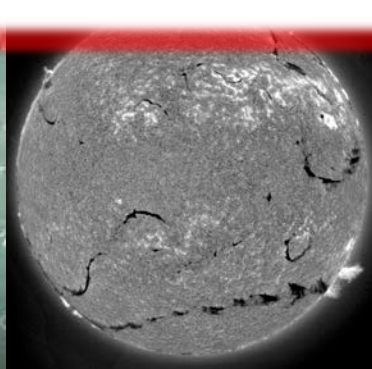
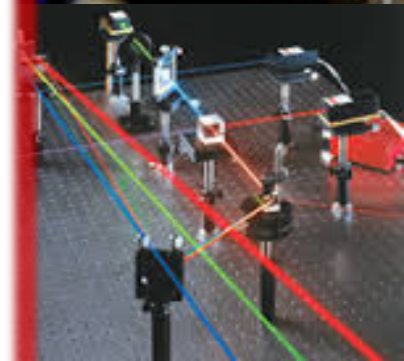


NJIT

New Jersey's Science & Technology University

Applied Physics Freshman Survival Guide



Dear Incoming Freshman,

First and foremost, welcome to NJIT and the Department of Applied Physics.

This guide was written by your fellow physics students with the aid of department administration. It is our sincere hope that the information provided herein will serve to enhance your time here. It wasn't too long ago that we were in your position. We recall what it felt like to arrive at NJIT for the first time, attend our first lecture, and step into our first lab. And just like you, we had many, many questions. Over the next couple of pages we will try our best to answer some of them. Physics is one of the hardest majors here at NJIT. DO prepare to be challenged intellectually through research, classes, and discussions with students and faculty alike. DO NOT try to do it all on your own. We're here to help.

So pull up a chair, sit down, and start reading this guide. You've chosen to major (or perhaps double major or minor) in this field for a reason. Whatever that reason, you've made an excellent decision.

Yours Truly,

Students of the Department of Applied Physics

Beginning with Basics

The transition from highschool to college can be incredibly challenging for some, while others may feel bored. Regardless of which description you fits your situation, there are numerous support systems here at NJIT and the physics department.

Over the next few pages, we will provide you with a detailed description of such support systems in addition to providing a closer look at the department. Before we start however, here are some key terms with which you should get familiar:

Common Hour: Common hours are hours during the weekdays where no classes are held. Common hours are Wednesday, 2:30 – 5:30 and Friday, 11:30 – 1.

Common Exams: Exams held during common hours. Most courses at or below the 200 level have common exams.

Course Permits: There are five types of permits: **general**, **honors**, **closed**, **winter**, and **summer**. Use a general permit application for registration errors due to missing prerequisites, field of study errors, honors cohort errors, major, year or other errors. DO NOT use this general permit for a closed course. Use a closed course permit to request entry into a full course. Use a winter permit to take a course in the winter. Finally, use a summer permit to obtain approval to take courses at another college during the summer.

Honors Courses: Honors courses typically cover their subject material in a more comprehensive manner. These courses are designed in collaboration with the Albert Dorman Honors College to satisfy student's honors requirements. Non-honors students may also partake in honors courses if they acquire an honors permit from the department of the course.

Get to Know Your Department

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Here are just a few of the important people here in the department. You'll often find yourself interacting with them, so below is a bit of information to help you get to know them better. In addition, their respective responsibilities are also listed so that you know who to contact when you have specific questions.



Name: Andrei Sirenko
Position: Chair
Responsibilities: Academic success of students, advancing undergraduate and graduate student participation in research
Hobbies/Likes: Met Opera, Art Museums, Ballet
Contact Info:
973-596-5342
andrei.sirenko@njit.edu
468 Tiernan



Name: Christina A. Oertel
Position: Administrative Coordinator
Responsibilities: Student permits; faculty teaching schedules; coordinate physics tutoring schedule, review sessions, commons and final exams
Hobbies/Likes: Camping, biking, writing, reading, animal lover/advocate
Contact Info:
973-596-3567
christine.a.oertel@njit.edu
463 Tiernan Hall



Name: Cindy Montavlo-Harden
Position: Customer Service
Contact Info:
973-596-3562
montalvo@njit.edu
463 Tiernan Hall



Name: Jessica Witte-Dyer
Position: Administrative Assistant
Contact Info:
973-596-5433
jwitte@njit.edu
463 Tiernan Hall

Physics Tracks

The [BS in Applied Physics](#) is a joint degree program offered by NJIT and Rutgers-Newark. The program offers students a general physics option with a broad exposure to several major areas of physics.

