

# SCIENCE, MATHEMATICS, TECHNOLOGY, ENGINEERING

## AND STRATEGIES THAT ENGAGE MINDS



The SMT Center believes that STEM is more than Science, Technology, Engineering and Mathematics. It's **Strategies That Engage Minds™** through hands-on, active involvement in science, technology, engineering and mathematics education.

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The common assumption for the acronym STEM is for the disciplines of science, technology, engineering, and mathematics. While these are critical fields of endeavor, we know that everyone will not become a scientist, a mathematician, an engineer, or a computer programmer. What we can do is provide students with a method of thinking to enable them to problem solve, creatively explore options, and to engage innovatively. This is why the SMT Center refers to STEM as **Strategies That Engage Minds™**.



North Carolina Science,  
Mathematics, and Technology  
Education Center

[ncsmt.org](http://ncsmt.org)



[www.ncsmt.org/competitions/overview](http://www.ncsmt.org/competitions/overview)

can be a fun way to hone important skills, meet students from other schools, and maybe even garner recognition or scholarships. What follows is just a sample of the many opportunities available to students—many more local, state, and national competitions exist. For a list of competitions, see [www.ncsmt.org/competitions/overview](http://www.ncsmt.org/competitions/overview)



## AMERICAN INDIAN SCIENCE AND ENGINEERING SOCIETY COMPETITIONS

[aises.org](http://aises.org)

AISES engages in a multitude of programs that aim to ensure students are given exposure to first-rate STEM programs. AISES has competitions that allow students to do hands-on science; conduct research; and interact with professional role models in STEM.

## AMERICAN REGIONS MATHEMATICS LEAGUE

[arml.com](http://arml.com)

ARML is a national contest that tests the ability of high school students to solve various mathematics problems as a team and individually.

## eCYBERMISSION

[ecybermission.com](http://ecybermission.com)

eCYBERMISSION is a web-based STEM competition for students in grades six through nine that promotes self-discovery and enables all students to recognize the real-life applications of STEM. Teams of three or four students are instructed to ask questions (for science) or define problems (for engineering), and then construct explanations (for science) or design solutions (for engineering) based on identified problems in their community. Students compete for State, Regional, and National Awards.

## ENVIROTHON

[ncenvirothon.org](http://ncenvirothon.org)

Envirothon is a competitive event for 5-member teams to compete in a natural resources knowledge and ecology field day against other school teams. It stimulates, reinforces and enhances student's interest in the environment and our state's natural resources. The competition includes both middle and high school teams.

## FIRST

[ncfirstrobotics.org](http://ncfirstrobotics.org)

FIRST® (For Inspiration and Recognition of Science and Technology) inspires young people's interest and participation in science and technology by engaging them in exciting Mentor-based programs that build STEM skills, inspire innovation, and foster well rounded life capabilities including self-confidence, communication, and leadership.

FIRST Robotics Competition for ages 14-18 (Grades 9-12)  
FIRST Tech Challenge for ages 12-18 (Grades 7-12)  
FIRST LEGO League for ages 9-16 (Grades 4-8)  
Junior FIRST LEGO League for ages 6-9 (Grades K-3)

## FUTURE CITY

[futurecity.org/north-carolina](http://futurecity.org/north-carolina)

Future City starts with a question—how can we make the world a better place? To answer it, 6th, 7th, and 8th grade students imagine, research, design, and build cities of the future that showcase their solution to a citywide sustainability issue. Future City is a cross-cultural program that lets students do the things engineers do: identify problems, brainstorm ideas, design solutions, test and retest, build and then share the results. Students present their solutions via a virtual city design (using SimCity); a 1,500-word city description; a scale model; a project plan, and a presentation to judges.

## MATH COUNTS

[mathcounts.org](http://mathcounts.org)

MATHCOUNTS® is an enrichment, coaching and competition program that promotes middle school mathematics achievement through grassroots involvement in every U.S. state and territory. N.C. has state coordinators that provide support.

## NATIONAL YOUTH CYBER DEFENSE COMPETITION

[uscyberpatriot.org](http://uscyberpatriot.org)

Teams of middle and high school students are tasked with managing the IT network of a small company. Teams must find cybersecurity vulnerabilities and harden the system while maintaining critical services in a six-hour period. Top teams advance to the national finals.

