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# Northeast Community College logoAssociate to Bachelors (A2B) Articulation Agreement

**Prescribed Curriculum:** Northeast Community College

## Associate of Science – Physics

|  |  |
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| General Education Courses | **34** CREDIT HOURS |
|  | **Credit Hours** | **Course No.** | **Course Title or Category** |
| **Written Comm** | 3 | ENGL 2070 | Technical Communications I |
| **Oral Communication** | 3 | SPCH 1010 or 1110 | Fundamentals of Communication or Public Speaking |
| **Behavioral & Social Sciences** | 3 | Select 1 course from | AS General Education list *(except AGRI 1530)* |
| **English/Literature** | 3 | Select 1 course from | AS General Education list *(except ENGL 1020)* |
| **Fine Arts and Language** | 3 | Select 1 course from | AS General Education list |
| **Mathematics** | 10 | MATH 1600MATH 2010 | Analytic Geometry and Calculus IAnalytic Geometry and Calculus II |
| **Natural Science** | 9 | CHEM 1090PHYS 2110 | General Chemistry IGeneral Physics I w/Calculus |

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| Required Courses |  | **17** CREDIT HOURS |
|  | **Credit Hours** | **Course No.** | **Course Title** |
| **Mathematics & Science** | 5 | PHYS 2120 | General Physics II w/Calculus |
| 3 | MATH 2100 | Differential Equations |
| 5 | MATH 2020 | Analytic Geometry and Calculus III |
| 4 | CHEM 1100 | General Chemistry II |

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| Program Elective Courses |  | **9** CREDIT HOURS |
|  | **Credit Hours** | **Course No.** | **Course Title** |
| **Electives** | 3 | ENGR 1020 | Programming and Problem Solving |
| 3 | MATH 2170 | Applied Statistics |
| 3 | ENGR 2020 | Engineering Statics |

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| **Associate of Science – Physics Total:** | **60 CREDIT HOURS** |

**Post-Associate Degree Prescribed Curriculum:** South Dakota Mines

## Bachelor of Science – Physics

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| General Education Courses | **6** CREDIT HOURS |
|  | **Credit Hours** | **Course No.** | **Course Title or Category** |
| **Written Communication** | 3 | ENGL 289 | Explorations in STEM Communications |
| **Social Sciences** | 3 | Select 1 course from | CIV 100, HIST 151, HIS 152, POLS 100, or POLS 210 |

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| Major Required Courses |  | **50** CREDIT HOURS |
|  | **Credit Hours** | **Course No.** | **Course Title** |
| **Physics & Mathematics** | 3 | PHYS 225 | Vibrations, Waves, and Optics |
| 2 | PHYS 312 | Experimental Physics Design I |
| 3 | PHYS 331 | Introduction to Modern Physics |
| 2 | PHYS 341 | Thermodynamics |
| 2 | PHYS 343 | Statistical Physics |
| 3 | PHYS 361 | Optics |
| 2 | PHYS 314 | Experimental Physics Design II |
| 3 | PHYS 350 | Advanced Physics Laboratory |
| 4 | PHYS 421 | Electromagnetism |
| 4 | PHYS 471 | Quantum Mechanics |
| 3 | PHYS 412 | Advanced Design Projects I |
| 4 | PHYS 451 | Classical Mechanics |
| 4 | PHYS 414 | Advanced Design Projects II |
| 4 | PHYS 433 | Nuclear and Elementary Particle Physics |
| 4 | PHYS 439 | Condensed Matter Physics |
| 3 | MATH 315 | Linear Algebra |

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| Elective Courses |  | **4** CREDIT HOURS |
|  | **Credit Hours** | **Course No.** | **Course Title** |
| **Program Electives** | 4 | Select with Advisor | From list of approved electives |

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| **Post-Associate Degree Total:** | **60 CREDIT HOURS** |

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| **Bachelor of Science – Physics Total:** | **120 CREDIT HOURS** |

**A2B Articulation Agreement Guarantees & Limitations**

### GUARANTEES

Students who:

1. complete the Associate of Science – Pre-Engineering degree prescribed curriculum at Northeast Community College exactly as it is identified in this articulation agreement, **and**
2. have the degree conferred on their education record at Northeast Community College (post high school graduation)**, and**
3. earn a minimum cumulative grade point average (GPA) of 2.75 at the Northeast Community College, **and**
4. pass all 60 credits for the associate degree, earning a grade C- or higher in each course

are **guaranteed** the following at the South Dakota School of Mines and Technology (South Dakota Mines):

1. junior standing at South Dakota Mines with no more than 60 remaining credits to meet the graduation requirements for the Bachelor of Science degree in Physics.
2. admission to South Dakota Mines
3. admission to the Bachelor of Science degree in Physics.

