

The Governor's School of New Jersey



Application for the 2023 Governor's School Program in the Sciences at Drew University July 16 – August 5, 2023

Please read the entire package.

Application materials that are incomplete, do not conform to the application instructions, or do not meet deadlines will not be considered.

PROGRAM OVERVIEW

The Governor's School of New Jersey Program in the Sciences (GSS) brings the best science and mathematics students of the state together for a three-week summer enrichment program hosted by Drew University. The program exposes these exceptional scholars to courses, laboratories, team research projects, and other special events that encourage them to explore a career in science and math, including a Career Day, where alumni join other professionals in sharing their experiences with the scholars.

There are no examinations or grades. The program emphasizes group learning and collaboration within a supportive academic community of fellow scholars, counselors, faculty, and staff. The program also seeks to foster social interactions between the scholars to support and enhance the academic experience. Consequently, scholars experience a taste of what college will be like.

The program is free of tuition and fees, as it operates with generous donations from public, private and corporate sponsors. Scholars for this summer's program are selected based on the excellence of their academic performance, written essays, standardized test scores, math and science teacher recommendations, and extracurricular activities in and out of science. The program will provide a unique opportunity for the scholars to explore the sciences more deeply while sharing their passion for science with a community of students with similar interests. Currently, we anticipate that the 2023 will be held in-person on Drew's campus.

ELIGIBILITY

To be considered for the Governor's School in the Sciences, a student must meet the following criteria:

- The student must be a New Jersey resident and be a high school junior during the 2022-2023 school year.
- The student must have a very strong interest in the sciences and be committed to the acquisition of knowledge and the pursuit of opportunities in that field.
- The student must commit fully to the demanding schedule of the 3-week. As the full commitment to both academic and social portions of the program is expected, the student should not engage in other activities, classes, employment, or other summer program while the program is in session.
- The student must be one of the top students in his or her school. The student should have primarily "A" grades in honors math and science classes and outstanding scores on standardized achievement tests. Students who have demonstrated very strong scientific abilities outside the classroom can still be strong candidates for the Governor's School even with weaker standardized test scores.
- Competitive candidates often rank in the top 5% of their class and score above the 90th percentile on standardized tests. A student whose standardized test scores are below the 90th percentile but rank among the best in his/her school are still encouraged to apply if he or she is otherwise qualified.

The Governor's School encourages all qualified applicants regardless of sex, race, color, creed, national origin, or physical handicap.

PROGRAM DESCRIPTION

Core courses in a variety of different areas of science and mathematics (anthropology, biology, chemistry, mathematics, physics) address aspects of science and mathematics not usually seen in either high school or in the first year of college. Each student takes three core courses. The core courses offered in 2022 were:

- Molecular Orbital Theory
- Data Analytics
- Modern Physics
- Neurobiology
- Human Evolution
- Molecular Biology of Cancer

Laboratory courses provide the scholars with innovative experiments. Each scholar takes one lab course. During the last in-person program, labs were:

- Experiments in Biology
- Experiments in Organic Chemistry
- Experiments in Computer Science
- Experiments in Physics
- Experiments in Anthropology

Team Projects provide scholars with the opportunity to work in small teams under faculty guidance on mini-research topics. Results are presented at The David Miyamoto Scholars Conference. There were five team projects in 2022:

- Project in Psychology: Olfactory Learning and Memory
- Project in Computer Science: Machine Learning
- Project in Physics: Quantum Computing
- Project in Chemistry: Computational Biochemistry
- Project in Chemistry: Using Computational Drug Docking to Identify Possible Therapeutics and Lead Compounds

Special Events include colloquia speakers, Career Day, Talent Show, and The David Miyamoto Scholars Conference. Colloquia speakers at the 2022 program were:

A Double-Edged Sword: The Immune System and COVID-19, Dr. Brianne Barker

Many people are aware of the role of an immune response in protecting us from disease following vaccination or in recovery from infection. During the COVID pandemic, immunologists have characterized the immune response to SARS-CoV2 infection and the ways in which the immune response contributes to the disease. This talk will focus on the positive and negative aspects of the immune responses to SARS-CoV2 infection compared to the response to vaccination. Data on how these immune responses are examined will also be presented.

A Career Rooted in Mentorship: Creating a Successful Educational Journey for Yourself Dr. Ronak H. Mistry, DO (NJGSS '08)

An important lesson I learned along the way is the importance of mentorship, both seeking out mentors for yourself and also being a mentor to others. In this interactive presentation, Ronak will discuss the important steps to identifying a mentor that is right for you and how to make the best of this relationship. He will share his journey from his time in the Governor's School to now and how having great mentors along the way opened doors for future opportunities. The format will be very informal; your questions are more than welcome and encouraged!

