Welcome

Overview of Programs

- Governor’s School for Science & Technology (GSST)
- Pre-Admissions Informational Series Program (PAS)
Program Model

- Two year / Half-Day Program
- High achieving/ gifted 11th & 12th graders
- STEM and Scientific Research Focus

Morning Session: 7:10 A.M. - 10:30 A.M.
Gloucester, Hampton, Poquoson, WJCC

Afternoon Session: 11:20 A.M. - 2:35 P.M.
Isle of Wight, Newport News, York
ACADEMIC STRANDS

- Physics - Engineering
- Biological Science
- Computational Science & Engineering
Engineering Strand

- Provides solid foundation in calculus-based physics & engineering design principals
- Excellent opportunity for students interested in any aspect of physics, mathematics and engineering
- Students must be ready for Calculus in 11th grade
ENGINEERING - PHYSICS

CALCULUS BASED ENGINEERING PHYSICS

Senior Engineering Design

Engineering is a CREATIVE DISCIPLINE

Learning in project-oriented, integrated STEM courses, students at GST discover that engineering is a CREATIVE DISCIPLINE. They learn that the professional engineer uses knowledge and his or her state of the art knowledge to solve problems and create opportunities.

Tippe-Top Engineering Design Challenge

In one project, students designed a Tippe-Top, a spinning top that spins itself over and spins on its rim. Students used calculus-based kinematics, linear momentum, and centripetal force to design and refine their final products. Optimal design objectives included minimizing the landing time and weighing the least amount.

Modern Physics

Students also study Modern Physics in the Engineering Strand. In one laboratory, students determine the value of the Planck's constant by analyzing the light frequency and photon energy of various color light emitting diodes. Planck's Constant, a foundation discovery in the development of the quantum theory of matter, appears throughout the discipline of quantum mechanics.

Students investigate LED performance to determine Planck's constant.

Students observe and analyze new product design performance.
Biological Sciences Strand

- Provides an advanced understanding in biology, chemistry, and environmental sciences

- Excellent opportunity for students interested in medicine, veterinary medicine, and environmental issues
Governor’s School Biological Sciences Strand

Advanced Biological Analysis

Using various experimental systems, the biology classes have been studying some of the most critical processes taking place within the cells of living organisms. Currently studying metabolism, they have conducted experiments to optimize enzymatic activity of cellulase, an enzyme involved in the production of biofuels. Students first set up and tested a system using a color-producing reaction quantified by spectrophotometry. Then, each pair designed a novel experiment to study an environmental condition for its effects on the rate of the reaction. Ultimately, optimum conditions for cellulase activity will be discerned by evaluating the collective data.

Students usually spend more than four hours in lab each week.

Students also constructed simple respirometers to study the rate of respiration of test organisms, such as germinating seeds and beans. Again, the results of independently designed experiments conducted by each lab pair will be compiled for the whole class in order to more fully understand the types of organisms and conditions under which respiration occurs most readily.
Biological Sciences Strand
Advanced Biological Analysis
Advanced Biological Analysis
Advanced Chemical Analysis
Advanced Chemical Analysis
Advanced Chemical Analysis
Advanced Chemical Analysis
Computational Science & Engineering Strand

- Provides a solid foundation in physics, modeling & simulations, and computer programming languages (Python, Java & C++)
- Algebra based physics
- Excellent alternative to the calculus-based physics - engineering strand
College Mathematics – Gatekeeper

- 2 Math courses (College Level) - 11\textsuperscript{th} grade
  - Pre-calculus
  - Calculus

- 3 Math courses (College Level) - 12\textsuperscript{th} grade
  - Calculus
  - Multivariable Calculus & Linear Algebra
  - Statistics
  - Differential Equations
Research Methodology & Ethics
(Junior year)

Solid Foundation Scientific Research
- Hands-on activities
- Critical thinking skills
- Data collection & analysis
- Ethics & Statistics

Present Research Project
- Tidewater Science & Engineering Fair
- Virginia Junior Academy of Science (VJAS)
- Virginia Junior Academy of Science Humanity Symposium (VJASHS)
- Virginia State Science & Engineering Fair
Honors Research & Mentorship
(Senior year)

Outside of School - approx. 5 hrs. / per week

- Conducting research
- On-site at institution & business
- In area of science interest
Senior Mentorship
Scientific Research Journal

Mentorship Symposium - May

- Final Research Paper Presentation
- Judged By Panel of Professionals
- Student’s field of research
Orion Test Flight

Team ARES: Anna Montgomery, Christopher Dobyns – HCPS, Daniel McNamara, Sajan Sheth, Abid Rizvi – YCPS; Greg Hajos, Team ARES’s Mentor - NASA Retiree
Capstone Mentorship

- Hampton University: Medical Research, Electrical Engineering, Psychology
- Jeff Lab: Engineering, Physics
- Mary Immaculate: Emergency Medicine
- Riverside Hospital: Emergency Medicine
- Sentara: Emergency Medicine
- NASA: Engineering, Aeronautical, Materials Engineer
- VIMS: Ecology, Marine Science
- Tidewater Heart Institute: Cardiology
- CNU: Environmental Science, Computer Science
- Virginia Living Museum
GSST Competitions

- Virginia Science Bowl
- Blue Crab Bowl
- Tidewater Science Fair
- VJAS: Virginia Junior Academy of Science
- VJSHS: Virginia Junior Science & Humanities Symposium
- Academic Challenge and Knowledge Master
- CNU Mathematics Contest
- Great Computer Challenge
GSST Student Activities

- NCSSSMST - National Consortium of Specialized STEM Schools
- Spring Break Trip – Costa Rica
- AYGS Reception in Richmond
- Recycling Club
- Student Advisory Board
- Yearbook Club
Transportation - provided by school divisions @ designated time only.

No cost - GSST parents / students

No cost - Dual enrollment TNCC
Pre-Admissions Information Series (PAS) Application Process

8th & 9th Graders

- Download Applications [www.nhrec.org](http://www.nhrec.org)
- PAS Applications available at MS / HS School Counselor offices
- Return applications to School Counselor by January

May Notification - PAS Program
GSST
On-Line Application Process
(10th Grade)

- Current 10th graders apply on-line
  @ www.nhrec.org

- On-line student page completed ASAP – February
GSST Admission Criteria

- GPA & Class Rank
- Most rigorous math & science courses offered in school division
- Teacher recommendations: math & science
- PSAT / SAT / ACT Scores

Notification: Mid April - 10th Grade Year
Purpose

Pre-Admission Series (PAS) Program

Educate students/parents about...

- GSST program model
- Features of Academic Strands
- Course Prerequisites for Strands
- Educational Consultant- College Planning program
Mrs. Vikki Wismer, Director

vikki.wismer@nhrec.org

web site: http://nhrec.org/gsst/

Thank you for attending!