

**Department of Physics and Engineering  
West Chester University of Pennsylvania**

**Physics-Engineering Dual-Degree Programs  
Curriculum for students who entered in Fall 2019 or later  
Last modified June 19, 2020**

B.S. Physics, West Chester University and B.S. Engineering from Case Western University, Columbia University<sup>1</sup>, Penn State University, or Thomas Jefferson University

**Semester 1**

MAT 161	Calculus I	4	M
ECO 111	Princ. of Econ. (Macro)	3	SS
Gen. Ed.	Arts Gen. Ed.		A
WRT 120	Effective Writing I	3	E
Gen Ed.	First Year Experience	4	G
	Total	17	

**Semester 2**

MAT 162	Calculus II	4	
Gen. Ed.	Humanities Gen. Ed. <sup>2</sup>	3	H
PHY 170	Physics I	4	
WRT 2XX <sup>1</sup>	Effective Writing II	3	E
BME 120	Intro CAE	3	
	Total	17	

**Semester 3**

MAT 261	Calculus III	4	
PHY 180	Physics II	4	
BME 220	Statics	3	
CHE 103	General Chemistry I	3	S
CRL 103	Exper. Gen. Chem. I	1	
	Total	15	

**Semester 4**

MAT 315	Diff. Eq. & Lin Alg.	3	
PHY 240	Intro. to Modern Physics	3	
Gen. Ed.	Interdisciplinary	3	I
CHE 104	General Chemistry II	3	
CRL 104	Exper. Gen. Chem. II	1	
PHY 175	Computational Physics	3	
	Total	16	

**Semester 5**

PHY 300	Mechanics	3	
PHY 310	Inter. Physics Lab I	3	WE, SE
PHY	Physics Elective <sup>2</sup>	3	
Gen. Ed.	PHI 180	3	H/ET/J
Gen. Ed.	Science Gen. Ed. <sup>2</sup>	3	S
	Total	15	

**Semester 6**

PHY 320	Inter. Physics Lab II	3	WE, SE, Cap
PHY	Physics Elective <sup>2</sup>	3	
PHY	Physics Elective <sup>2</sup>	3	
	3-2 Elective Course <sup>2</sup>	3	
	3-2 Elective Course <sup>2</sup>	3	SS
	Total	15	

<sup>1</sup>For students who matriculated to WCU after Fall 2018, completion of the program at WCU does **not** guarantee admission into the Columbia engineering program, even if the grade requirements have been satisfied. Students will be placed into a competitive application process, and selected based upon their merits with respect to the entire applicant pool.

<sup>2</sup> Courses should be selected to fulfill program specific requirements. See appendix.

**WCU Physics Degree Requirements:**

- Majors will not be permitted to repeat any physics course more than once.
- Upper level courses (numbered 300 or above) must be completed with a grade of C (2.0) or higher.
- All Physics electives must be numbered above 300. Speak with your advisor about the appropriate elective for your engineering discipline.

**Additional information for students matriculating to Case Western Reserve University:**

- Available majors are Biomedical Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Macromolecular Science, Materials Science, Mechanical and Aerospace Engineering, and Systems & Control Engineering.
- The minimum cumulative grade point average is a 3.0. Note: you must also have a cumulative GPA of 3.0 in your math and science classes.
- Complete a minimum of 90 credits hours at WCU.

**Additional information for students matriculating to Columbia University** (for students who started at WCU after Fall 2018, available only by competitive application process):

- Available majors are Applied Mathematics, Applied Physics, Biomedical Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Computer Science, Earth and Environmental Engineering, Electrical Engineering, Engineering Mechanics, Engineering and Management Systems, Industrial Engineering, Material Science and Engineering, and Mechanical Engineering, and Operations Research.

*To be competitive in the application process:*

- The required minimum cumulative grade point average is a 3.30.
- A minimum grade of B (3.0) must be obtained on the first attempt in all science and mathematics prerequisite coursework (e.g. MAT 161, 162, 262, PHY 170, 180, CHE 103, and CSC 141).
- Online courses will not be accepted in the matriculation process.

**Additional information for students matriculating to Pennsylvania State University:**

- Available majors are Biological Engineering, Electrical Engineering, Energy Engineering, Engineering Science, Environmental Systems Engineering, General Engineering, Material Science and Engineering, and Mining Engineering. Other majors are not available.
- The required minimum cumulative grade point average is a 3.00. Original grades for courses that were repeated should be used in the calculation.
- A minimum grade of "C" (2.00) in MAT 161, MAT 162, PHY 170, and CHE 103 is required. These courses must be taken at WCU.
- The degree program with Penn State must be completed within three years and is not available to transfer students.

**Additional information for students matriculating to Thomas Jefferson University:**

- Available majors Mechanical Engineering and (General) Engineering with concentrations in Architectural Engineering, Industrial and Systems Engineering, Composites Engineering and Textile Engineering.
- The required minimum cumulative grade point average is a 3.00. Original grades for courses that were repeated should be used in the calculation.

## **Appendix** for Cooperative Physics-Engineering Dual-Degree Programs advising sheet

### Course recommendations for students matriculating to **Case Western Reserve University**:

- Students are encouraged to take PHY370 as a physics elective.
- Each specific engineering major has unique additional **recommended** courses. Students should consult the website for the Dual Degree Program at Case Western pertaining to their major of interest for other recommended course. Note: If these courses cannot be fulfilled, they will be integrated into the curriculum, which may possibly extend the program timeline.

### Course recommendations for students matriculating to **Columbia University**

- Students should consult the document titled *The Combined Plan Program at Columbia University* for information about foundational and major-specific prerequisite coursework that must be completed at WCU. Some of the engineering majors have three or more major-specific prerequisite courses, which may require an additional course to be taken during one of the semesters.

### Course recommendations for students matriculating to **Pennsylvania State University**:

- The 3-2 Elective courses should be selected to satisfy course requirements at Penn State. Recommended courses are: ENG 371 Technical Writing, an Art Course, a Health Course, or a course that fulfills the requirement of a particular major. See Penn State's 'Check Sheet.'

### Course recommendations for students matriculating to **Thomas Jefferson University**:

- Physics Elective courses: Students intending to pursue Mechanical Engineering should take PHY 330, PHY 350, and PHY 370.
- General Education courses: For WRT 2XX, students should select WRT 200, 204, or 206. Soc. Sci Gen. Ed., students should select PSY100, PSC101, or PSC343. For Humanities Gen. Ed., students should select HIS100, HIS151, or HIS 152. Details can be found on the WCU Department of Physics and Engineering homepage under Programs → Engineering. At the bottom of the page, click on the link for the B.S. Mechanical Engineering Full Checksheet.