Using computational biology to understand viral protein evolution, Dr. Sarah Hilton

Computational biology is the study of biological systems using methods from computer science, statistics, and mathematics. In this talk, I will discuss some of my work from graduate school applying these techniques to the study of viral surface proteins. In the first part, I will introduce an evolutionary model built on empirical measurements from the lab and show how we can use this model to learn about influenza virus. In the second part, I will show an interactive visualization tool I built which helps facilitate collaboration between researchers. Finally, I will briefly touch on some of the protein engineering work I am currently doing at a cancer immunotherapy biotech company.

The quiet giant in our galaxy: Studying the Milky Way supermassive black hole, Dr. Melania Nynka

Supermassive black holes are one of the main drivers behind the evolution and behavior of a galaxy. However, we know very little about Sagittarius A*, the black hole in the center of our own galaxy. X-ray satellites are able to penetrate the veil of dust and gas and provide us an in-depth look at the strange behavior of our Milky Way supermassive black hole. I will give an overview of what it takes to build an X-ray telescope, X-ray astronomy in general, and how X-ray observatories are probing the darkest depths of our galactic center.

THE SELECTION PROCESS

To apply for the Governor's School in the Sciences, students must be nominated by their high school's nominating committee. If the high school's junior class contains at most 325 students, only one student may be nominated for each Governor's School program. If the high school's junior class has between 326 and 650 students, two students may be nominated for each Governor's School program. Three students may be nominated only if the junior class comprises more than 650 students.

Students chosen by their high school's nominating committee are termed "nominees." The nominee is ultimately responsible for providing all necessary forms and information to their high school and working with the high school officials to ensure that the completed application package (including official transcripts, copies of PSAT scores, and the principal's signature) is submitted before the deadline. The high school officials compile all application materials (including the two letters of recommendation) and submit the full application as a single PDF document that conforms to the following naming convention: **Last Name of Nominee_First Name of Nominee_County.pdf (ex. Jones_Mary_Monmouth.pdf)** before the deadline. **The application must be submitted by the high school, NOT the nominee, directly to GSNJS google form linked [HERE](#). The full application must be submitted on or before January 13, 2023, 11:59 p.m.**

The Governor's School will confirm receipt of the application by late-February in an email to the nominee and the school counselor listed on the application. At Drew University, a panel of professors, researchers, and educators will review nominees' applications. Using the criteria below, this selection committee will choose the scholars and invite those students to attend the Governor's School. The committee's decision will be emailed to the student on **April 14, 2023**. **Students who are selected, AND a parent/guardian, must then sign and return a commitment form. BOTH signed commitment forms must be submitted on or before April 21, 2023, 11:59 p.m.** If both commitment forms are not received by April 21, 2023, 11:59 p.m., the student's acceptance to the Governor's School may be rescinded. The admissions process is very competitive; in recent years, 15% - 25% of nominees have been offered admission.

SELECTION CRITERIA

The selection committee for the Governor's School in the Sciences aims to craft a student body made up of New Jersey's most talented and enthusiastic students. Our student body should be diverse in myriad ways. Our students should possess a great range of gifts in technology, the arts, humanities, and the sciences. Overall, the committee chooses the nominees who will best take advantage of the opportunities presented by the Governor's School.

Decisions are based on the following qualitative and quantitative criteria:

- High school transcript and class rank, which should demonstrate that the student is at or near the top of the class.
- Essays and reasons for wanting to attend the Governor's School.
- Letters of recommendation from science and math teachers.
- Extracurricular activities, work experience and community service pursuits.
- Academic and extracurricular honors and accomplishments.
- Standardized test scores (PSAT preferred).

We expect Governor's School scholars to exhibit great creativity and a unique passion for the nature of our Governor's School. We look for students who have shown a strong interest in science and mathematics, as well as an open mind and the ability to work on a team to explore these interests further. We want to know what a student hopes to gain from the Governor's School experience, as well as what he or she hopes to contribute to the program. In general, nominees who have demonstrated a fervent interest in science and mathematics both inside and outside of the classroom will be most successful in the admissions process. A student with perfect standardized test scores but only superficial interest in the nature of the school is not a competitive candidate. Of course, our scholars are not only devoted to science, but also have outstanding test scores and rank at the absolute top of their class. We are privileged to choose the best of the best.

