Virginia Aerospace Science and Technology Scholars (VASTS)
Modeled after the highly successful Texas Aerospace Scholars Program and through a Memorandum of Understanding with Johnson Space Center and Langley Research Center, VASTS uses the High School Aerospace Scholars’ curriculum developed by NASA Johnson Space Center.
A partnership between Virginia Space Grant Consortium and NASA Langley Research Center with support from the Virginia Department of Education, the Commonwealth of Virginia, and industry.
Program Background

- Innovative and exciting NASA-based science, technology, engineering, and mathematics (STEM) education program for high school juniors in Virginia
  - Online course
  - Week long residential Summer Academy
- VSGC has received competitive grants, state, and industry support to sustain the program
- Students will be longitudinally tracked for 6 years.
Course Overview

- An engaging NASA/JSC-developed online course with a Space Exploration theme
- Students receive up to 2 college credits
- Teaches broad range of science, technology, engineering, and math (STEM) concepts
- Fosters the STEM workforce pipeline and aerospace-related career options
VASTS Online Course

- Two credits from Thomas Nelson Community College - MEC 195 Intro to Aerospace Engineering
- 10 modules with topics including:
  - NASA History
  - Space Shuttle
  - International Space Station
  - Lunar Exploration
  - Mars Geology, Exploration, Colonization
- Topically relevant forum discussions with:
  - Peers
  - NASA Mentors and industry representatives
  - Master Teachers
- Comprehensive final project

Virginia Space Grant Consortium
VASTS Online Course

- Module Components
  - Reading content
  - Interactive links
    - Simulations
    - Videos
  - Design Activities
  - Essays
  - Math/Physics Problem
  - Case Studies
  - Topic related forum discussions
VASTS Online Course

- Online course management system – Moodle
- Open source software – free
- Generates student reports – tracks and logs user activity
- Interfaces with Excel
- Mark Fischer, National Space Grant Foundation
  - IT and Moodle Administrator
  - Student and Master Teacher applications
  - Designs system to generate automatic notifications, reminders, and updates
- VSGC has arranged for college credit for student participation through a local community college; high school dual-enrollment rate of $15 per credit hour
VASTS 2008/2009

- **Online Course**
  - 166 students online
  - 135 successfully completed course
  - 92% course average
  - 2 credits from Thomas Nelson Community College
    - MEC 195 – Intro to Aerospace Engineering
  - Target for 2010 is 400 students enrolled statewide
VASTS Online Course

Staffing required:

- Program Coordinator, with administrative support
- Master Teachers
Master Teachers

- Receive full day of training at VSGC in Hampton
- Facilitate online coursework
- Direct interaction with students
  - Forum discussions, emails, synchronous chats
  - 1:25 Student/Teacher ratio at VSGC; JSC has higher student/teacher ratio
- Provide evaluation, feedback, assessment of student work
- Input of student evaluation data into Moodle
- Paid as consultants
Marketing

- Statewide effort
- Direct mailings
- Flyers
- Posters
- Targeted school/school division visits
- Phone calls
- Professional conferences
- Press releases
- Student Ambassadors
- Facebook
Collaboration

- JSC Texas Aerospace Scholars
  - Communication
  - Sharing of information, resources, updates
  - Trips to experience TAS programs
- Nebraska Space Grant Consortium
  - Two meetings in 2009 to share VASTS program information
- Idaho Department of Education
  - Barbara Morgan – planned video conference in October
- Collaboration with individual schools and divisions to incorporate online coursework into core school curriculum
NASA Johnson Space Center has generously agreed to allow other Mid-Atlantic Space Grant states to use its Aerospace Scholars coursework.

VSGC would assist other Space Grants with Master Teacher training and use of Moodle software to access and manage the course.
Budget Estimates for
Course Implementation by State Space Grants

- $5,000 (estimate) for IT/Moodle consultant (Mark Fischer, National Space Grant Foundation)
- $1,650 per Master Teacher for online coursework
- Staff costs for administration, coordination, marketing
- Travel costs for 2 days to VSGC for Master Teacher training

Exclusive of staff costs, online course for about 100 participants should be about $15,000
VASTS Scholar Comments

“I will definitely be recommending this to rising juniors at my school. I had a great time and I’ve learned a lot!”

“The program is definitely worth the time invested in it. If you put your hard work into it, good results would occur. I would recommend it to anyone interested in Aerospace Engineering.”

“This is an absolutely amazing course. I enjoyed every minute I spent with it. All the great teachers and bright fellow scholars created a comforting and intelligent [learning] environment.”
Virginia Aerospace Science and Technology Scholars

A NASA-based science, technology, engineering and mathematics educational program for high school juniors in Virginia.

Virginia Space Grant Consortium