# SCIENCE EDUCATION
## PHYSICS CONCENTRATION

Grade Levels 5-12  
REPA 3

**Purdue University Course Catalog 2022-2023**

<table>
<thead>
<tr>
<th>CONTENT</th>
<th>CREDIT HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Major Courses</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Physics Concentration (36-38)</strong></td>
<td>4-5</td>
</tr>
<tr>
<td>PHYS 30600 Mathematical Methods of Physics I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 30700 Mathematical Methods of Physics II</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 31000 Intermediate Mechanics</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 33000 Intermediate Electricity and Magnetism</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 34000 Modern Physics Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 34400 Modern Physics</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 36000 Quantum Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 42200 Waves and Oscillations</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 45000 Intermediate Laboratory</td>
<td>2</td>
</tr>
</tbody>
</table>

Choose one of the following:  4-5

| CHM 11600 General Chemistry (4) |
| CHM 12400 General Chemistry for Engineers II (4) |
| CHM 12600 Introduction to Chemistry II (5) |
| CHM 13600 General Chemistry Honors (4) |

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

**Physics Selective (6-7)** 6-7

| PHYS 53600 Electronic Techniques for Research (4) |
| PHYS 58000 Computational Physics (3) |
| PHYS/ASTR higher than 300-level (3) |
| 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)** 4-5

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

| CHM 11500 General Chemistry (4) |
| CHM 12300 General Chemistry for Engineers I (5) |
| CHM 12500 Introduction to Chemistry I (5) |

**Required Computing Option (3-4)** 3-4

Choose one available for your concentration.

| CS 15900 C Programming (3) |
| CS 17700 Programming with Multimedia Objects (4) |
| CS 18000 Problem Solving and Object-Oriented Programming (4) |

**Required Calculus Selective (6-10)** 6-10

Choose one available for your concentration.

Option 1 (all concentrations)

| MA 16100 Plan Analytic Geometry and Calculus I (5) |
| MA 16200 Plan Analytic Geometry and Calculus II (5) |
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)

**Total Content 60-68**

**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
EDCI/ 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
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 School¹ OR 2-3
EDCI 55800 Integrated Science, Technology, Engineering, and Mathematics (STEM) Education Methods – Secondary¹

EDCI 49800 Supervised Teaching¹ 12

Learner Pathway Selective
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.