

Mathematics

Summer Program

Internships

Where might Mathematics take YOU at NSA?
Further than you imagined...

- ❖ Director's Summer Program (DSP)
- ❖ Cryptanalysis and Signals Analysis Summer Program (CASASP)
- ❖ Graduate Mathematics Program (GMP)



NSA

IntelligenceCareers.gov/NSA

About the Summer Programs

The NSA has summer opportunities for undergraduate and graduate students majoring in mathematics or statistics. Applicants must be enrolled as full time students when the application is submitted. Due to the lengthy processing required, applications must be received by October 15th each year. To initiate your application, visit www.intelligencecareers.gov/nsa.

Director's Summer Program (DSP)

The DSP provides a summer opportunity to outstanding undergraduate mathematics majors. We invite 25 students who have demonstrated superior mathematical aptitude to collaborate with each other and NSA mathematicians on problems critical to the intelligence gathering and cybersecurity missions of the Agency. A full year of abstract algebra and analysis is strongly recommended. Some experience in computer programming, especially in C, Python, and in mathematical software packages is desirable.

DSP participants work on problems in mathematics, cryptology, and communications science that involve applications of abstract algebra, geometry, number theory, probability, statistics, combinatorics, graph theory, algorithms, computer science, and analysis. Each student chooses one of these problems as the focus of their research and documents the work in technical papers which are internally published at NSA.

Cryptanalysis and Signals Analysis Summer Program (CASASP)

The CASASP gives undergraduate mathematicians and computer scientists a chance to contribute to mission-essential technical operations. We invite 12 students to learn, use, and further our tradecraft while working on operational problems of national importance. The problems involve applications of math, statistics, computer science, reverse engineering, and software development with results integrated into production systems for new capabilities.

The CASASP is seeking students majoring in mathematics, computer science, or related engineering fields that have a year of mathematics beyond calculus and some programming experience. Experience in C, C++, Java, Python, or some mathematical software package is desirable.

Graduate Mathematics Program (GMP)

The GMP provides an opportunity for exceptional mathematics and statistics graduate students to work directly with NSA Mathematicians on mission-critical problems and experience the excitement of the NSA mathematics community.

Applicants should have demonstrated superior mathematical aptitude and problem-solving skills. Evidence of successful work on an independent project in pure or applied mathematics, statistics, data science, or computer science is desirable. Applicants may be at any stage in their graduate careers or intending to work in any area of mathematics or statistics. Computer programming experience, especially Python, C, or C++, is desirable.

GMP participants work on problems involving math, statistics, data analysis, cryptology, and communications technology and document their work in technical papers which are internally published at NSA.

Summer Hiring Process

NSA summer internships are 12-week programs held in Fort Meade, MD from late May through mid-August. Students will receive annual, sick, and federal holiday leave, and are paid a competitive salary based on education level. Subsidized housing is available.

In addition to applying online at www.intelligencecareers.gov/nsa, the below items must be emailed to mathsummer@nsa.gov or sent via postal mail by October 15th to complete the application submission process:

- **Resume or CV**
- **Transcripts of college and university coursework, including community college (official or unofficial accepted)**
- **Two letters of recommendation from faculty members familiar with your technical work**
- **List of courses that will be completed by the end of the academic year**

National Security Agency
9800 Savage Road
Suite 6844
Fort George G. Meade, MD 20755-6844
ATTN: R1 (Name of Internship)

CAREERS AT THE NATIONAL SECURITY AGENCY

Mathematics Development Program (MDP)

- Algorithm Development
- Cryptologic Mathematics
- Machine Learning
- Signals Analysis
- Data Compression
- Network Vulnerability Analysis
- Cyber Security



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WHERE INTELLIGENCE GOES TO WORK[®]

About the Program

Newly-hired Mathematicians and Statisticians begin their careers in one of three Math Development Programs: the Cryptologic Mathematician Program (CMP), the Applied Mathematics Program (AMP), or the Cyber Assurance Mathematics Program (CAMP). These three-year programs share a common goal: to produce Mathematicians and Statisticians who are broadly knowledgeable in the spectrum of mathematical sciences used at NSA.

As new communication technologies emerge, so will new challenges for Mathematicians and Statisticians at NSA. They must work with others in STEM, information assurance, cyber security, and other disciplines. No description of mathematics at NSA can ever be final and complete.

Program Requirements

During these three-year programs, each participant will study cryptologic mathematics and related subjects in NSA-taught classes and complete rotational assignments to build skills in specific mission-related competency areas.

While there is no requirement for any previous programming experience, at NSA you must learn to use computing platforms effectively. Upon conclusion of the three-year program, each graduate will place in an office relating to the program's core competencies based jointly on the needs of the mission and the participant's preferences.

Qualifications

Minimum acceptable to be considered for the position:

- Bachelor's, Master's, or Doctoral degree in Mathematics, Statistics, Physics, or Computer Science is preferred
- 24 credit hours of advanced mathematics and/or statistics

The following skills are desired:

- Programming
- Experience in the design, development, use, and evaluation of mathematics models, methods, and/or techniques (e.g., algorithm development) to study issues and solve problems

Salary

Offers are based on education level and years of relevant experience.

How to Apply

NSA has a rigorous application process for all applicants. All applicants must submit a resume using our online application system.

To apply to the **Mathematics Development Program (MDP)**:

- Navigate to **IntelligenceCareers.gov/NSA**.
- Click **Search NSA Jobs**.
- Select **Mathematician** or **Mathematical Statistician** and click **Apply**.

In addition to applying online, applicants must submit a resume and all college transcripts to **mathjobs@nsa.gov**. Questions regarding the program can also be sent to this email address.

NSA is unique in its ability to offer the opportunity to work in diverse areas of applied mathematics. The primary responsibility of NSA Mathematicians and Statisticians is to solve problems associated with signals intelligence (the interception, collection, and analysis of foreign signals) and information security (assuring confidentiality, integrity, and availability of information).

In addition to cryptologic mathematics, Mathematicians and Statisticians work in data compression, machine learning, data science, speech/image/video processing, signals analysis, human language technology, network vulnerability analysis, and cyber security. They bring a wealth of expertise including, but not limited to, number theory, finite field theory, coding theory, Fourier analysis, graph theory, probability, and statistics.

For more information or to apply online, visit

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U.S. citizenship is required for all applicants. NSA is an Equal Opportunity Employer and abides by applicable employment laws and regulations. All applicants for employment are considered without regard to race, color, orientation, or status as a parent.