### LIMITATIONS

1. This agreement is between the Associate of Science – Pre-Engineering degree at Northeast Community College and the Bachelor of Science degree in Physics at South Dakota Mines only.
2. Students must meet all admission and application requirements at South Dakota Mines, including the submission of all required documentation by stated deadlines. Students are advised to contact the Office of Admissions at the South Dakota Mines early in their transfer planning.
3. Student must have a cumulative grade point average (GPA) at the Northeast Community College of 2.75 or higher

**and** only courses with grades of C- or higher are guaranteed to be accepted in transfer by South Dakota Mines.

1. The credit and course transfer guarantees described in this agreement apply to the Associate of Science – Pre- Engineering degree at Northeast Community College and the Bachelor of Science degree in Physics at South Dakota Mines. If the student changes majors at Northeast Community College or at South Dakota Mines, the student is no longer covered by this Articulation Agreement and none of the Guarantees of the Agreement apply.
2. Students utilizing any form of transfer credit, including but not limited to credit awarded from other higher education institutions, standardized exam (CLEP, AP, DSST, etc.), prior learning assessment (military, certifications, ACE recommended credit, portfolio, challenge exam, work experience equivalent credit, etc.) to satisfy any Associate degree requirements will have those credits evaluated by South Dakota Mines. Should South Dakota Mines not accept the transfer credits accepted by Northeast Community College, the student will be required to make up the credit deficiency at South Dakota Mines.
3. No course substitutions are allowed for the courses listed in the Prescribed Curriculum for the associate degree at Northeast Community College.

### A2B CONTACT INFORMATION

South Dakota Mines Northeast Community College

Office of the Provost Registration Office

605.394.2256 402.844.7265

Provost@sdsmt.edu

### RENEWAL, REVISION, and TERMINATION

1. This Associate to Bachelor Articulation Agreement (A2B) shall be in effect July 1 – June 30 each year and will automatically renew annually unless action is taken by South Dakota Mines or Northeast Community College to terminate or modify it.
2. The South Dakota Mines Office of the Provost and the Northeast Community College Academic Affairs division will collaborate to coordinate a review of the content of the associate and bachelor degrees on a three-year cycle to ensure this A2B is still appropriate.
3. South Dakota Mines and the Northeast Community College each reserve the right to seek revision of this agreement at any time.
4. Revision of any content of the agreement (except Appendices content) will be approved by each institution and result in a new agreement being signed, with copies retained by each institution.
	1. Revision to any Appendices will be communicated to each institution, but do not need to be approved by each institution and will not result in a new agreement being signed by each institution.
5. South Dakota Mines and the Northeast Community College each reserve the right to seek termination of this agreement at any time.
6. Should the agreement be terminated, each institution agrees to collaborate and engage in appropriate plans to notify and work with impacted students, providing a minimum one-year advance notice of termination.

### Leah Barrett signatureBrian Tande signatureAPPROVALS

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| --- | --- | --- | --- |
|  | 8/5/2025 |  | 8/4/2025 |
| Brian Tande, Ph.D.President | Date | Leah Barrett, Ed.D.President | Date |
| South Dakota Mines |  | Northeast Community College |  |
| Brian.Tande@sdsmt.edu |  | lbarrett@northeast.edu |  |
|  | 8/5/2025 |  | 8/4/2025 |
| Lance Roberts, Ph.D. | Date | Charlene Widener, Ph.D. | Date |

Provost and Vice President for Academic Affairs Vice President of Educational Services South Dakota Mines Northeast Community College

Lance.Roberts@sdsmt.edu cwidener@northeast.edu

8/5/2025 7/25/2025

Richard Schnee, Ph.D. Date Connie Sixta Date Department Head Dean of Science, Technology, Agriculture & Math

South Dakota Mines Northeast Community College

Richard.Schnee@sdsmt.edu connie@northeast.edu

## Appendix A: Course Sequence

**Course Sequence:** Northeast Community College

## Physics (A.S.)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Semester** | **Course No.** | **Course Title** | **Credit Hours** | **Completed** |
| Freshman | ENGL 2070 | Technical Communications I | 3 |  |
| Year |
| MATH 1600 | Analytic Geometry and Calculus I | 5 |  |
| First |
| CHEM 1090 | General Chemistry I | 4 |  |
| Semester |
| Select 1 course from | General Education: Fine Arts and Language | 3 |  |
|  |  |  |  |  |
|  |  | ***Total Credits*** | ***15*** |  |