Applied Physics – Optical Science and Engineering Option

Optics is the domain of physics which focuses on light and its interaction with matter and more. The OPSE concentration provides a unified, multi-departmental optical science/engineering curriculum and emphasizes optics courses which provide laboratory and classroom training to undergraduate and graduate students in emerging areas of industrial and technological importance.

Advisor: Tao Zhou
(taozhou@njit.edu), TIER 478

Applied Physics – Astronomy Option

Astronomy is the domain of physics that concerns itself with the study of the cosmos including the physics, chemical processes, and development of the observable universe. NJIT is home to one of the best Astronomy departments in the nation. NJIT operates the Big Bear Solar Observatory and has an impressive array of experts in solar physics and space phenomena.

Advisor: Andy Gerrard
(andrew.j.gerrard@njit.edu), TIER 101

There are also options to double major in applied physics and either mathematics or computer science and accelerate your studies under the Applied Physics 3-year B.S./M.D. program.

Applied Physics – Physics and Mathematics Double Major

The Applied Physics and Mathematics double major provides students with a comprehensive exposure to physics while providing them with a rigorous mathematical background. This option is recommended for students who wish to develop their mathematical ability in a more structured manner.

Advisor: Ken Ahn
(kenahn@njit.edu), TIER 483

Applied Physics – Physics and Comp. Sci. Double Major

The Applied Physics and Computer Science double major integrates computer science and physics to ensure students are well equipped to pursue either (or both) after graduation. Students are taught by faculty in both departments.

Advisor: Ken Ahn
(kenahn@njit.edu), TIER 483

PLEASE NOTE: There is a difference between a double major and dual major. If you are interested in graduating with two bachelors degrees, talk with your advisor.

Physics Tracks Cont.

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The Department of Physics also offers a concentration in Biophysics and opportunities to minor in physics.

Applied Physics – Biophysics Option

Biophysics is a new, rapidly growing domain of physics with expanding career opportunities. Merging physics with the biological sciences and materials science, the biophysics option provides students with an exciting and interdisciplinary education. This option is especially valuable for students interested in pursuing medical school after graduation as it well prepares students for the required entrance exams.

Advisor: Andrei Sirenko

(andrei.sirenko@njit.edu), TIER 468

Applied Physics Minor

The applied physics minor is an excellent option for students interested in physics but pursuing another major. The minor consists of 15 credits (5 courses). Students take Phys 234 (Physics 3), and either Phys 335 (Intro to Thermodynamics) or Phys 450 (Advanced Physics Laboratory) in addition to three other courses of the student's choosing. The three additional courses must be approved in consultation with the minor advisor.

Advisor: Camelia Prodan

(camelia.prodan@njit.edu), TIER 480

Though the department is small relative to others here at NJIT, the Department of Applied Physics is one of NJIT's most impressive. Home to several physicists renown in their respective fields, you will be sure to find research that interests you. The department brings in over 25% of the entire school's research funding. Applied Physics faculty perform research in the fields of Astro- and Solar-Physics, Optics, 3D Printing, Micro- and Nano-electronics, and much more. Unlike other physics departments, NJIT's strives to offer a hands on experience for all undergraduate students. In other words, you're strongly encouraged to get involved outside of the classroom! Getting into a laboratory is truly a painless process. Figure out what you're interested in, read a little bit about it, and then contact a professor to figure out if there's an opening. If you don't get into your first choice, don't fret. Contact your physics senate representative or the department chair to figure out what other options are available.



Steve Susanibar excels in research. Over his 4 years at NJIT, Steve worked at Princeton, Stanford, and NJIT's Biophysics laboratory. Read more about Steve [here](#).



Scott Leiberman is immensely bright. While at NJIT he Interned at the world's largest particle physics facility - CERN. Read more about Scott [here](#).



Michelle Salzano is a skilled researcher. Michelle is now headed to the University of New Hampshire for graduate studies.

Internships/Summer

Before you know it, your freshman year will be coming to a close. What you do during your summer break is completely up to you. Some students will choose to head home and relax with friends and family while others may be looking for either internships, REUs (or IREUs), or summer employment. If you're in the latter group it's never too early to get summer plans together. It is recommended that you start looking for opportunities at the end of your **1st semester** (fall semester). Many REUs and IREUs (research experiences for undergraduates and international research experiences for undergraduates) have applications which close in January or February. So you'll need ample time to request letters of recommendation from professors, past employers, or highschool teachers. It is recommended that you ask recommenders a month before a letter is needed.

