

1. When does the NanoExplorers program start and end?

This year (2019), the deadline for submitting an application packet for the 2019 program is April 12, 2019. Applicants selected for the program will be notified by email on or before April 26, 2019. Acceptance letters must be postmarked by May 10, 2019.

The program will begin with an orientation session the first or second week of June. Details will be made available when acceptance letters go out.

2. If I have been selected for and/or participated in the NanoExplorers program before, do I need to re-apply?

If you want to formally be part of the NanoExplorers program, then YES! Planning for a program that has become this large requires a hard count on how many students we are going to be taking in. Obtaining student IDs, making sure we have enough mentors, arranging the orientation session, and insuring that we have up to date release forms on file all depend on the application process. There are also criteria for successful completion of the program, for example, participating in a colloquium at the end of the summer. You are certainly welcome to contact the mentor you worked with previously to inquire about returning to work in their laboratory, however to formally be part of the NanoExplorers program you must go through the application process.

3. How much time per week do I have to dedicate to the program?

This is a good question, and the most often one asked. The work you do in our labs will be associated with real, funded programs from agencies such as NASA, the National Science Foundation, the Air Force Office of Scientific Research, and the Department of Defense. When you join the program, you are joining our team and will be working with our scientists to meet deliverables. We simply do not have the resources to assign a mentor to a student who has only a small amount of time to spend in the laboratory. As a general rule of thumb, a minimum of 20 hours per week is a fair estimate. If you cannot spend at least that amount of time in the laboratory, you will not be able to appreciably contribute to the project team, and will therefore have a less than rewarding experience.

4. My family is going on vacation at the beginning of the summer. Is it okay if I start late?

Unfortunately the answer to this question is no. One of the most crucial parts of the program is laboratory training and safety training during the first few weeks. We only have the resources and manpower to offer this critical training one time, and students are not allowed to work in the laboratory until they've had this training.

5. What time do I have to be there in the morning during the summer?

I leave this up to the student and his/her mentor. Most of the NanoExplorers who want to give up a summer working in a laboratory have other extracurricular activities as well. And being scientists at a university, we have strange schedules as well. The amount of time that you can spend in the lab each week, how many days per week you can be on campus, and what times you can be in the lab are all determining factors in who your mentor will be. You and your mentor will work out an agreeable schedule.

6. Is there a stipend?

At this time, there is no stipend for participating in the program. Chemicals, materials, and supplies for scientific research are incredibly expensive, and the limited available funds are used to support this expense.

7. Is housing provided?

At this time, we do not provide housing to accommodate students. All program participants must arrange their own room and board.

8. Who comes to the orientation session, and how do I know when/where it is?

After you are accepted into the program, you will receive a welcome letter from us. It will let you know where to go and the date and time to get there. You can bring your parents if you like! We may put them to work in the lab as well!

9. What happens at the orientation session?

Well, mostly we eat and talk. The orientation session is for the incoming class of NanoExplorers to meet the students, faculty, and staff that they will be working with during the summer. The Director of the NanoTech Institute and founder of this program, Professor Ray Baughman, will say a few words. Once he finally quits talking, a few of our key staff scientists and students will give brief introductions of what we do at our Institute, i.e. what they are working on. This is where you take note of anything that sounds interesting to you.

10. How do I get paired up with a mentor?

This is the tricky part, and where your participation is required. The first two years of the program, I spent a lot of time diligently pairing up students with mentors before I had even met them. I found that about two weeks into the program some (a bunch) of the NanoExplorers were looking over their shoulders looking at what others were doing thinking “man, I wish I was doing that”, while whoever they were watching was probably thinking the same thing. We work on a variety of programs that span pretty much every scientific discipline, from biology to chemistry to physics to engineering. I found that most of our NanoExplorers are at the stage where they already have some interest in one or the other and I want them to be able to find that niche here. So, how do you get paired up with a mentor? You find each other! After we are full of barbeque or pizza and after the mentors have told you a little bit about what they work on, we'll push the chairs out of the room and have a “mingling” session. At this point, you can talk one-on-one with the mentors about projects, your schedule of availability, etc. Before you leave for the day, you will tell ME who you are working with! It may sound crazy, but it has worked very well in the past.

11. Can I enter my work in the laboratory during the program into scholarship competitions and school science fairs?

It depends on your project. If you are planning on submitting your work for a competition, speak with your mentor early on about it. Some information may be limited due to pending patents or publications. In the past, our students have been very successful in science fairs and competitions like Intel and Siemens.