CONTACT INFORMATION

Dr. Adam Cassano, Director

Yumi Kouh, Administrative Manager

Web: <http://www.drew.edu/governors-school/> (*Sciences only*)
<http://www.nj.gov/govschool/> (*all programs*)

Email: Governor's School in the Sciences
govschool@drew.edu

Telephone: (973) 408-3605

APPLICATION INSTRUCTIONS

The nominee and the high school prepare the following application materials in the order instructed. The high school then compiles the full application as a single PDF document with the following naming convention: “Last Name of Nominee _ First Name of Nominee _ County.pdf” (for example, “Jones_Mary_Monmouth.pdf”). The application must be submitted by the high school, NOT the nominee, via Google Form.

Materials (in the following order)	Prepared by
Step 1: Application Cover Sheet (signed by the nominee and parent/guardian)	Nominee
Step 2: Online Student Application Information Form Visit the Governor’s School in the Sciences website at: https://drew.edu/governors-school/ Follow the link to the 2023 Online Student Application Information Form. Complete all fields and click on the “Submit Application Data” at the very end of the form. You will receive a confirmation email immediately following submission. Print all the applicant data contained in the email. Include the printed document as a part of the application.	Nominee
Step 3: Nominee’s Checklists.	Nominee
Step 4: Principal’s Checklist	High School
Step 5: List of extracurricular activities in order of their importance to the nominee, with emphasis on activities requiring a substantial amount of time commitment. These can include school sponsored activities, work experience, community service, as well as science, artistic or athletic programs. Be sure to include leadership roles and the amount of time spent on these activities. Along with this list, please note any awards and/or honors (academic or extracurricular).	Nominee
Step 6: Two essays. <i>EACH ESSAY IS LIMITED TO ONE PAGE, SINGLE-SPACED, 12-POINT FONT.</i> Essay 1) Essay focusing on your scientific interests and aspirations, including any experiences that led to these interests, and how you envision the Governor’s School in the Sciences contributing to these aspirations. Essay 2) Essay describing one discovery in science or mathematics and the impact it has had on its field. “Discovery is the hallmark of science.”	Nominee
Step 7: Two letters of recommendation <u>with original signatures</u> . Letters should be confidential and not available to the applicant. One must be from a science teacher and the other must be from a mathematics or a computer science teacher. A letter that is unsigned or not from a science or mathematics teacher will <u>NOT</u> be considered. Additionally, if both letters of recommendation are from two science teachers or two math teachers, only ONE letter will be considered.	High school collects and attaches them into the application packet.
Step 8: Official transcript including the junior year. This must be an official transcript and include the school’s seal and/or any signature(s), if required or indicated on the transcript. If the junior year grades are not available before the application deadline, the high school should upload an updated transcript at this link on or before February 17, 2023, 11:59 p.m. It is the nominee’s responsibility to ensure that the junior year grades have been submitted by the school. If junior year mid-term grades will not be available by February 18, the school must notify the program, and indicate the earliest date they can be provided.	High School
Step 9: Official 2022 PSAT Scores. If the most current score is not available by the application deadline and the nominee wishes to have those scores considered, they must be uploaded at this link on or before February 17, 2023 11:59 p.m. , or they will <u>NOT</u> be considered. It is the nominee’s responsibility to ensure that their PSAT/SAT scores have been submitted by their school by the deadline. If the nominee did not take the PSAT in 2022, include the 2021 scores. The nominee may include your SAT or ACT scores if they have not taken the PSAT. If the nominee has not taken either the PSAT, SAT, or ACT, please ensure that <u>the high school principal indicates this on the checklist.</u>	High School

DATES TO REMEMBER

January 13, 2023, 11:59 p.m.: Completed applications must be uploaded by the high school to [2023 GSNJS Application](#) by this date. **APPLICATIONS THAT ARE SUBMITTED AFTER THIS DATE WILL NOT BE CONSIDERED.**

February 17, 2023, 11:59 p.m.: Junior grades/PSAT scores email deadline.

By late February, 2023: If you do not receive the confirmation of your application, please contact us at govschool@drew.edu.

April 14, 2023: You will receive an email announcing the selection committee’s decision.

