PHYSICS, B.S. - CONCENTRATION: ENGINEERING

120 Overall Credits Required

LIBERAL EDUCATION PROGRAM AND WRITING REQUIREMENTS

Liberal Education Program

Students must complete a comprehensive three-tiered Liberal Education Program (LEP). View all requirements of the tiers on the Liberal Education Program.

While the choice of courses that fulfill the requirements is generally left up to students, courses in the major and/or cognate may also satisfy LEP requirements. These shared courses are recommended below to fulfill both areas, although the course credits are only counted once towards the 120 credits required for graduation.

Tier 1 - Quantitative Reasoning:
MAT 150 – Calculus I

Tier 2 – Natural World I: Physical Realm:
CHE 120 - General Chemistry I

Tier 3 – Capstone (select one):
EGR 471 - Capstone Experience for Engineering
PHY 471 - Capstone Experience in Physics

Writing Requirements (“W-Courses”)

Three W-courses are required. These may not be taken until after a student has passed ENG 112 — Writing Arguments. W-courses may count toward LEP, major, or cognate requirements, as well as free electives. Course sections that meet this requirement are designated by section numbers ending in “W”.

Transfer students who enter with 60 to 89 credits are required to pass two W-courses, while transfer students who enter with 90 credits or more must pass one W-course.

MAJOR REQUIREMENTS

37 Credits Required

Requirements:
PHY 230 — Physics for Scientists and Engineers I (‘C-’ or better)
PHY 231 — Physics for Scientists and Engineers II (‘C-’ or better)
PHY 309 — Modern Physics (‘C-’ or better)
PHY 370 — Modern Physics Laboratory (‘C-’ or better)
PHY 461 — Methods in Physics Research
EGR 151 - Engineering Concepts
PHY 355 - Electricity and Electronics
EGR 471 - Capstone Experience for Engineering
or PHY 471 - Capstone Experience in Physics

Select one from:

• EGR 251 - Engineering Mechanics I: Statics
• PHY 251 - Engineering Mechanics I: Statics

Select an additional 9 credits from:

• PHY 220 - Analytical Physics
• PHY 340 - Lasers and Fiber Optics
• PHY 398 - Special Topics in Physics
• PHY 400 - Classical Mechanics I
• PHY 405 - Scientific Computer Interfacing
• PHY 406 - Electricity and Magnetism
• PHY 410 - Optics
• PHY 415 - Solid State Physics
• PHY 430 - Thermodynamics
• PHY 440 - Introduction to Quantum Mechanics
• PHY 499 - Independent Study and Research
• Or other PHY courses at the 200 level or above with permission of Physics Department Chairperson

COGNATE REQUIREMENTS

41 Credits Required

Requirements:
CHE 120 - General Chemistry I
CHE 121 - General Chemistry II
MAT 150 – Calculus I
MAT 151 – Calculus II
MAT 252 – Calculus III
MAT 245 - Differential Equations

Select two from:

• CSC 152 - Computer Programming I
• CSC 153 - Computer Programming II
• CSC 207 - Computer Systems
• CSC 341 - Digital Imaging
• CSC 370 - Computer Implementation of Statistical Methods
• CSC 375 - Simulation Techniques
• Or other CSC course with the permission of the Physics Department Chairperson
Minor or Credits (12 or 18 Credits Required)

- Minor in Computer Science
- Minor in Chemistry
- Minor in General Management
- 12 additional credits in PHY, EGR, or MAT with advisor approval
  - Since all 100-level courses are introductory, a student may not receive credit for
    more than one of PHY 100, 101, 103, and 111.

FREE ELECTIVES

Student must take remaining credits to reach Overall Credits Required (listed above).