12. What happens at the end of the program?

Before local area schools start back up, we will have a symposium where program participants present their research. At the end of the symposium, students will be presented with a certificate of completion of the 2019 NanoExplorers Programs.

Application Information and Advice

13. I applied to the program before and didn't get accepted. What can I do this year to make sure I get in?

This is probably the second most frequently asked question. The application packages are reviewed and ranked by the mentors participating in the program. For the 2018 program, we received nearly 300 applications for 35 spots. This year we are limited to about 25 spots due to space, insurance, and liability issues, however the number of applicants rises every year. Most, if not all, of the applicants are highly qualified. The panel of mentors who review the applications consider the questionnaire and recommendations, and do their best to choose participants who they feel best fit into the program. Your course background, how much time you have to devote to the program and your interests obviously play a part, but so does the availability of mentors. As an example we get many applicants interested in pursuing pre-med fields like neuroscience, however if we receive 20 applicants interested in working in this area and have only two mentors, we aren't going to be able to accommodate all of them.

14. What criteria are used to judge applications? What is the best subject to study? Is there a list of mentors available?

See FAQ 13 above. The panel of reviewers considers your questionnaire and recommendations. Questions regarding your interests and why you want to participate in the program are very important. What courses you have taken, how much time you are willing to dedicate to the program, and what subject you would like to study are obviously considered. For example, if you primarily want to study in a subject where we don't currently have many mentors, then we probably aren't going to be able to find a good fit for you. Unfortunately, due to a variety of reasons (student load, teaching load, graduation, etc.), the mentors for the program change every year and therefore a list isn't available. And no, we do not give out information regarding the panel that reviews applicants.

15. How can I make my application stand out and improve my chances of being accepted?

Assuming you are interested in studying something in which we can accommodate you, the best way to increase your odds of being accepted is to have an application which stands out among the nearly 300 others against whom you will be competing. Most, if not all, of the students who apply to this program have a high GPA, good test scores, and take advanced AP/IB science and math courses. If the crux of your application is your numerical performance in coursework, you will not look any better than anyone else who applies. Additionally, how well you do in a laboratory setting has surprisingly little to do with how well you do in school. While textbook-type knowledge of the subject you are pursuing is of course important, it is far more useful to have creativity, common sense, experience solving hands-on problems, and a good work ethic. As one of our mentors says, he would rather work with someone who has participated in a soap-box derby, or robotics club competition, than someone who is in the top 1% of their

class, but has no hands-on experience with solving problems. Much of the research we do involves scientific concepts that no one, not even the brightest students, would be learning until undergraduate or even graduate level courses anyway, so we'd rather work with someone who will be useful and productive in a laboratory setting.

16. How should I answer the questions in the application?

First, focus on the topics in FAQ 14. Tell us about any hands on experience you've had that would make you more useful in a laboratory setting. Second, try to answer questions specifically and uniquely. If you're asked what you want to get out of the program, don't say "I want to gain knowledge and gain the invaluable experience of working in a real university laboratory." That answer might sound nice, but it doesn't contain any substance. If you're applying to work in a research lab all summer, then of course that will be true. Instead, be specific about your goals. Show us that you've done some background study on your options and have an idea about what you want to do. If you want to develop your coding expertise in a research environment, say that. If you want to develop new robotics, or study improved energy storage devices, say that. If you want to work on a project to compete in a scholarship competition like Intel or Siemens, say that. Be honest, complete, and specific and you'll stand out to the panel reviewing your application.

17. Who should I choose as my recommenders?

Your choice of recommenders is very important, and is a decision you should think about and ask about well in advance. You must choose 3 people to write recommendations for your application. You'll enter the contact information of these 3 people in your application, and they will be automatically contacted to submit their comments electronically. Who you choose is completely up to you, but good options are: teachers (often a science teacher), leaders of a club or group that you participate in which would have experience of your academic abilities, or mentors from another summer program you may have been involved in. For the recommenders, we are looking for people who have a good understanding of your abilities, both academic and extracurricular. They should be able to vouch for your grades/achievements, work ethic, and experience with hands-on/laboratory work. For letters of recommendation, it's always a good idea to ask someone who knows you well over someone of authority or fame who has had little interaction with you in the past.

Your recommenders must submit their comments before you will be allowed to submit your application. So choose these people and ask them well in advance! If someone changes their mind and is unable to recommend you, you may select a different person in your application, but you must have exactly 3 submitted reviews by the deadline of April 12, 2019 for your application to be accepted.