

## Physics and Engineering Physics BS and BA Curriculum Map

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 <del>†</del>	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 <del>†</del>	PHY341, PHY361, PHY401, PHY431, PHY311 <sup>†</sup> , PHY362 <sup>†</sup> , PHY443 <sup>†</sup>	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 <sup>†</sup> , EGR422 <del>†</del> , EGR432 <del>†</del>	PHY475	PHY475 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 in writing	EGR110, EGR120	PHY304, PHY361, PHY495, PHY311 <sup>†</sup> , PHY443 <sup>†</sup>	PHY475	PHY475: Senior Lab final written project. Juried as a department.	At least 75% of students will achieve an average score of 2.5 or higher on criteria on the Written Presentation rubric.
Students will effectively communicate complicated technical information orally	EGR110, EGR120	PHY304, PHY361, PHY495, PHY311 <sup>†</sup> , PHY443 <sup>†</sup>	PHY475	PHY475: Senior Lab project technical talk. Juried as a department;	At least 75% of students will achieve an average score of 2.5 or higher on criteria on the Oral Presentation rubrics.
Students will be able to identify, locate, evaluate, and effectively and responsibly use and cite information for the task at hand.	EGR110, EGR120	PHY304, PHY361, PHY495, PHY311 <sup>†</sup> , PHY443 <sup>†</sup>	PHY475	PHY475: Senior Lab final written project. Juried as a department.	At least 75% of students will achieve an average score of 2.5 or higher on criteria on the information literacy portion of the Written Presentation rubric.
Students will effectively collaborate in teams.	PHY241, PHY242	PHY362 <sup>†</sup> , EGR422 <del>†</del>	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

<sup>†</sup> BA program students choose between PHY311, PHY362, and PHY443<sup>†</sup> <sup>‡</sup> BS program only