SCIENCE EDUCATION
PHYSICS CONCENTRATION

Grade Levels 5-12
REPA 3

Purdue University Course Catalog 2022-2023

Major Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 30600</td>
<td>Mathematical Methods of Physics I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 30700</td>
<td>Mathematical Methods of Physics II</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 31000</td>
<td>Intermediate Mechanics</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 33000</td>
<td>Intermediate Electricity and Magnetism</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 34000</td>
<td>Modern Physics Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 34400</td>
<td>Modern Physics</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 36000</td>
<td>Quantum Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 42200</td>
<td>Waves and Oscillations</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 45000</td>
<td>Intermediate Laboratory</td>
<td>2</td>
</tr>
</tbody>
</table>

Choose one of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM 11600</td>
<td>General Chemistry (4)</td>
<td></td>
</tr>
<tr>
<td>CHM 12400</td>
<td>General Chemistry for Engineers II (4)</td>
<td></td>
</tr>
<tr>
<td>CHM 12600</td>
<td>Introduction to Chemistry II (5)</td>
<td></td>
</tr>
<tr>
<td>CHM 13600</td>
<td>General Chemistry Honors (4)</td>
<td></td>
</tr>
</tbody>
</table>

(CHM 13600 takes the place of CHM 11500 and 11600, or CHM 12300 and 12400, or CHM 12500 and 12600)

Physics Selective (6-7)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 53600</td>
<td>Electronic Techniques for Research (4)</td>
<td></td>
</tr>
<tr>
<td>PHYS 58000</td>
<td>Computational Physics (3)</td>
<td></td>
</tr>
<tr>
<td>PHYS/ASTR higher than 300-level</td>
<td>(3)</td>
<td></td>
</tr>
</tbody>
</table>

Science/Engineering higher than 300-level (met with STAT 30100)
Science/Engineering higher than 300-level (met with Great Issues Option)

Required Chemistry Course (4-5)

Biology students must take CHM 12901; Chemistry, Earth/Space Science, and Physics students choose CHM 11500 or CHM 12500.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM 11500</td>
<td>General Chemistry (4)</td>
<td></td>
</tr>
<tr>
<td>CHM 12300</td>
<td>General Chemistry for Engineers I (5)</td>
<td></td>
</tr>
<tr>
<td>CHM 12500</td>
<td>Introduction to Chemistry I (5)</td>
<td></td>
</tr>
</tbody>
</table>

Required Computing Option (3-4)

Choose one available for your concentration.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 15900</td>
<td>C Programming</td>
<td>(3)</td>
</tr>
<tr>
<td>CS 17700</td>
<td>Programming with Multimedia Objects (4)</td>
<td></td>
</tr>
<tr>
<td>CS 18000</td>
<td>Problem Solving and Object-Oriented Programming (4)</td>
<td></td>
</tr>
</tbody>
</table>

Required Calculus Selective (6-10)

Choose one available for your concentration.
Option 1 (all concentrations)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA 16100</td>
<td>Plan Analytic Geometry and Calculus I (5)</td>
<td></td>
</tr>
<tr>
<td>MA 16200</td>
<td>Plan Analytic Geometry and Calculus II (5)</td>
<td></td>
</tr>
</tbody>
</table>
Option 2 (all concentrations)
MA  16500  Analytic Geometry and Calculus I (4)
MA  16600  Analytic Geometry and Calculus II (4)

Option 3 (Biology Only)
MA  16010  Applied Calculus I (3)
MA  16010  Applied Calculus II (3)

Required Physics Courses (8)
Choose one sequence available for your concentration.
Option 1 (Biology, Chemistry, Earth/Space)
PHYS  17200  Modern Mechanics (4)
PHYS  27200  Electric and Magnetic Interactions (4)

Option 2 (Physics Only)
PHYS  17200  Modern Mechanics (4)  Honors Version Required
PHYS  27200  Electric and Magnetic Interactions (4)  Honors Version Required

Option 3 (Biology, Chemistry, Earth/Space)
PHYS  17200  Modern Mechanics (4)
PHYS  24100  Electricity and Optics (3)
PHYS  25200  Electricity and Optics Laboratory (1)

