

# PHYSICS (B.S.) PRE-MED WITH BIOLOGY

## Requirements for the Major

To receive the BS or BS Ed degree, a student must maintain an overall GPA of at least 2.0 and at least 2.5 in all core science, technology, engineering, and math courses. The total number of hours of coursework for the BS or BS Ed is at least 124 semester hours. In addition, to receive the BS Ed degree a student must be admitted to the Teacher Education Program, which is sought through the College of Education and Human Development. Students interested in entering teacher education should see the Requirements for Admission to Teacher Education in this issue of the Jackson State University Undergraduate Catalog under the College of Education and Human Development.

## Major Requirements

Code	Title	Hours
<b>Physics Seminar</b>		
Select four credits from the following:		
PHY 198	PHYSICS STUDENT SEMINAR	
PHY 199	PHYSICS STUDENT SEMINAR	
PHY 201	BASIC PHYSICS I	
PHY 202	BASIC PHYSICS II	
PHY 205	BASIC PHYSICS	
PHY 211	General Physics I	
PHY 212	General Physics II	
PHY 216	MODERN PHYSICS	
PHY 241	INTRODUCTN TO ASTRONOMY	
PHY 251	COSMOLOGY FOR NON-SCIENTISTS	
PHY 298	PHYSICS STUDENT SEMINAR	
PHY 299	PHYSICS STUDENT SEMINAR	
PHY 311	THEORETICAL MECHANICS I	
PHY 312	THEORETICAL MECHANICS II	
PHY 330	METHODS OF EXPERIMENTAL PHYICS	
PHY 342	OPTICS SPECTRA & LASERS	
PHY 351	THERMAL PHYSICS	
PHY 361	MATH MET OF PHYSICS & CHEMISTRY	
PHY 362	MATH MET OF PHYSICS & CHEMISTRY	
PHY 380	INDEPENDENT STUDY	
PHY 398	PHYSICS STUDENT SEMINAR	
PHY 399	PHYSICS STUDENT SEMINAR	
PHY 411	ELECTROMAGNETIC THEORY I	
PHY 412	ELECTROMAGNETIC THEORY II	
PHY 422	QUANTUM MECHANICS	
PHY 431	ATOMIC & NUCLEAR PHYSICS	
PHY 433	SOLID STATE PHYSICS	
PHY 449	SPECIL TOPICS IN PHYSICS	
PHY 480	RESEARCH PROJECT	
PHY 481	PHYS. SCI. FOR SEC. TEACHERS I	
PHY 482	PHY SCI FOR SEC TEACHERS II	
PHY 498	PHYSICS STUDENT SEMINAR	
PHY 499	PHYSICS STUDENT SEMINAR	

PHY 211 & PHY 212	General Physics I and General Physics II	6
PHYL 211 & PHYL 212	GENERAL PHYSICS LAB I and GENERAL PHYSICS LAB II	2
PHY 311	THEORETICAL MECHANICS I	3
PHY 330	METHODS OF EXPERIMENTAL PHYICS	3
PHY 351	THERMAL PHYSICS	3
PHY 361	MATH MET OF PHYSICS & CHEMISTRY	3
PHY 411	ELECTROMAGNETIC THEORY I	3
PHY 422	QUANTUM MECHANICS	3
PHY 431	ATOMIC & NUCLEAR PHYSICS	3
Physics Elective		6
<b>Total Hours</b>		<b>35</b>

Code	Title	Hours
CHEM 241 & CHEM 242	ORGANIC CHEMISTRY I and ORGANIC CHEMISTRY II	6
CHML 241 & CHML 242	ORGANIC CHEMISTRY I LAB and ORGANIC CHEMISTRY II LAB	2
CHEM 431 & CHML 431	BIOCHEMISTRY I and BIOCHEMISTRY I LAB	4
BIO 112 & BIOL 112	GENERAL BIOLOGY and GENERAL BIOLOGY LAB	4
BIO 318 & BIOL 318	INTRODUCTORY GENETICS and INTRODUCTORY GENETICS LAB	4
BIO 470 & BIOL 470	HUMAN PHYSIOLOGY and HUMAN PHYSIOLOGY LAB	4
<b>Total Hours</b>		<b>24</b>

Course	Title	Hours
<b>Freshman</b>		
<b>Fall</b>		
CHEM 141 & CHML 141	GENERAL CHEMISTRY I and GENERAL CHEMISTRY LAB	4
ENG 104 or ENG 103 or ENG 111	COMPOSITION I or English Composition I with Co-requisite Support or COMPOSITION & LITERATURE FOR L	3
MATH 241	CALCULUS I WITH LABORATORY	3
PHY 198	PHYSICS STUDENT SEMINAR	0.5
UNIV 100	UNIVERSITY SUCCESS	2
Humanities & Fine Arts Option		3
<b>Hours</b>		<b>15.5</b>

