

PHYSICS & SECONDARY EDUCATION DUAL MAJOR – (PHYS_BS_02)

BS DEGREE – 32 COURSE UNITS (APPLIES TO STUDENTS ENTERING IN/AFTER FALL 2017)

MAJOR COURSE REQUIREMENTS

Core Courses in Physics (7.25 course units)	Major Options (10 units)	Required Courses for Secondary Education (7 additional units)	Correlates (2 units)
PHY 099 – Orientation Seminar (0 U.)	Physics options (5 Units) ^a	SED 099 – Orientation Seminar (0 U.)	MAT 127 – Calculus A
PHY 203 – Physics I for Physicists	1. PHY 390	CHE 201 – General Chemistry I	MAT 128 – Calculus B
PHY 204 – Physics II for Physicists	2. PHY 490 (unit 1 of 2)		
	3. PHY 490 (unit 2 of 2)	SED 224 – Adolescent Learning and Development	
	4. Lab Option: 		
PHY 299 – Research seminar (0.25 U.)	5. PHY Option: 	SPE 103 – Social & Legal Foundations of Special Ed.	
PHY 306 – Mathematical Physics	Specialization Options (5 units) ^b	EFN 299 – Schools and Communities	
PHY 321 – Modern Physics	1. CHE 201		
	2. RAL 328 (0.5 U.)	RAL 328 – Reading in Secondary Education (0.5 U.) ¹	
PHY 356 – Thermal Physics	3. SED 399 (1.5 U.)		
	4. Option: 	PHY 390 – Methods of Teaching Science ¹	
PHY 401 – Classical Mechanics	5. Option: 	SED 399 – Pedagogy in Secondary Schools (1.5 U.) ¹	
PHY 421 – Electromagnetic Theory I		PHY 490 – Student Teaching (2.0 U.) ¹	
<i>a) Can be any 200+ level PHY courses, incl. 1 lab unit (PHY390 and 2 units of PHY490 are pre-set from Sec. Ed. req.)</i>		SED 498 – Capstone for Professional Inquiry ²	
<i>b) Any science, engineering, or education course (max. of 3 100-level courses; CHE201, RAL 328, SED399 pre-set)</i>		<i>1) These 3 courses are co-requisites and are typically taken together in the spring of the 3rd year as Clinical Experience I</i>	
<i>Note: Many classes run only specific semesters see planning grid: https://physics.tcnj.edu/academics/course-descriptions/</i>		<i>2) SED 498 is a required capstone for Dual Major, taken with student teaching, fall of 4th year only.</i>	

LIBERAL LEARNING REQUIREMENTS

Dual Major Breadth Distribution from Approved List (other options possible: liberallearning.tcnj.edu)

Arts & Humanities (any 2 courses, different prefixes required)	Social Science & History (fulfilled by Education Courses)	Natural Sciences & Quantitative Reasoning (Requirements fulfilled by major course)
Course 1: 	Satisfied by SED224	Satisfied by Physics Major
Course 2: 	Satisfied by EFN299	

CIVIC RESPONSIBILITIES, PROFICIENCIES & ELECTIVES

Civic Responsibilities	Intellectual & Scholarly Growth	Electives
Community Engaged Learning (0 U) <i>Met through FSP or C.E.L day</i>	IDS 102 – Information Literacy online tutorial	Choose free electives to meet 32 course min. & satisfy all requirements
Gender: <i>Met through a course</i>	Second Language <i>101 + 102, or through 103 level</i>	
Global Perspective: <i>Met through a course</i>	Writing Intensive Courses <i>WRI 101 or WRI102, if required based on entry</i>	
Race & Ethnicity: Satisfied by EFN299	FSP First Seminar course	
	Mid-level writing course: Satisfied by PHY390	
	Capstone course: Satisfied by SED498	

Typical recommended 4-year course sequence for Physics and Secondary Education

*Courses with asterisks have some flexibility in which semester they are taken, though this is approximate order is optimized

Year	Fall Semester Course No. & category	Name	units	Spring Semester Course No. & category	Name	units
1st year	PHY 099 (Physics core)	Physics Orientation	0	PHY204 (Physics core)	Gen. Physics II	1
	PHY 203 (Physics core)	Gen. Physics I	1	MAT128 (correlate req.)	Calculus B	1
	MAT127 (correlate req.)	Calculus A	1	*CHEM201 (Spec. option 1)	Gen. Chem. I	1
	FSP xxx (liberal learning)	First Seminar	1	*any Language, unit 2	2 nd language	1
	*any 2nd Language, unit 1	2 nd language	1	SED099	Educ. Orientation	0
2nd year	PHY306 (Physics core)	Math. Physics	1	PHY356	Thermodynamics	1
	PHY321 (Physics core)	Modern Physics	1	*PHY290 (Physics option 1a)	Learning Asst.	0.5
	*PHY299 (Physics core)	Research Fund. Sem	0.25	*EFN299	Schools & Comm.	1
	*SED224	Learning & Devel.	1	*any SCI xxx (Spec. opt. 3)	Science option	1
	*any SCI xxx (Spec. option 2)	Science option	1	*elective	free elective	1
3rd year	PHY421 (Physics core)	Electricity & Mag.	1	PHY390 (PHY option 3)	Sci. Teaching Met.	1
	*PHY xxx (Phy option 2, w/lab)	Physics lab option	1	SED399 (Spec. option 3)	Pedagogy	1
	*PHY290 (Physics option 1b)	Learning Asst.	0.5	RAL328 (Spec. option 5)	Sec. Ed. readings	1
	*Liberal learning Arts/Hum. 1	Liberal learning	1	PHY401 (Physics core)	Classical Mech.	1
	*SPE 103 (Sec. Ed. required)	Special Educ.	1			
4th year	PHY490 (PHY opt. 4&5)	Student-teaching	2	*Lib. Learn. Arts/Hum. 2	Liberal Learning	1
	SED498 (Sec. Ed. req.)	Teaching capstone	1	*any SCI xxx (Spec. opt. 3)	Science Option	1
				*elective	free elective	1
				*elective	free elective	1