Option 4 (Earth/Space Only)
PHYS  22000  General Physics (4)
PHYS  22100  General Physics (4)

Option 5 (Biology Only)
PHYS  23300  Physics for Life Sciences I (4)
PHYS  23400  Physics for Life Sciences II (4)

Required Statistics Selective Course (3)
Choose one of the following courses:
STAT  30100  Elementary Statistical Methods (3)
STAT  35000  Introduction to Statistics (3)
STAT  50300  Statistical Methods for Biology (3)

Educational Program Course Requirements
EDCI  20500  Exploring Teaching as a Career  *required for TEP admission*  2
EDCI  27000  Introduction to Educational Technology and Computing  1
EDCI  28500  Multiculturalism and Education  *required for TEP admission*  2
EDCI  30900  Reading in Middle and Secondary Schools  1
EDCI  35000  Community Issues and Applications for Educators  1
EDCI  37001  Teaching and Learning English as a New Language  2
EDPS  23500  Learning and Motivation  2
EDPS  24000  Children with Gifts, Creativity, and Talents  1
EDPS  24800  Differentiating Curriculum and Instruction  1
EDPS  26501  The Inclusive Classroom  2
EDPS  32700  Classroom Assessment  1
EDPS  36201  Positive Behavioral Supports  2
EDPS  43010  Secondary Creating and Managing Learning Environments  1
EDST  20010  Educational Policies and Laws  *required for TEP admission*  1

Total Content 60-68
EDCI/EDPS 20001 Special Pop Sem: Focus on Students with Disabilities and Differentiation (1), OR Special Pop Sem: Focus on Students with Disabilities and Differentiation (1) 1
EDCI/EDPS 20002 Special Pop Sem: English Lang Learners and Students with Gifts (1), OR Special Pop Sem: English Lang Learners and Students with Gifts (1) 1

Methods Courses
EDCI 42400 The Teaching of Earth and Physical Science in the Secondary Schools 3
EDCI 42800 Teaching Science in the Middle and Junior High School† OR 2-3
EDCI 55800 Integrated Science, Technology, Engineering, and Mathematics (STEM) Education Methods – Secondary† 3

EDCI 49800 Supervised Teaching† 12

Learner Pathway Selective
3

Pick ONE course from the selective below in a pathway of your choice (required). ABA courses are included if allowed by the plan of study. Students can take two additional courses in the same pathway to complete requirements for an add-on teaching license in ELL or HA or take one additional course in the SPED pathway for a certificate in SPED.

English Language Learners Licensure Pathway
EDCI 51900 Teaching English Language Learners (3)
EDCI 52600 Language Study for Educators (3)
EDCI 55900 Academic Language and Content Area Learning (3)

High Ability Licensure Pathway
EDPS 54200 Curriculum and Program Development in Gifted Education (3)
EDPS 54500 Social and Affective Development of Gifted Students (3)

Special Education Non-Licensure Pathway
EDPS 21100 Special Education Law, Policy, and Ethical Guidelines (3)

Applied Behavior Analysis Non-Licensure Pathway
EDPS 34100 Introduction to Philosophical Underpinnings and Concepts of Applied Behavior Analysis (3)
EDPS 34200 Applied Behavior Analysis – Assessment and Intervention (3)
EDPS 44100 Introduction to Ethics and Practice of Applied Behavior Analysis (3)
EDPS 44200 Advanced Intervention in Applied Behavior Analysis (3)

Total Professional Education 45

Licensure Information

All Purdue University Program and Indiana Department of Education requirements must be met for recommendation for Indiana licensure.

After all requirements are met, Purdue graduates will be considered eligible to apply to the Indiana Department of Education for licensure under REPA 3 in:

Physics (5-12)
Addition in Blended and Online Teaching (5-12)
Optional: Addition in High Ability (P-12) or ELL (P-12) if chosen pathway requirements are completed

Visit the Indiana Department of Education website for more information about what courses can be taught once licensed in this area.