

DEPARTMENT: PHYSICS

As a member of the **Department of Physics** you will join a group of students who are part of the **School of Arts and Sciences** at New York City College of Technology, City University of New York.

Mission: The **Applied Computational Physics (ACP) Bachelor degree program** provides a broader, more balanced and flexible education than a traditional physics major. Combining computational elements alongside basic physical principles creates a mindset for modeling realistic systems.

The ACP program combines applied physics and high-performance computing to show complex laws of nature, physics methods and computational techniques within the context and application of different fields.

Students in the ACP major can join department clubs such as the Physics Club and engage in internships both within and outside the department. They can also join the activities and seminars organized by the Center for Theoretical Physics.

The City Tech Center for Theoretical Physics (CTP) is a subsidiary of the Physics Department and is a unified research and teaching center focused on fundamental physics. The primary mission of the CTP is to foster and promote excellence in theoretical physics research with significant focus on mathematical physics, computational physics, condensed matter physics, particle physics, nuclear physics, and astrophysics. The collaborative and individual research activities of CTP members range from string theory to LHC physics, to astrophysics at the highest energies and nuclei at the low energy scale, and also include nanophysics and interaction of light with matter.

Members of the CTP are encouraged to supervise student research at both the undergraduate and graduate level. They routinely participate in various programs supporting the research of minority undergraduate and graduate students.

The CTP also aims to educate undergraduate students in theoretical and computational physics and to communicate its activities to the general public through public lectures and other outreach activities. These involve seminars, workshops, colloquia and conferences, collaborative and individual research.

The seminars enable the dissemination and discussion of current research and provide an opportunity to discuss joint projects with collaborators. The speakers include CUNY faculty, scholars visiting from leading scientific centers and academic institutions within the US and worldwide. The talks are accessible to advanced City Tech students majoring in Applied Computational Physics, Applied

Mathematics, and Computer Sciences as well as graduate students from the CUNY Graduate Center.

Options for Employment and Further Study

Students in the Physics Department are often interested in acquiring the following skills and aptitudes:

- Enjoy the challenge of advanced math problems
- Enjoy coding and working with computers
- Enjoy solving puzzles and logical problems

The skills acquired by graduates in the ACP program position them to fulfill the growing need for researchers, educators, and information professionals in a wide variety of fields, including engineering areas such as aerospace, applied mathematics and computer science, physical chemistry, finance, biomedicine and environmental science, as well as research in academic, industrial or national laboratories.

Graduates will be well equipped with a solid platform in physics, computing and mathematics, as well as valuable skills in complex problem solving and teamwork. Students are provided the opportunity of learning and applying coding techniques that are useful in many work environments. Tutoring is available.

Faculty have interests in various research areas:

Astrophysics: Professors Acquaviva, Maller

Solid State Physics: Professors Berman, Kolmakov, and Kezerashvili

Space Science: Professors Matloff, Kezerashvili

Low Energy Particle Physics: Professor Kezerashvili

String Theory: Professor Krym

Photonics: Professor Leng

High Energy Particle Physics: Professors Ossola, Ferrogli

Fun Facts

- ✓ Notable graduate: One of the 2020 graduates is now pursuing a Ph.D. degree at Harvard University, working in Astrophysics.
- ✓ Graduates of the program: The ACP program is a relatively young program, the first cohort of students graduated in 2019. So far 10 students have graduated from the program.
- ✓ Advice from professors: Take full advantage of interactions with professors in class and during office hours. Make sure that you work through the material, review the calculations discussed in class, and ask specific questions.