

Physics and Engineering Physics BS and Physics BA Assessment Plan

| Program Learning Outcome | I | D | M* | Measurement Tool | Criteria for Success |
|---|----------------|---|---|---|---|
| Students will develop an understanding of the fundamental principles of physics. | PHY241, PHY242 | PHY304, EGR422 [‡] | PHY341, PHY361, PHY401, PHY431 | Major Field Achievement Test in Physics taken by seniors in the capstone course PHY475. | At least 50% of students will score more than the 40th percentile on the MFAT in Physics. |
| Students will apply physical principles, mathematical reasoning, and computational techniques to solve real-world problems. | EGR110, EGR120 | PHY241, PHY242, PHY304, EGR432 [‡] | PHY341, PHY361, PHY401, PHY431, PHY311 [†] , PHY362 [†] , PHY443 [†] | Embedded final exam question given in upper division mastery class on a rotating basis. | At least 75% of students will achieve an average score of 2.5 or higher on criteria described in application rubric. |
| Students will design and conduct experiments or complete engineering design projects as well as analyze and interpret data. | PHY241, PHY242 | PHY304, PHY311 [†] , EGR422 [‡] , EGR432 [‡] | PHY475 | Two assignments from PHY475: lab rotation one highlighting analysis and Senior Lab final project highlighting design. | At least 75% of students will achieve an average score of 2.5 or higher on criteria described in experimental rubric. |
| Students will effectively communicate complicated technical information. | EGR110, EGR120 | PHY304, PHY361, PHY495, PHY311 [†] , PHY443 [†] | PHY475 | PHY475: Senior Lab final written project and technical talk. Juried as a department; Secondary Measure Oral Examination in Electricity and Magnetism. | At least 75% of students will achieve an average score of 2.5 or higher on criteria on the Oral and Written Presentation rubrics; At least 75% of students will achieve an average score of no less than one grade lower on their PHY361 final oral exam than their written exam. |
| Students will effectively collaborate in teams. | PHY241, PHY242 | PHY362 [†] , EGR422 [‡] | PHY475, PHY495 | Teamwork survey taken, and faculty evaluation of the teams. This survey and evaluation is done in PHY304L. | At least 75% of students will achieve an average score of 2.5 or higher on criteria described in teamwork rubric. |

*I = Introduced, D = Developing, M = Mastery

[†] BA program students choose between PHY311, PHY362, and PHY443[†] [‡] BS program only