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| --- | --- | --- | --- | --- |
| **Semester** | **Course No.** | **Course Title** | **Credit Hours** | **Completed** |
| Freshman | Select 1 course from | General Education: English/Literature (Except ENGL 1020) | 3 |  |
| Year |
| MATH 2010 | Analytic Geometry and Calculus II | 5 |  |
| Second |
| PHYS 2110 | General Physics I with Calculus | 5 |  |
| Semester |
| CHEM 1100 | General Chemistry II | 4 |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  | ***Total Credits*** | ***17*** |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Semester** | **Course No.** | **Course Title** | **Credit Hours** | **Completed** |
| Sophomore | Select 1 course from | General Education: Behavioral/Social Sci (Except AGRI 1530) | 3 |  |
| Year |
| MATH 2100 | Differential Equations | 3 |  |
| First |
| PHYS 2120 | General Physics II with Calculus | 5 |  |
| Semester |
| ENGR 2020 | Engineering Statics | 3 |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  | ***Total Credits*** | ***14*** |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Semester** | **Course No.** | **Course Title** | **Credit Hours** | **Completed** |
| Sophomore | MATH 2020 | Analytic Geometry and Calculus III | 5 |  |
| Year |
| Select 1 course from | SPCH 1010 Fund of Comm or SPCH 1110 Public Speaking | 3 |  |
| Second |
| MATH 2170 | Applied Statistics | 3 |  |
| Semester |
| ENGR 1020 | Programming and Problem Solving | 3 |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  | ***Total Credits*** | ***14*** |  |

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| --- | --- |
| **General Education Coursework Total:****Major and Elective Coursework Total:****Northeast Community College Coursework Total:** | **34 credit hours****26 credit hours****60 CREDIT HOURS** |

**Course Sequence:** South Dakota Mines – Fall Semester Start

## Physics (B.S.)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Semester** | **Course No.** | **Course Title** | **Credit Hours** | **Completed** |
| Junior Year First Semester- FALL | PHYS 312 | Experimental Physics Design I | 2 |  |
| PHYS 331 | Introduction to Modern Physics | 3 |  |
| PHYS 343 | Statistical Physics | 2 |  |
| PHYS 341 | Thermodynamics | 2 |  |
| PHYS 361 | Optics | 3 |  |
| MATH 315 | Linear Algebra | 3 |  |
|  |  |  |  |
|  |  |  |  |
| ***Total Credits 15*** |  |

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| --- | --- | --- | --- | --- |
| **Semester** | **Course No.** | **Course Title** | **Credit Hours** | **Completed** |
| Junior Year | PHYS 314 | Experimental Physics Design II | 2 |  |
| Second |
| PHYS 350 | Advanced Physics Lab | 3 |  |
| Semester - |
| PHYS 421 | Electromagnetism | 4 |  |
| SPRING |
| PHYS 471 | Quantum Mechanics | 4 |  |
|  | Select 1 course from | Social Science (Goal 3) - Civics CIV 100, HIST 151, HIS 152, | 3 |  |
|  | POLS 100, or POLS 210 |
|  |  |  |  |  |
|  |  | ***Total Credits*** | ***16*** |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Semester** | **Course No.** | **Course Title** | **Credit Hours** | **Completed** |
| Senior Year First Semester- FALL | PHYS 412 | Advanced Design Projects I | 3 |  |
| PHYS 451 | Classical Mechanics | 4 |  |
| PHYS 225 | Vibrations, Waves & Optics | 3 |  |
| ENGL 289 | STEM Communications for Technical & Public Audiences | 3 |  |
|  |  |  |  |
|  |  |  |  |
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| ***Total Credits 13*** |  |

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| **Semester** | **Course No.** | **Course Title** | **Credit Hours** | **Completed** |
| Senior Year | PHYS 414 | Advanced Design Projects II | 4 |  |
| Second |
| PHYS 439 | Condensed Matter Physics | 4 |  |
| Semester - |
| PHYS 433 | Nuclear & Elementary Particle Physics | 4 |  |
| SPRING |
|  | Program Electives | 4 |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  | ***Total Credits*** | ***16*** |  |

|  |  |
| --- | --- |
| **General Education Coursework Total:****Major and Elective Coursework Total:****South Dakota Mines Coursework Total:** | **6 credit hours****54 credit hours****60 CREDIT HOURS** |