Society (3.0 cr)
EDSE 4501 - Adolescent/Adult Development and Learning Theory (3.0 cr)
SPED 3415 - Special Education in the Secondary School (3.0 cr)

Block 2 (15 cr)

All courses must be taken concurrently. Application for student teaching must be made by the 4th Friday of the semester before student teaching. Application are available from the Department of Education website. EDSE 4255 and EDUC 4110 offered spring only. Consult advisor for additional upper division science course.

EDSE 3206 - Apprenticeship: Secondary School (2.0 cr)
EDSE 4214 - Teaching Content-Area Reading (3.0 cr)
EDSE 4255 - Teaching Science: Grades 5-12 (3.0 cr)
EDSE 4525 - Assessment for Secondary Education (3.0 cr)
EDUC 4381 - Teaching Indigenous Students (3.0 cr)
EDUC 4110 - Advanced Earth Science for Teachers (2.0 cr)

Block 3 (13 cr)

All courses must be taken concurrently. Registration for student teaching in the senior year requires grades of C- or better in all courses in teaching major(s) and minor; graded completion of all education block courses; completion of at least 85% of teaching major courses. Students must have personal liability insurance while they are working in field placement settings. EDSE 4600 register for 12 credits. EDUC 4990 must be taken concurrently with EDSE 4600.

EDSE 4600 - Student Teaching (3.0 - 24.0 cr)
EDUC 4500 - Professional Issues and Ethics (1.0 cr)
EDUC 4990 - Education Teacher Performance Assessment (0.0 cr)

Physics

The BASc degree in teaching physical sciences, physics emphasis, is offered by the Department of Education in conjunction with the Department of Physics. This major (120 - 121 cr) prepares students to teach all science areas in grades 5 through 8 and to teach physics in grades 9 through 12. One semester of computer programming is recommended for students completing this major.

Lower Division Requirements (64 cr)

Astronomy

AST 1040 - Introductory Astronomy [LE CAT, NAT SCI] (3.0 cr)

Biology

BIOL 1011 - General Biology I [LE CAT, NAT SCI] (5.0 cr)
BIOL 1012 - General Biology II [SUSTAIN] (5.0 cr)

Chemistry

CHEM 1113 - Introduction to General, Organic, and Biological Chemistry I [LE CAT, NAT SCI] (5.0 cr)
CHEM 1114 - Introduction to General, Organic, and Biological Chemistry II (5.0 cr)

Education

EDUC 1101 - Education in Modern Society [LE CAT7, HUMANITIES] (3.0 cr)

Geology

EES 1110 - Geology and Earth Systems [LE CAT, NAT SCI, SUSTAIN] (4.0 cr)
EES 2110 - Reconstructing Earth's Climate History (4.0 cr)

Math

MATH 1296 - Calculus I [LE CAT, LOGIC & QR] (5.0 cr)
MATH 1297 - Calculus II [LOGIC & QR] (5.0 cr)

Physics

Physics I

PHYS 2013 - General Physics I [LE CAT, NAT SCI] (4.0 cr)
or PHYS 2017 - Honors: General Physics I [NAT SCI] (4.0 cr)

Phys I lab

PHYS 2014 - General Physics Lab I [NAT SCI] (1.0 cr)

Physics II

PHYS 2015 - General Physics II (4.0 cr)
or PHYS 2018 - Honors General Physics II (4.0 cr)
PHYS 2016 - General Physics Lab II (1.0 cr)

Additional Physics

PHYS 2021 - Relativity and Quantum Physics (4.0 cr)
PHYS 2022 - Classical Physics (4.0 cr)
PHYS 2033 - Classical and Quantum Physics Lab (2.0 cr)

© 2005 by the Regents of the University of Minnesota
The University of Minnesota is an equal opportunity educator and employer.
Information current as of March 28, 2024

Upper Division Requirements (17 cr)

EDUC 3412 - The Computer in Education (3.0 cr)
EDUC 4234 - Science, Technology, and Society [SUSTAIN] (3.0 cr)
HLTH 3202 - Drug Education (2.0 cr)
PHYS 3061 - Instrumentation (3.0 cr)
PHYS 4110 - Physics for Science Teachers (2.0 cr)
WRIT 3140 - Advanced Writing: Human Services (3.0 cr)
or WRIT 3150 - Advanced Writing: Science (3.0 cr)

Block Requirements (40 cr)

Application for admission to the blocks must be submitted by the 6th Friday of the semester. Applications are available from the Department of Education website.

Block 1 (12 cr)

Application to the blocks can only be completed spring semester for fall semester admission. All courses must be taken concurrently. Consult advisor for additional upper division science course.

EDSE 4204 - Designing Learning Environments and Lessons (3.0 cr)
EDSE 4100 - Teaching in a Diverse Society (3.0 cr)
EDSE 4501 - Adolescent/Adult Development and Learning Theory (3.0 cr)
SPED 3415 - Special Education in the Secondary School (3.0 cr)

Block 2 (15 cr)

All courses must be taken concurrently. Application for student teaching must be made by the 4th Friday of the semester before student teaching. Applications are available from the Department of Education website. EDSE 4255 and EDUC 4110 offered spring only. Consult advisor for additional upper division science course.

EDSE 3206 - Apprenticeship: Secondary School (2.0 cr)
EDSE 4214 - Teaching Content-Area Reading (3.0 cr)
EDSE 4255 - Teaching Science: Grades 5-12 (3.0 cr)
EDUC 4381 - Teaching Indigenous Students (3.0 cr)
EDUC 4110 - Advanced Earth Science for Teachers (2.0 cr)
EDSE 4525 - Assessment for Secondary Education (3.0 cr)

Block 3 (13 cr)

All courses must be taken concurrently. Registration for student teaching in the senior year requires grades of C- or better in all courses in the teaching major(s) and minor; graded completion of all education block courses; completion of at least 85% of teaching major courses. Students must have personal liability insurance while they are working in field placement settings. EDSE 4600 register for 12 credits. EDUC 4990 must be taken concurrently with EDSE 4600.

EDSE 4600 - Student Teaching (3.0 - 24.0 cr)
EDUC 4500 - Professional Issues and Ethics (1.0 cr)
EDUC 4990 - Education Teacher Performance Assessment (0.0 cr)

© 2005 by the Regents of the University of Minnesota
The University of Minnesota is an equal opportunity educator and employer.