

## Degree Pathway

### A.S. in Physics – Catalog Year 2024-25

The number of credits you take each year will determine when you graduate. To graduate on time, you are strongly encouraged to enroll in at least 30 credits toward your degree during the calendar year, including fall and spring semesters and winter and summer sessions. This Degree Pathway is also designed for students who place into **MA-119**. Additional Degree Pathways are available for students who place into other levels of mathematics. Please see the degree website or your advisor for more information.

Courses in **Bold Text** are prerequisites for later courses or only offered in the Fall or Spring semester and should be taken where indicated in the sequence.

#### Fall Semester #1

| Courses                                                                          | Credits   | Prerequisites and Corequisites <sup>1</sup>                  |
|----------------------------------------------------------------------------------|-----------|--------------------------------------------------------------|
| <b>ENGL-101 English Composition I</b><br>(Required Core 1A: English Composition) | 3         | Prerequisite: Complete developmental requirements in English |
| <b>MA-119 College Algebra</b> <sup>2,3</sup>                                     | 3         | Prerequisite: Complete developmental requirements in math    |
| <b>MA-121 Trigonometry</b> <sup>2,3</sup>                                        | 1         | Corequisite: MA-119                                          |
| PH-160 Physics Colloquium                                                        | 1         | None                                                         |
| One course from Flexible Core 2A, 2B, 2C, or 2D <sup>4</sup>                     | 3         | Check individual courses for prerequisites and corequisites  |
| One credit course in PE-400, PE-500, or DAN- 100 series                          | 1         | Check individual courses for prerequisites and corequisites  |
| <b>Total credits for the term</b>                                                | <b>12</b> |                                                              |

#### Spring Semester #1

| Courses                                                                                                           | Credits   | Prerequisites and Corequisites <sup>1</sup>                                   |
|-------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------|
| <b>ENGL-102 English Composition II</b><br>(Required Core 1A: English Composition)                                 | 3         | Prerequisite: ENGL-101 or placement                                           |
| <b>MA-440 Pre-Calculus Mathematics</b> <sup>2</sup><br>(Required Core 1B - Mathematical & Quantitative Reasoning) | 4         | Prerequisite: MA-119 and MA-121 (C or better in both) or MA-114 (C or better) |
| One course from Flexible Core 2A, 2B, 2C, or 2D <sup>4</sup>                                                      | 3         | Check individual courses for prerequisites and corequisites                   |
| One course from Flexible Core 2A, 2B, 2C, or 2D <sup>4</sup>                                                      | 3         | Check individual courses for prerequisites and corequisites                   |
| <b>Total credits for the term</b>                                                                                 | <b>13</b> |                                                                               |

### Fall Semester #2

| Courses                                                                                                | Credits   | Prerequisites and Corequisites <sup>1</sup>                 |
|--------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------|
| <b>MA-441 Analytic Geometry and Calculus I</b> <sup>2,4</sup><br>(Flexible Core 2E – Scientific World) | 4         | Prerequisite: MA-440 (C or better)                          |
| <b>PH-421 General Calculus Physics A</b> <sup>2</sup><br>(Required Core 1C – Life & Physical Sciences) | 5         | Prerequisite: MA-440<br>Corequisite: MA-441                 |
| Major Elective Course <sup>3</sup> - Take one course from the list below                               | 3         | Check individual courses for prerequisites and corequisites |
| <b>Total credits for the term</b>                                                                      | <b>12</b> |                                                             |

### Spring Semester #2

| Courses                                                                                          | Credits   | Prerequisites and Corequisites <sup>1</sup>                           |
|--------------------------------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------|
| <b>MA-442 Analytic Geometry and Calculus II</b>                                                  | 4         | Prerequisite: MA-441 (C or better)                                    |
| <b>PH-422 General Calculus Physics B</b> <sup>2,4</sup><br>(Flexible Core 2E – Scientific World) | 5         | Prerequisites: MA-441 and PH-421 (C or better)<br>Corequisite: MA-442 |
| Major Elective Courses <sup>3</sup> – Take one course from the list below                        | 3         | Check individual courses for prerequisites and corequisites           |
| <b>Total credits for the term</b>                                                                | <b>12</b> |                                                                       |

### Fall Semester #3

| Courses                                                      | Credits   | Prerequisites and Corequisites <sup>1</sup>                 |
|--------------------------------------------------------------|-----------|-------------------------------------------------------------|
| MA-443 Analytic Geometry and Calculus III                    | 4         | Prerequisite: MA-442 (C or better)                          |
| PH-440 Modern Physics and Quantum Mechanics for Engineers    | 4         | Prerequisite: PH-422; Corequisite: MA-443                   |
| One course from Flexible Core 2A, 2B, 2C, or 2D <sup>4</sup> | 3         | Check individual courses for prerequisites and corequisites |
| <b>Total credits for the term</b>                            | <b>11</b> |                                                             |
| <b>Total credits required for the degree</b>                 | <b>60</b> |                                                             |

#### Notes:

1. Prerequisites for a course must be passed before taking the course. Corequisites must be passed before taking the course or taken in the same term as the course.
2. Students are required to take specific courses in some areas of the Common Core that fulfill both general education and major requirements. If students do not take the required courses in the Common Core, they will have to take additional credits to complete their degree requirements.
3. Students must take 10 credits of major elective courses to reach 60 credits. See the list below for approved major elective courses.
4. Students must complete one course from each of the Flexible Core categories (2A, 2B, 2C, 2D, and 2E) and one additional course from any one of the categories. PH-421 will satisfy area 2E. MA-441 will satisfy the one additional flexible core course requirement.

*All students must complete two (2) WI designated classes to fulfill degree requirements.*

## Major Elective Courses – complete at least 6 credits from this list

| Major Elective Courses                                               | Credits | Prerequisites and Corequisites                                                                                                                                                   |
|----------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CH-151 General Chemistry I                                           | 4.5     | MA-119 and MA-121 or placement                                                                                                                                                   |
| CH-152 General Chemistry II                                          | 4.5     | Prerequisite: CH-151                                                                                                                                                             |
| MA-119 College Algebra                                               | 3       | Pre/corequisite: Complete developmental requirements in math or co-enroll in MA-10ALP                                                                                            |
| MA-121 Trigonometry                                                  | 1       | Prerequisite: None; Corequisite: MA-119                                                                                                                                          |
| MA-451 Differential Equations                                        | 4       | Prerequisite: MA-443 (C or better)                                                                                                                                               |
| MA-461 Linear Algebra                                                | 4       | Prerequisite: MA-442 (C or better)                                                                                                                                               |
| PH-240 Computerized Physical Measurement Using Graphical Programming | 3       | Permission of the department based on one laboratory course in science or technology; MA-114, MA-119 and MA-121 or the equivalent; and ET-501, PH-303, CIS-101 or the equivalent |
| PH-416 Thermodynamics                                                | 4       | Prerequisite: MA-443 and PH-412 or PH-422                                                                                                                                        |
| PH-450 Introduction to Physics Research                              | 5       | None                                                                                                                                                                             |
| PH-451 Numerical Methods                                             | 3       | Prerequisite: PH-421                                                                                                                                                             |
| PH-501 Special Topics                                                | 3       | Prerequisite: PH-422                                                                                                                                                             |
| PH-900 Independent Study Physics Research                            | 2       | Prerequisites: PH-201, PH-301, PH-411, or PH-421<br>Corequisites: PH-202, PH-302, PH-412, PH-413, or PH-422                                                                      |