While there are more comprehensive lists available, here are a few summer research opportunities for Freshman students:

Nakatani RIES: Sponsored by Rice University, the Nakatani RIES program takes 14 U.S. Freshman and Sophomore students to Japan for 3 months. Students are given intensive language classes and an opportunity to live in and explore Tokyo together for the first month. The final two months are spent in Japanese laboratories across the nation. Students are given a \$4000 stipend and most major costs are covered by the program.

NSF REU: Database from the national science foundation that has an enormous amount of REU opportunities for students. To find offers, just click "search for an REU site", choose your subject of interest, and pick which offers interest you. Freshman may not be eligible for all opportunities however.

NJIT REU: NJIT has numerous summer research programs that provide students with funding to work with a professor and mentors, meet other students, and develop a project the student is interested in. Programs range from nanotechnology summer research programs to the provost research fellowships, which allows students to work on whatever they're interested in so long as they have a faculty member to work with.

For job opportunities, attend the career fairs at NJIT or talk with Dr. Sirenko. **Edmund Optics** and **IPG Photonics** often request NJIT physics students for summer and winter internships.

There are an array of resources here at NJIT to ensure your time here is the best it can be. Here are a few such sources along with their descriptions.

Tutoring – All tutoring centers are free!

Physics Tutoring Center – Located in Central King Building G12. Monday - Thursday, 10:00 am - 6:00 pm and Friday, 10:00 am - 2:30 pm. Physics seniors often tutor here and tutoring positions are typically available.

Math Tutoring Center – Located in Central King Building G11. Monday -Friday: 8:30 am - 8:00 pm or by appointment through njit.simplybook.me.

Writing Center – Located in Central King Building G17. Scheduling an appointment is strongly recommended through <https://njit.mywconline.com>

Course Registration – Remember to meet with your advisor(s) BEFORE registration to have holds removed!

[Schedule builder](#) – Easy to use graphical schedule builder .

[NJIT Physics Advisor List](#) – Pdf that contains all relevant information for figuring out and contacting your advisor.

[NJIT Registration Instructions](#) – Comprehensive website that provides all the information you should need for the registration process.

Jobs – Opportunities on campus to make money!

[NJIT Internal Job Offers](#) – A list of job opportunities for students to make money at NJIT. Some research opportunities can also be found here.

Miscellaneous – Other valuable resources

[NJIT Grade Appeal Policy](#) – A document that contains the official process for contesting a final grade in an attempt to have it changed.

So now that you've received an overview of your department, we hope you feel prepared. Nevertheless, if you still have questions, please don't hesitate to ask. Contact your physics representative. They would love to talk and help you with any issues you have. Here are a few of the common questions that physics students have:

Which Physics 111 Class Should Take?

The answer to this question really depends on what you're looking for. Are you looking for an easy A or to really be challenged as a physicist? If the latter, Dr. Vitaly Shneidman is recommended. Though some students may complain that he can be monotone, Prof. Shneidman has an impressive background in mathematical physics. Coupled with his worksheets, thought-provoking extra credit problems, and insightful extra-class discussions, Prof. Shneidman is an excellent choice. If you're looking for the former, contact your physics representative.

How Important Is Advisement? When Should I Go?

Advisement is critical! In the past, some students at NJIT have had to delay graduation due to poor advisement from their advisors or careless class registration. Luckily, for the first 1 and a half years, almost every physics track requires the same classes. Still, go to your advisor to have your registration hold removed (this allows you to register). Sometimes departments can be late sending out reminders to meet with your advisor. Therefore, it is recommended to keep in mind when registration begins for your year (Fr, So, J, Se) and shoot your advisor an email roughly a month before registration begins asking to meet with him or her so that you're prepared when registration opens.

What Clubs/Activities Are Available for Physics Students?

There are only a few, but you are encouraged to participate and start more! The primary clubs include the Society of Physics Students (SPS) and NJIT Amateur Radio Club (Ham radio). The department has given SPS their own club room, equipped with a few cool contraptions and books for tutoring. In addition, several leadership positions in these clubs are open for applications, so if you're interested apply.

Help! Professors Are Not Adequately Teaching Me The Material OR I've Witnessed Students Cheat

Both issues are legitimate and have been brought up to the department Chair and physics representative over the past years. If you have encountered either issue, contact your representative first. The meeting will be completely private and information provided will be anonymously used to correct the issue(s).

What Am I Doing With My Life?

You tell me! Anytime you would like to meet up to discuss academics, research, NJIT, or just how your life is going at the moment, hit me up! I can be reached at the following email address: dam59@njit.edu.