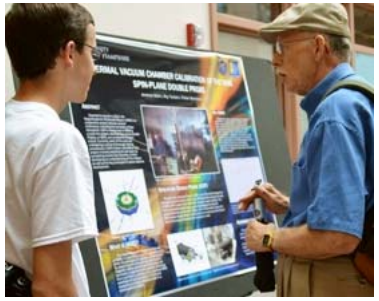
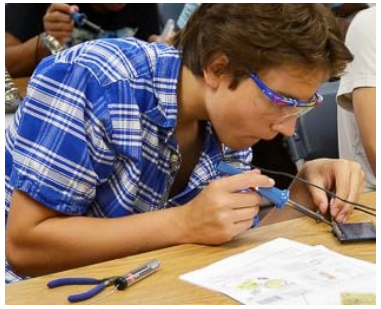


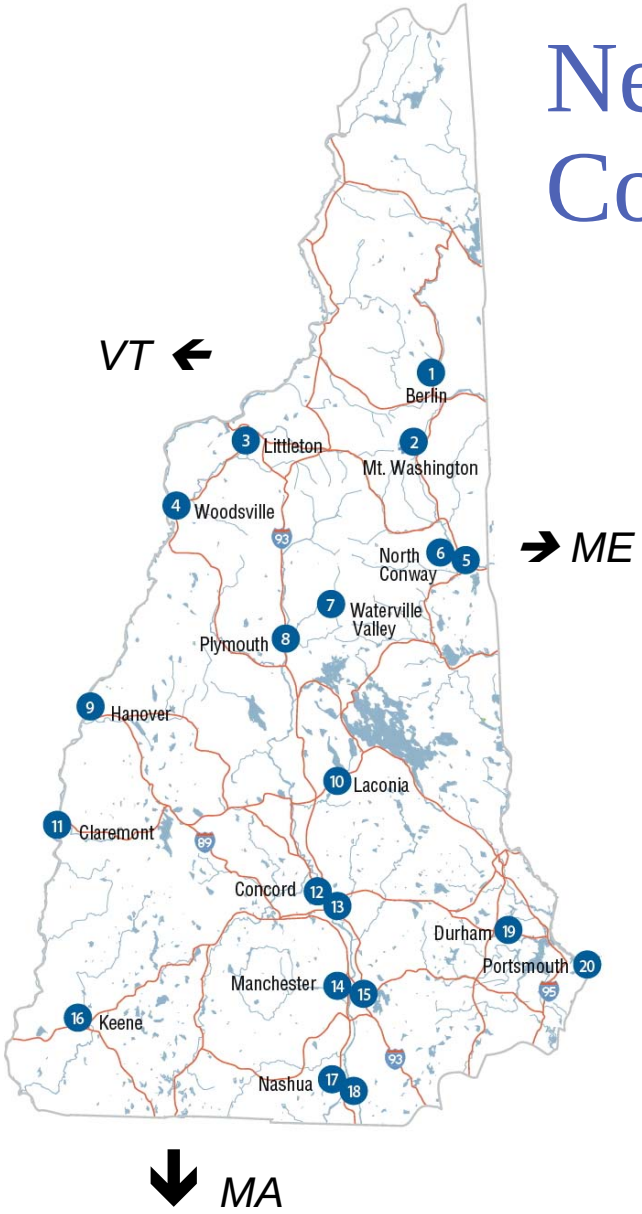


New Hampshire Space Grant Consortium

Antoinette Galvin,
Director

David Heirtzler,
Assistant Director

New Hampshire Space Grant Consortium



NH SPACE GRANT CONSORTIUM AFFILIATES

1. White Mountains Community College, Berlin
2. Mount Washington Observatory, Mt. Washington
3. White Mountains Community College, Littleton
4. White Mountains Community College, Woodsville
5. White Mountains Community College, North Conway
6. Mount Washington Weather Discovery Center, North Conway
7. Margret and H.A. Rey Center, Waterville Valley
8. Plymouth State University, Plymouth
9. Dartmouth College, Hanover
10. Lakes Region Community College, Laconia
11. River Valley Community College, Claremont
12. NH Technical Institute, Concord
13. McAuliffe-Shepard Discovery Center, Concord
14. FIRST, Manchester
15. Manchester Community College, Manchester
16. River Valley Community College, Keene
17. Nashua Community College, Nashua
18. BAE Systems of N.A., Nashua
19. University of New Hampshire, Durham
20. Great Bay Community College, Portsmouth