<b>Spring</b>		
CHEM 142 & CHML 142	GENERAL CHEMISTRY II and GENERAL CHEMISTRY II LAB	4
ENG 105 or ENG 112	COMPOSITION II or COMPOSITION	3
MATH 242	CALCULUS II WITH LABORATORY	3
PHY 211 & PHYL 211	General Physics I and GENERAL PHYSICS LAB I	4
PHY 199	PHYSICS STUDENT SEMINAR	0.5
Pathway Option		3
<b>Hours</b>		<b>17.5</b>

<b>Sophomore</b>		
<b>Fall</b>		
BIO 111 & BIOL 111	GENERAL BIOLOGY and GENERAL BIOLOGY LAB	4
CHEM 241 & CHML 241	ORGANIC CHEMISTRY I and ORGANIC CHEMISTRY I LAB	4
Pathway Option		3

PHY 212 & PHYL 212	General Physics II and GENERAL PHYSICS LAB II	4
PHY 298	PHYSICS STUDENT SEMINAR	0.5
<b>Hours</b>		<b>15.5</b>
<b>Spring</b>		
BIO 112 & BIOL 112	GENERAL BIOLOGY and GENERAL BIOLOGY LAB	4
CHEM 242 & CHML 242	ORGANIC CHEMISTRY II and ORGANIC CHEMISTRY II LAB	4
PHY 299	PHYSICS STUDENT SEMINAR	0.5
UNIV 200	CIVIC ENGAGEMENT	1
Physics Elective		3
Pathway Option		3
<b>Hours</b>		<b>15.5</b>
<b>Junior</b>		
<b>Fall</b>		
BIO 318 & BIOL 318	INTRODUCTORY GENETICS and INTRODUCTORY GENETICS LAB	4
CHEM 431 & CHML 431	BIOCHEMISTRY I and BIOCHEMISTRY I LAB	4
PHY 311	THEORETICAL MECHANICS I	3
PHY 351	THERMAL PHYSICS	3
PHY 361	MATH MET OF PHYSICS & CHEMISTRY	3
PHY 398	PHYSICS STUDENT SEMINAR	0.5
<b>Hours</b>		<b>17.5</b>
<b>Spring</b>		
BIO 440	CELL BIOLOGY	3
Humanities & Fine Arts Option		3
BIO 470	HUMAN PHYSIOLOGY	3
PHY 330	METHODS OF EXPERIMENTAL PHYSICS	3
PHY 342	OPTICS SPECTRA & LASERS	3
PHY 399	PHYSICS STUDENT SEMINAR	0.5
<b>Hours</b>		<b>15.5</b>
<b>Senior</b>		
<b>Fall</b>		
PHY 411	ELECTROMAGNETIC THEORY I	3
PHY 422	QUANTUM MECHANICS	3
PHY 498	PHYSICS STUDENT SEMINAR	0.5
PSY 201 or Social & Behavioral Science Option		3
Physics Elective		3
<b>Hours</b>		<b>12.5</b>
<b>Spring</b>		
PHY 431	ATOMIC & NUCLEAR PHYSICS	3
PHY 499	PHYSICS STUDENT SEMINAR	0.5
Humanities & Fine Arts Option		3
Social & Behavioral Science Option		3
Statistics Option		3
<b>Hours</b>		<b>12.5</b>
<b>Total Hours</b>		<b>122</b>

**Notes:**

- Candidates that transfer 12 or more hours of college credit are exempt from UNIV 100 UNIVERSITY SUCCESS; however, the student must take 2 hours of general electives to replace the UNIV course.
- Online Graduation Clearance (**to be completed during the graduating semester only**).

Code	Title	Hours
<i>Physics Electives</i>		

Students must choose six (6) hours of Physics Electives from the course option list below.

PHY 241	INTRODUCTN TO ASTRONOMY	4
PHY 312	THEORETICAL MECHANICS II	3
PHY 362	MATH MET OF PHYSICS&CHEMISTRY	3
PHY 412	ELECTROMAGNETIC THEORY II	3
PHY 449	SPECIL TOPICS IN PHYSICS	3

Code	Title	Hours
<b>Statistics Options (Choose one 3 credit hour course)</b>		
PSY 211	STATISTICS I	3
MATH 271	ELEMENTARY STATISTICS I	3
BIO 202	ELEMENTARY BIOSTATISTICS	3

**Student Learning Outcomes****Student Learning Outcome 1**

Students completing a BS degree in Physics will apply mathematics and science knowledge to solve problems that require critical and analytical thinking.

**Student Learning Outcome 2**

Students completing a BS degree in CPAS will have a broad knowledge of global perspectives as they relate to their field of study and obtain experimental learning within the international scientific community.

**Student Learning Outcome 3**

Students completing a BS degree in CPAS will be prepared to enter the workforce in their field and/or engage in advanced studies and research in their fields.