PHYSICS/ELECTRICAL ENGINEERING (BS/BS)

Department Website (http://cas.nyu.edu/engineering/)

NYSED: 33285  HEGIS: 1902.00  CIP: 40.0801

Program Description

Since the fall of 2010, the College’s dual degree program with the NYU Tandon School of Engineering, formerly known as the Polytechnic School of Engineering, has offered highly qualified and motivated students who are technically oriented the opportunity to pursue both a liberal arts program with a major in science, mathematics, or computer science and a traditional engineering program. Upon completion of this five-year program, students receive both a B.A. degree from the College of Arts and Science and a B.S. degree from the NYU Tandon School of Engineering. Students with this combination of degrees are likely to find excellent employment opportunities.

It is crucial that students begin the required dual-degree coursework in their first year.

The available dual degree combinations are as follows:

- BS in Biology/BS in Chemical and Biomolecular Engineering
- BS in Chemistry/BS in Chemical and Biomolecular Engineering
- BS in Computer Science/BS in Computer Engineering
- BS in Computer Science/BS in Electrical Engineering
- BS in Mathematics/BS in Civil Engineering
- BS in Mathematics/BS in Computer Engineering
- BS in Mathematics/BS in Electrical Engineering
- BS in Mathematics/BS in Mechanical Engineering
- BS in Physics/BS in Civil Engineering
- BS in Physics/BS in Computer Engineering
- BS in Physics/BS in Electrical Engineering
- BS in Physics/BS in Mechanical Engineering

Students in the program complete all of the CAS College Core Curriculum requirements, with the exception of the foreign language requirement, from which they are exempted. (Their required mathematics and science courses automatically satisfy the Core's Foundations of Scientific Inquiry requirements.) There is usually some flexibility concerning the semester in which a given course can be taken. Detailed programs of study for each of the degree combinations are available on the program website for reference.

Admissions

New York University’s Office of Undergraduate Admissions supports the application process for all undergraduate programs at NYU. For additional information about undergraduate admissions, including application requirements, see How to Apply (https://www.nyu.edu/admissions/undergraduate-admissions/how-to-apply.html).

Program Requirements

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<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CAS Core + Tandon General Education Requirements</td>
<td>EXPOS-UA 1  Writing The Essay:</td>
<td>4</td>
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Major Requirements

- MATH-UA 121  Calculus I  4
- MATH-UA 122  Calculus II  4
- MATH-UA 123  Calculus III  4
- PHYS-UA 91  Physics I  3
- PHYS-UA 93  Physics II  3
- PHYS-UA 95  Physics III  3
- PHYS-UA 71  Introductory Experimental Physics I  2
- PHYS-UA 72  Introductory Experimental Physics II  2
- PHYS-UA 73  Intermediate Experimental Physics I  2
- PHYS-UA 120  Dynamics  3
- PHYS-UA 74  Intermediate Experimental Physics II  2
- PHYS-UA 106  Mathematical Physics  3
- PHYS-UA 123  Quantum Mechanics I  3
- PHYS-UA 131  Electricity & Magnet I  3
- PHYS-UA 112  Advanced Experimental Physics  3
- PHYS-UA 140  Thermal & Statistical Physics  3
- CS-U 1114  INTRO TO PROGRAMMING & PROBLEM SOLVING  4
- MA-U 2034  Linear Algebra and Differential Equations  4
- MA-U 3113  Advanced Linear Algebra and Complex Variables  3
- CS-U 2163  INTRODUCTION TO PROGRAMMING IN C  3
- CS-U 2104  DIGITAL LOGIC AND STATE MACHINE DESIGN  4
- EG-U 1004  Introduction to Engineering and Design  4
- ECE-U 2004  FUND. OF ELECTRIC CIRCUITS  4
- ECE-U 3114  Fundamentals of Electronics I  4
- ECE-U 3054  Signals and Systems  4
- ECE-U 3604  Electromagnetic Waves  4
- ECE-U 4001  ECE Professional Development & Presentation  1
- ECE-U 45XX (Design Project I)  3
- ECE-U 4XX3 (Design Project II)  3
- MA-U 2233  Introduction to Probability  3
- CM-U 1003/1001

Electives

- ECE-U XXXX (Electrical Engineering Restricted Electives)  3
- ECE-U/EL-GY XXXX (Electrical Engineering Electives)  3
- ECE/C-U or EL/CS-GY XXXX (Electrical Engineering or Computer Science Elective)  3
- Humanities/Social Science Electives (2)  8
- Physics Electives (0110 and above) (2)  6

Total Credits  161

Sample Plan of Study

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<tr>
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<td>First-Year Seminar</td>
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### Learning Outcomes

**College of Arts and Science**

Upon completion of program requirements, students are expected to have acquired:

1. A fundamental command of physics, as well as of the subdisciplines of classical mechanics and electromagnetism, special relativity, quantum mechanics, and statistical and thermal physics.
2. Facility in advanced topics (chosen from among general relativity, condensed matter physics, biophysics, and others) relevant to modern research.
3. The mathematical skills required to describe and predict the behavior of physical systems from first principles.
4. The experimental and analytical skills needed to test the application of physical laws to real systems.
5. Facility in advanced topics in mathematics, chemistry, and/or biology, and an understanding of their relation to concepts in physics.

### Tandon School of Engineering

Students will be able to demonstrate the following (per ABET):

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. An ability to communicate effectively with a range of audiences
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

### Policies

**NYU Policies**

University-wide policies can be found on the New York University Policy pages (https://bulletins.nyu.edu/nyu/policies/).

**College of Arts and Science Policies**

A full list of relevant academic policies can be found on the CAS Academic Policies page (https://bulletins.nyu.edu/undergraduate/arts-science/academic-policies/).