## NCDOT MODEL BRIDGE BUILDING COMPETITION

[ncdot.org/about/kids/bridgecomp](http://ncdot.org/about/kids/bridgecomp)

NCDOT Statewide Model Bridge Building Competition gives students an opportunity to learn problem-solving strategies and utilize critical thinking skills, while making the connection between what is taught in the classroom and real world applications. Working in teams, students look at the methods of brainstorming ideas, designing a diagram, constructing the model and have the satisfaction of presenting the results of their ideas to a panel of judges.

## NC INTERNATIONAL SCIENCE CHALLENGE

[ncsmt.org/prog.ncisc.html](http://ncsmt.org/prog.ncisc.html)

NCISC is a yearly N.C. science competition for high school students. The selected students travel to Beijing, China to present their science research projects at the Beijing Youth Science Creation Competition. The competition requires students to undertake a research project, write an abstract explaining their research problem and present their research to a panel of scientists and engineers. The students selected spend a week in Beijing presenting their research, meeting students from other countries, and experiencing various cultural and scientific events. The NCISC is offered jointly by the North Carolina Science, Mathematics and Technology Education Center (SMT Center) and the Morehead Planetarium and Science Center.

## NC JUNIOR SCIENCE AND HUMANITIES SYMPOSIA

[jshs.org/regions/ncarolina.html](http://jshs.org/regions/ncarolina.html)

JSHS invites high school students to conduct an original research investigation in the sciences, engineering, or mathematics, and to participate in a regional symposium sponsored by universities or other academic institutions.

## NC MATH CONTEST

<https://sites.google.com/site/statemathcontest>

State Mathematics Contest provides state level competition in comprehensive math for those students who excel in regional contests held across the state. Students that excel in one of the 12 comprehensive test sites are invited to participate in the State Math

Contest. These competitions are held in the subject areas of Algebra I, Geometry, and Algebra II, and there is a Comprehensive Exam for more advanced students. Students can participate individually or as member of a team of three to five students, depending on local contest rules.

## NC MATH FAIR

[ncctm.org/resources-activities/math-fairs](http://ncctm.org/resources-activities/math-fairs)

NC Council of Teachers of Mathematics sponsors three regional math fairs and a state math fair each spring. Students in Grades K-12 prepare posters to display and discuss with judges at the regional math fairs. Winning projects advance to the state math fair.

## NC SCIENCE AND ENGINEERING FAIR

[ncsciencefair.org](http://ncsciencefair.org)

NCSEF provides an opportunity for students to display the results of their work in science and technology. The fairs are an exhibition of scientific projects prepared and presented by students under the guidance of their teachers and with the help of others interested in science and engineering. Students learn to recognize problems, plan experiments, gather and analyze data, and draw conclusions. Fairs are held locally, regionally and statewide with statewide winners going to ISEF.

## NC SCIENCE OLYMPIAD

[sciencenc.com](http://sciencenc.com)

NCSO involves teamwork, group planning and cooperation, and an emphasis on rich conceptual learning through active, hands-on group participation. Through NCSO, students, teachers, coaches, principals and parents are all bonded together as a team working towards a goal. NCSO seeks to provide an alternative to the "isolated scientist" stereotype and remind students that science can be fun, exciting and challenging at the same time. NCSO has 11 regional contests and a statewide tournament. Statewide tournament winners go to the national finals.

## NC STUDENT ACADEMY OF SCIENCES

[ncsas.org](http://ncsas.org)

NCSAS fosters interest and excitement in science research among North Carolina students from 6th grade through 12th grade. Schools can form a science club for students who are interested in research or students can join as individuals. Each year students presenting the best research papers are sponsored as delegates to the annual meeting of the American Junior Academy of Science held concurrently with the American Association for the Advancement of Sciences meeting.

## NC TECHNOLOGY STUDENT ASSOCIATION

[nctsa.org](http://nctsa.org)

Technology Student Association is a national competitive student organization for Technology Education. Competitions are held regionally, statewide and nationally. Competitions exist for middle and high school students.

# NORTH CAROLINA STEM COMPETITIONS