

ENGINEERING PHYSICS (MECHANICAL ENGINEERING) - BACHELOR OF SCIENCE IN ENGINEERING PHYSICS

A strong grasp of underlying physical principles behind the development of new technologies is necessary to keep up with new developments in a high-tech world. The Bachelor of Science (B.S.) in Engineering Physics program is designed to provide quality education to students for immediate employment with technical jobs in private industries (especially high-tech industries), research laboratories and public sectors. The program trains students with a combination of engineering knowledge, physics principles, mathematical background, problem-solving strategies and effective communication skills. The B.S. in Engineering Physics also provides an excellent preparation for graduate studies in either physics or an engineering discipline.

The requirements for the Mechanical concentration are listed below. Students must earn a C- or better in all required courses.

Students must complete all University degree requirements, which include: General Education requirements, Viewing a Wider World requirements, and elective credits to total at least 120 credits with 48 credits in courses numbered 300 or above. Developmental coursework will not count towards the degree requirements and/or elective credits, but may be needed in order to take the necessary English and Mathematics coursework.

| Prefix | Title | Credits |
|---|---|---------|
| General Education | | |
| <i>Area I: Communications</i> | | |
| <i>English Composition - Level 1</i> | | |
| ENGL 1110G | Composition I | 4 |
| or ENGL 1110H | Composition I Honors | |
| <i>English Composition - Level 2</i> ¹ | | |
| 3 | | |
| <i>Oral Communication</i> ¹ | | |
| 3 | | |
| <i>Area II: Mathematics</i> | | |
| MATH 1511G | Calculus and Analytic Geometry I ² | 4 |
| or MATH 1511H | Calculus and Analytic Geometry I Honors | |
| <i>Area III/IV: Laboratory Sciences and Social/Behavioral Sciences</i> | | |
| 11 | | |
| Select one sequence from the following for four credits: | | |
| PHYS 1310G & PHYS 1310L | Calculus -Based Physics I and Calculus -Based Physics I Lab | |
| PHYS 2110 & 2110L | Mechanics and Experimental Mechanics ³ | |
| Select one sequence from the following for four credits: | | |
| PHYS 1320G & PHYS 1320L | Calculus -Based Physics II and Calculus -Based Physics II Lab | |
| PHYS 2140 & 2140L | Electricity and Magnetism and Electricity & Magnetism Laboratory ³ | |
| <i>Area IV: Social and Behavioral Sciences (3 credits)</i> ¹ | | |
| <i>Area V: Humanities</i> ¹ | | |
| 3 | | |
| <i>Area VI: Creative and Fine Arts</i> ¹ | | |
| 3 | | |
| <i>General Education Elective</i> | | |
| MATH 1521G | Calculus and Analytic Geometry II | 4 |
| or MATH 1521H | Calculus and Analytic Geometry II Honors | |

Viewing A Wider World

Viewing a Wider World Electives⁴ 6

Departmental/College Requirements

Program Specific Requirements

Mathematics

| | | |
|------------|---|---|
| MATH 2530G | Calculus III | 3 |
| MATH 3160 | Introduction to Ordinary Differential Equations | 3 |

Natural Science

| | | |
|------------|--|---|
| CHEM 1215G | General Chemistry I Lecture and Laboratory for STEM Majors | 4 |
|------------|--|---|

Electives

Technical Elective⁵ 3

Physics

| | | |
|-------------------|--|---|
| PHYS 2120 & 2120L | Heat, Light, and Sound and Heat, Light, and Sound Laboratory | 4 |
| PHYS 395 | Intermediate Mathematical Methods of Physics | 3 |
| PHYS 451 | Intermediate Mechanics I | 3 |
| PHYS 454 | Intermediate Modern Physics I | 3 |
| PHYS 455 | Intermediate Modern Physics II | 3 |

Physics with Engineering Component

| | | |
|----------|---|---|
| PHYS 315 | Modern Physics | 3 |
| PHYS 325 | Intermediate Experimental Physics | 3 |
| PHYS 461 | Intermediate Electricity and Magnetism I | 3 |
| PHYS 462 | Intermediate Electricity and Magnetism II | 3 |

Engineering

| | | |
|----------|------------------------------------|---|
| C E 301 | Mechanics of Materials | 3 |
| M E 240 | Thermodynamics | 3 |
| M E 261 | Numerical Methods | 3 |
| M E 326 | Mechanical Design | 3 |
| M E 338 | Fluid Mechanics | 3 |
| M E 341 | Heat Transfer | 3 |
| M E 425 | Design of Machine Elements | 3 |
| ENGR 110 | Introduction to Engineering Design | 3 |
| ENGR 233 | Engineering Mechanics I | 3 |
| ENGR 234 | Engineering Mechanics II | 3 |
| ENGR 401 | Engineering Capstone I | 3 |
| ENGR 402 | Engineering Capstone II | 3 |

Second Language: (not required)

Electives, to bring the total credits to 120 2

Total Credits 120

¹ See the General Education (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/>) section of the catalog for a full list of courses.

² MATH 1511G Calculus and Analytic Geometry I is required for the degree but students may need to take any prerequisites needed to enter MATH 1511G Calculus and Analytic Geometry I first.

³ PHYS 2110 Mechanics/PHYS 2110L Experimental Mechanics and PHYS 2140 Electricity and Magnetism/PHYS 2140L Electricity & Magnetism Laboratory will not automatically count towards the Area III: Laboratory Science requirement, an exception will be made if students elect to take these courses.

⁴ See the Viewing a Wider World (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/>) section of the catalog for a full list of courses. See Alternatives for meeting VWW requirements (nine-credit rule).

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⁵ Approved technical electives are decided by Engineering Physics Advisors.