Adolescent Young Adult (7-12): Physical Sciences–Physics

Program Requirements

General Ed: Satisfactory completion of all general education requirements.
Major: Satisfactory completion of a major in Physics (plus the addition of PHYS 107) for a total of appx 41 credits with the addition of 22 credits of course work in related fields described below.
Education: Satisfactory completion of a minor in education (36 credits) as described below. Prior to being admitted to the Teacher Education Program, the student must demonstrate Math competency by earning a grade of C- or higher in a 4-credit course that fulfills the general education quantitative reasoning requirement (course designated with a “Q”).

Requirements for AYA Licensure
All courses must be passed with a grade of C- or above. See the Academic Catalog for additional requirements for admission and continuation in the program. Courses may not be offered every year. Check the department schedules for course offerings.

Students are required to complete a capstone assessment, the edTPA (Education Teacher Performance Assessment), during their Student Teaching Seminar (EDUC 496) and earn a C- or higher in the course.

Required in Education

Entry-Level Courses (Taken prior to application for teacher candidacy)

- EDUC 103S Sociological Perspectives in Education (4)*
- EDUC 104R Philosophical Perspectives in Education (4)*
- EDUC 105 Educational Psychology (2)
- EDUC 120 Introduction to Students with Special Needs (2) (Taken concurrently with EDUC 105)
- EDUC 213 Adolescent Development and Education (4)*

Advanced Courses (Taken following admission to teacher candidacy)

- EDUC 312 Reading & Writing in the Content Areas (3)* (Spring Only)
- EDUC 313 Practicum: Literacy (1)
- EDUC 332 Assessment and Inclusion (4)
- EDUC 348 Teaching Science in Secondary Schools (3) (Fall Odd Years)
- EDUC 388 Science Practicum (1) (Fall Odd Years)

Student Teaching

Application for permission to student teach must be submitted early spring term of junior year. Other coursework, if taken, must be scheduled for late afternoon or evenings during the term.

- EDUC 495 Student Teaching (10)
- EDUC 496 Student Teaching Seminar (2)*

Additional Requirement for Adolescent Young Adult Licensure

- Successful completion of the required licensure examinations.

*These courses are Writing Intensive.
### Required in Physics 41 credits

- Phys 107 Astronomy (4)
- Phys 200 Mechanics and Waves (5)
- Phys 213 Thermodynamics and Optics (2)
- Phys 214 Intermediate Physics Laboratory (1)
- Phys 215 Special Relativity & Applications (2)
- Phys 218 Introductory Electromagnetism (5)
- Phys 220 Modern Physics (5)
- Phys 311 Classical Mechanics (4)
- Phys 313 Electronics (2)
- Phys 350 Advanced Physics Lab (1)
- Phys 360 Junior Seminar (1)
- Phys 460 Senior Seminar (1)

**4 additional credits from the following courses**

- Phys 330 Statistical & Thermal Physics (4)
- Phys 332 Electromagnetism (4)
- Phys 411 Quantum Mechanics (4)

**4 additional credits at the 300 level or above:**

- Phys 312 Wave Phenomena (4)
- Phys 314 Digital electronics (2)
- Phys 320 Computational Physics (2)
- Phys 321 Signal Processing (2)
- Phys 325 Topics in Contemporary Physics (2)
- Phys 330 Statistical & Thermal Physics (4)
- Phys 332 Electromagnetism (4)
- Phys 380 Topics (1-4)
- Phys 410 Mathematical Physics (4)
- Phys 411 Quantum Mechanics (4)
- Phys 490 Independent Study (variable credit)
- Phys 491 Internship (variable credit)
- Phys 499 Senior Honors Thesis (variable cr)

### Required in Related Departments 22 credits

**Mathematics (12)**

- Math 201 Calculus I (4)
- Math 202 Calculus II (4)

**Plus One Additional Math Course**

- Math 212 Multivariable Calculus (4) OR
- Math 215 Differential Equations (4)

**Chemistry (5)**

- Chem 121 Models of Chemical Systems (5)

**Biology (5)**

- Biol 170 Concepts of Biology: Biological Information, Reproductions and Evolution OR
- Biol 180 Concepts of Biology: Energy and Resources in Biology (5)

**Note:** Any change(s) in this program of study must be approved by the Chairperson of the major department and the Director of Assessment and Licensure, Wittenberg University.