

## **2+2 Articulation Agreement for Carroll Community College and Towson University**

**Associate's Degree** A.S. in Physical Sciences, Physics Concentration

**Bachelor's Degree:** B.S. in Physics, Applied Physics Concentration

**Effective Term:** Fall 2019

The following information will guide students in selecting the best 2+2 pathway for their career and education goals:

Students intending to pursue graduate studies in physics or astrophysics should follow the pathway for either the General Physics or Astrophysics concentration. The pathway for the Applied Physics concentration is recommended for students who plan to pursue fundamental or applied research and development in industrial or government laboratories. The Computational Physics Concentration is designed to provide students with strong scientific, technical and computational skills necessary for employment in a STEM profession; it is not recommended if students wish to pursue graduate studies in physics.

This section outlines the courses to take for the Carroll Community College general education and program requirements in order to complete both Carroll Community College and TU degrees within a total of 4 years and 120 credits. The following tables do not include any nontransferable or prerequisite coursework outside of the curriculum.

Carroll CC Requirement	Carroll CC Course to Take	Credit	Towson University Equivalent Course
English Composition	ENGL 101 College Writing	3	ENGL 102 Writing for a Liberal Education
Mathematics	MATH 135 Calculus of a Single Variable I	4	MATH 273 Calculus I
Arts & Humanities	Any Arts & Humanities course	3	Equivalency will vary by course.
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Social & Behavioral Sciences	Any Social & Behavioral Sciences course	3	Equivalency will vary by course.
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Biological & Physical Sciences	CHEM 105 Principles of General Chemistry I	4	CHEM 131 & 131 L General Chemistry I Lecture & Lab
Biological & Physical Sciences	PHYS 111 Physics I for Scientists & Engineers	4	PHYS 241 General Physics I Calculus Based
General Education Elective	PHYS 212 Physics II for Scientists & Engineers	4	PHYS 242 General Physics II Calculus Based
English Literature	ENGL 102 Writing About Literature	3	ENGL TLL English Elective

Completing the courses in Table 1 will satisfy the general education program at Carroll CC. Upon transferring to TU, students will receive a core package that satisfies most of the TU Core Curriculum without the need for course-by-course placement in specific Core Curriculum requirements. Students will only need to complete two Core Curriculum requirements at TU: Advanced Writing Seminar (Core 9) and Ethical Perspectives (Core 14). If an ethics course is taken as one of the Arts & Humanities requirements at Carroll CC, students will complete a different requirement than Core 14.

Carroll CC Requirement	Carroll CC Course to Take	Credit	Towson University Equivalent Course
Concentration Requirement	77.64(4)B(s)(m)5-1 ee Ae		



Students must note the following information about their program electives:

is recommended as preparation for upper-level courses in the major at TU.

The remaining program electives may be satisfied by a course of the student's choosing.

A course number beginning with T indicates that a course transfers as a lower-level equivalent of an upper-level TU course. MATH T74 will satisfy a major requirement but will not count toward the TU degree requirement for 32 upper-level units.

This section outlines the degree requirements for students transferring into the Physics (Applied Physics Concentration) major. Refer to section 4 for university-wide degree requirements.

Core 9 Advanced Writing Seminar  
Core 14 Ethical Issues and Perspectives

PHYS 185 Introductory Honors Seminar in Physics (1 unit)  
PHYS 270 Computers in Physics (4 units)  
PHYS 307 Introductory Mathematical Physics (3 units)  
PHYS 311 Modern Physics I (3 units)  
PHYS 341 Intermediate Physics Laboratory I (3 units)  
PHYS 351 Mechanics (4 units)  
PHYS 354 Electricity & Magnetism (4 units)

PHYS 312 Modern Physics II (3 units)  
Select one of the following for 4 units:  
    PHYS 335 Basic Electronics  
    PHYS 337 Digital Electronics  
PHYS 342 Intermediate Physics Laboratory II (3 units)  
PHYS 361 Optics Fundamentals (4 units)  
PHYS 385 Physics Seminar (1 unit)  
PHYS 486 Physics Seminar II (1 unit)  
Upper Level PHYS or ASTR Electives (9 units)

The total number of electives required is determined by subtracting the total units completed for the major and Core Curriculum from 120 units. General elective units can be satisfied by additional major electives or courses for personal interest.

A C (2.0) or higher is required in all major courses and prerequisites.