

The Concentration in **Physics and Astronomy** teaches broad problem-solving strategies and advanced mathematical and computational tools essential in many technical areas. Physics is an essential and fundamental tool for all of these disciplines, and is the taproot from which all the sciences, engineering, and technology grow. Physics provides the principles that, for example, help the architect to assess the structural integrity of a design of a building. In addition to its being an essential tool for all of the sciences and engineering, physics provides fascinating and deep insights into the nature and structure of matter, energy, space, and time. The domain of physics is the universe: from studies of the interiors of protons, to arrangements and motions of atoms in solids, to the dynamics of galaxies.

| Course Number                                  | Course Title   | Lower Division | Upper Division | Course Pre-requisites | GS Designation(s)                                |
|--|--|----------------|----------------|-----------------------|--|
| M PHY 150<br>or<br>M PHY 121<br>&<br>M PHY 122 | Physics I<br><br>University Physics I: Mechanics<br><br>University Physics Laboratory I                  | 4              |                | Y<br><br>Y<br><br>Y   | SQ<br><br>SQ <sup>1</sup><br><br>SQ <sup>1</sup> |
| M PHY 151<br>or<br>M PHY 131<br>&<br>M PHY 132 | Physics II<br><br>University Physics II: Electricity & Magnetism<br><br>University Physics Laboratory II | 4              |                | Y<br><br>Y<br><br>Y   | SQ<br><br>SQ <sup>2</sup><br><br>SQ <sup>2</sup> |
| M PHY 201                                      | Mathematical Methods in Physics I  | 3              |                | Y                     | CS   |
| M PHY 252                                      | Physics III  | 4              |                | Y                     | SQ   |
| M PHY 302                                      | Mathematical Methods in Physics II   |                | 2              | Y                     |  |
| M PHY 310                                      | Classical Particles, Fields, and Matter I  |                | 3              | Y                     |  |
| M PHY 311                                      | Classical Particles, Fields, and Matter II   |                | 3              | Y                     |  |
| M PHY 314                                      | Quantum Physics I  |                | 3              | Y                     |  |
| M PHY 3**/4**                                  |  |                | 3              | Y                     |  |
| <b>Upper Division Hours Required</b>           |  |                | <b>14</b>      |                       |  |
| <b>Total Hours Required</b>                    |  |                | <b>29</b>      |                       |  |

**Requirements:**

1. "C" minimum grade required for all classes in the Physics area of concentration.
2. A minimum of six upper-division hours in the concentration must be taken in residence at ASU Main.
3. Electives for a concentration in Physics are chosen with the approval of the physics advisor from upper-division courses in physics.

**Eligibility:**

1. A minimum 2.00 GPA.
2. Junior standing required to take 300- and 400-level courses.

Pre-registration for the above classes is not available to BIS and Pre-BIS majors.

<sup>1</sup> Both PHY 121 and 122 must be taken to secure SQ credit.

<sup>2</sup> Both PHY 131 and 132 must be taken to secure SQ credit.

**Requirements and Eligibility Notes:**

1. GPA requirements for graduation
2. GPA requirements to declare concentration