April 21, 2023, 11:59 p.m.: Commitment email deadline. **IF THE COMMITMENT IS SUBMITTED AFTER THIS DATE, YOUR ACCEPTANCE TO THE GOVERNOR’S SCHOOL MAY BE RESCINDED.**



**2023 GOVERNOR'S SCHOOL PROGRAM IN THE
SCIENCES
at Drew University**

Application Cover Sheet

INSTRUCTIONS FOR ONLINE STUDENT APPLICATION INFORMATION FORM

Student Name (PRINT): _____

Student Email (PRINT): _____

School Name (PRINT): _____

Please visit the Governor's School in the Sciences website at:

<https://drew.edu/governors-school/>

Follow the link to the 2023 Online Student Application Information Form:

1. Complete all fields and click on the "Submit Application Data" at the very end of the form.
2. You will receive a confirmation email immediately following submission. PRINT all the applicant data contained in the email.
3. Attach the printed document to this page.

IMPORTANT DATES

January 13, 2023, 11:59 p.m.
Application deadline

February 17, 2023, 11:59 p.m.
Junior grades/PSAT scores
deadline date

Late-February 2023
If you do not receive the
confirmation of your
application, please contact us.

April 14, 2023
Admissions decisions
announced by email

April 21, 2023, 11:59 p.m.
Commitment forms deadline

July 15 – August 5, 2023
GSS in session

STUDENT AND PARENT CERTIFICATION

___ I am a resident of New Jersey.

___ I expect to be a high school senior in the 2023-2024 school year.

___ I am willing and able to attend the entire Governor's School session.

Signature of Student

Date

This is to certify that I give my permission for the student named above to participate in the Governor's School in the Sciences at Drew University, in full-time residence.

Signature of Parent/Guardian

Date

APPLICATION CHECKLIST

NOMINEE'S CHECKLIST:

INCOMPLETE APPLICATION MATERIALS WILL NOT BE CONSIDERED.

___ Application Cover Sheet,

___ signed by me

___ signed by parent/guardian

___ Online Student Application Information Form,

___ Completed and submitted the online form

___ Printed the confirmation email and attached it here.

___ Application Checklist

___ Signed by me

___ Signed by the principal of my high school

___ List of my extracurricular activities and my extracurricular and academic honors

___ Essay 1

___ Essay 2

___ Two letters of recommendation with original signatures

___ Science Teacher

___ Mathematics Teacher

___ Official high school transcript. If my junior year grades were not included, I will ensure that my school submit them to at this [link](#) by February 17, 2023, 11:59 p.m. once they become available.

___ Copies of my official PSAT (or other standardized test) scores. If my most current PSAT scores were not included, I will ensure that my school submit them to at this [link](#) by February 17, 2023, 11:59 p.m.

___ I am a resident of the state of New Jersey and will complete my junior year of high school in June 2023.

I have reviewed the checklist above, and have included all necessary and appropriate application materials. All of the information submitted as part of my application is factual and truthful to the best of my knowledge.

Name of Nominee (Please Print)

Nominee's Signature

PRINCIPAL'S CHECKLIST:

- The nominee is one of our top students and has expressed a strong interest in the Governor's School in the Sciences.
- Our school has nominated the correct number of students. (If the junior class has 1 – 325 students, 1 nominee is permitted for each Governor's School program. If there are 326 – 650 students, 2 nominees are permitted for each Governor's School program. If there are more than 650 juniors, 3 nominees are permitted for each Governor's School program.)
- The nominee has provided the Application Cover Sheet the printed applicant data from the Online Student Application Information Form, this checklist, a list of activities and honors, and two essays
- I have included the two letters of recommendation
 - Science Teacher
 - Mathematics Teacher
- I have included the nominee's official high school transcript
 - The transcript includes grades from the first marking period of the 2022-2023 school year.
 - I will submit the nominee's junior year grades to at this [link](#) by February 17, 2023, 11:59 p.m.
- For the nominee's PSAT (or other standardized test) scores:
 - I have included the nominee's 2022 PSAT scores or I will submit the nominee's most current scores to at this [link](#) by the postmark deadline of February 17, 2023, 11:59 p.m.
 - The nominee did not take the PSAT in 2022. I have included his/her 2021 PSAT scores.
 - The nominee has not taken the PSAT. I have included the nominee's SAT or ACT scores.
 - No PSAT / SAT or ACT scores are available for this nominee.
- The application package is a single PDF document with the correct name: **Last Name_ First Name_County.pdf (ex. Jones_Mary_Monmouth.pdf)**
- The application will be submitted by the high school, NOT the nominee.
- The nominee is a conscientious, eager student and ranks near the top of his/her class.
- This nominee has not been nominated to more than one Governor's School.
- The nominating high school has kept a copy of this application on file.

I have reviewed the checklist above, and have included all necessary and appropriate application materials. All of the information submitted as part of my application is factual and truthful to the best of my knowledge.

Name of Principal (Please Print) **Principal's Signature**