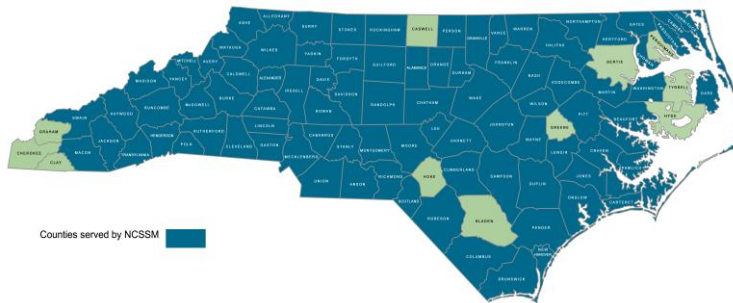


About:

The North Carolina School of Science and Mathematics (NCSSM) was the first school of its kind in the world, a publicly funded, residential high school where students study a specialized curriculum emphasizing science and mathematics.

NCSSM is a constituent institution of the University of North Carolina and annually serves 680 11th and 12th grade students from across North Carolina in its residential program and an additional 800 plus students from across the state through its distance education programs. NCSSM also provides science and math enrichment opportunities for K-12 students across the state, along with providing course content and professional development for teachers throughout North Carolina.



Key Facts and Statistics:

- NCSSM serves a diverse student body from across the state of North Carolina. For the 2015-2016 academic year NCSSM has students from 89 of the state's 100 counties enrolled in its residential and online programs.
- NCSSM graduates more than 99% of its students all of whom are admitted to 4-year colleges and universities.



Best Practices for Closing the Excellence Gap:

NCSSM's mission is to serve talented students from across the state of North Carolina and to advance public education in the state. NCSSM has a number of programs and practices targeted to providing talented students from diverse backgrounds and resources with opportunities to succeed at NCSSM, or in rigorous STEM courses at their own high schools. These efforts include:

- Step Up to STEM

Step Up to STEM is a grant-funded program begun by NCSSM to provide talented, rising 9th grade students from underrepresented populations with a rigorous, integrated academic STEM summer experience. Students selected for the program live on NCSSM's campus for two weeks in the summer and attend math, science, and engineering courses on campus. Students also learn and apply research skills in each area. Following the summer program, NCSSM faculty work with the students to identify mentors in their home community where they can continue their research experience during their 9th

grade year. The program's goals are to help prepare students to take and succeed in honors and AP-level STEM courses at their high schools and to help prepare them to be successful applicants for NCSSM.

- Summer Bridge Program

NCSSM began the Summer Bridge Program two years ago. This program provides an intensive, three-week program for students who are incoming juniors at NCSSM. Students are identified for the program based on a variety of factors that include SAT scores and NCSSM math placement scores. Approximately 60 students are identified each year and are invited to participate in the program. The program provides intensive coursework in math, the humanities (with a particular focus on writing), and research skills. The program also provides sessions on how to be successful living in the NCSSM residential environment. The goal of the program is to give students who are enrolling at NCSSM a jump-start to set them up for success.

- Summer Leadership and Research Program

This program provides an intensive one-week residential summer program for incoming junior under-represented minority students. The goals of the program are to introduce the students to research in STEM-related fields and to encourage them to pursue one of the research pathways at NCSSM. Another goal is to acclimate the students to the academic and social environment at NCSSM and to cultivate leadership competencies in the students.

- Digitally Enhance Integrated Math I

This is a partnership between NCSSM and the Northampton County Schools (NCS) and that is generously funded through a grant from the Jack Kent Cooke Foundation. This program provides Integrated Math I instruction through interactive video conferencing (IVC) to low-income middle school students in Northampton County. Students receive instruction in the Integrated Math I course from a NCSSM instructor through IVC. A teacher from Northampton County is also in the classroom co-teaching as a way for the teacher to receive professional development. The digital materials used in the course will be made available to all math teachers in NCS, and across the state, at no cost. The goal of the partnership is to provide opportunities for talented, low-income students to receive high-quality instruction in Integrated Math I in 8th grade, so that they will be on track to take, and be successful in, AP Calculus BC in the 11th grade.



Best Practices for Preparing Students to Succeed in STEM Careers

NCSSM's mission states that NCSSM will prepare students to be state, national, and global leaders and innovators in STEM. The academic and residential experience at NCSSM includes many components that help prepare students to be able to meet this mission. Core to the academic program is a focus on preparing students to be independent, critical thinkers who are able to apply knowledge creatively to solve real-world problems. Whether in humanities, math, engineering, or science classes, students experience hands-on, inquiry based learning environments that prepare them well for success in college and beyond. Two areas of NCSSM's academic program highlighted below are:

Engineering and Computer Science

The goal of NCSSM's engineering curriculum is two-fold. First, to provide a hands-on, real-world learning experience through gateway courses that enable students to explore a variety of fields of engineering, learn fundamental problem-solving skills, and help inform their decisions about college majors and professions. Second, to provide students the opportunity to take college-level engineering courses, which will give them a head start on the intensive undergraduate engineering programs, should they decide to pursue an undergraduate degree in engineering. The school's newest academic department, it also host the school's newest lab facility, the [Peter T. Haughton Fabrication and Innovation Lab](#).

NCSSM's computer science courses provide students with a range of opportunities from foundations in computing to advanced programming where students learn Java, Python, C++, databases, and web development.

Student Research and Mentorship Opportunities

NCSSM offers a broad array of research opportunities, ranging from courses that introduce students to the research process and provide the opportunity to complete a research project, to multi-term advanced research courses where students conduct research with faculty on campus or with researchers at universities. The goal of these opportunities is to engage students in real-world learning experiences to further develop knowledge in a field of study and to be hands-on as they progress through their projects. Students have opportunities to present their research in a variety of settings, including the NCSSM Research Symposium and national and international research competitions.

NCSSM offers the following opportunities for students to participate in research:

- **Research Experience:** a one-term course where students develop research skills while completing a research project in an area of study that they choose from the following disciplines: biology, chemistry, physics, engineering, humanities.
- **Mentorship:** a three-term course where students develop research in any chosen field of study. Students take the lead in identifying a researcher at a local university or other real-world setting to serve as their mentor as the student develops research skills through working on an independent project, or a part of an ongoing project.
- **Research Courses:** a four-term course where students initiate, or continue, an in-depth research project of their own design. Students may participate in courses in the following disciplines: biology, chemistry, physics, computational science, engineering, mathematics, humanities. NCSSM faculty teach these courses, however, students may also conduct their research with a mentor in a university setting.
- **Summer Research Internship Program:** online and residential students participate in a 5-week, intensive research/internship program while living on campus during the summer. Students in the program conduct research on-campus with NCSSM faculty, or travel off-campus to engage in a hands-on research/internship with a professional in a university, company, or non-profit. All students present their work at the NCSSM Summer Research Symposium.