New Hampshire Space Grant Consortium

NASA

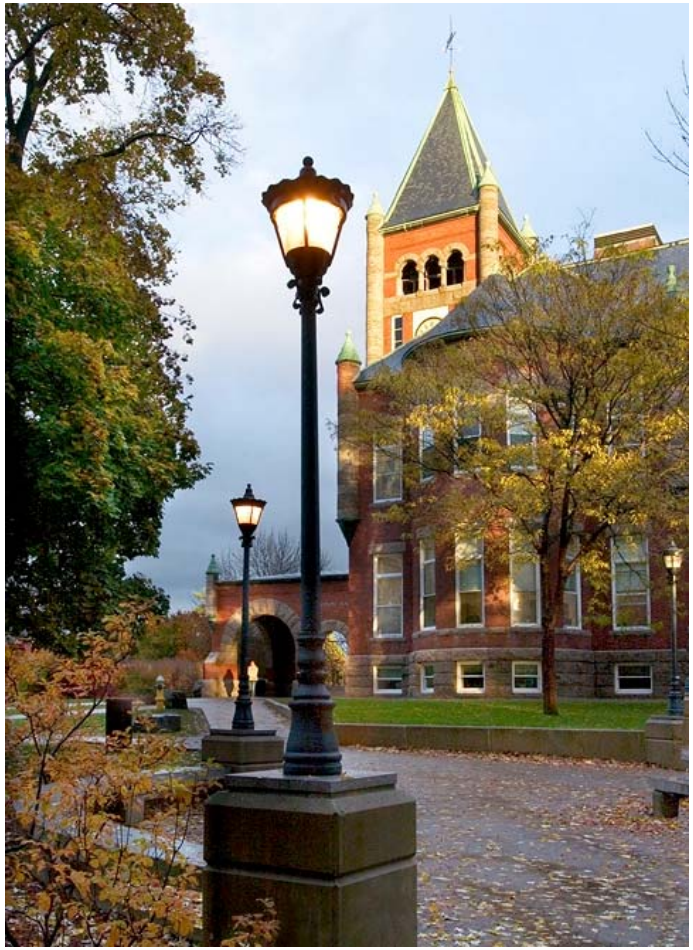
New Hampshire Space Grant Consortium

Introducing:

Mr. David Heirtzler, Assistant Director NHSGC, has a background in Space Physics (M.S.), Software Quality Assurance, Instrument Simulations, and System Engineering

Ms. Natalie Kashi, PhD student in Natural Resources and the Environment program, working in Dr. Ruth Varner's Biogeochemistry and Wetland Ecosystems lab at UNH. Natalie is presenting her research later in this meeting.

New Hampshire Space Grant Consortium



NASA Education Priority:

"Summer opportunities for secondary students on college campuses with the objective of increased enrollment in STEM disciplines or interest in STEM careers"

This priority presents opportunities for both in-state and out-of state student participation on NH college campuses.

•High School Career Day at UNH-Manchester
•Middle School Tech Camp at Community College
•Middle & High School Tech Camps at UNH
•High School Student Summer Research Program at UNH

WIST Women In Science and Technology

NH Space Grant is sponsoring a FIRST WIST Forum on November 18, 2016 at UNH-Manchester in Manchester, NH.

Registration is now open.

WIST: Women in Science and Technology
FIRST: For Inspiration and Recognition of Science and Technology

This forum is an opportunity for high school girls to learn about careers in science and technology —

directly from professional women in STEM fields of study.

WIST Women In Science and Technology

FIRST Women in Science and Technology Forum for High School Students

Where: *FIRST* Place and UNH Manchester, NH
When: November 18, 2016

Sponsors

New Hampshire Space Grant Consortium

University of New Hampshire at Manchester

This year's *FIRST* Women in Science & Technology (WIST) Forum presented by *FIRST* Place and University of New Hampshire (UNH) Manchester will take place on Friday, November 18, 2016.

The *FIRST* WIST Forum, offered since 2000 to more than 400 attendees every other year, has proven to be a very effective day and networking opportunity for high school students (geared to girls, also relevant to boys) to learn more about careers in science and technology directly from successful women in STEM (science, technology, engineering, and math) fields.

Following the keynote(s), panelists from a wide variety of science, technology, engineering and math fields will give presentations and reflect on their education, careers, field, choices, work history, and what a high school student needs to know today for a rewarding future career in science and technology.

Registration for this event will open September 16, 2016. (https://my.firstinspires.org/WIST/)

Details

- The Forum runs from 8:45 a.m. to 2:00 p.m.
- Breakfast and lunch are included.

Register at:
https://my.firstinspires.org/WIST/

White Mountains Community College

White Mountains Community College, Berlin, NH

STEM-Health Careers camp (grades 6-8)
Provides a week-long camp with hands-on, fun-filled activities that are meant to be introductory, interactive, and project - based in the areas of Science, Technology, Engineering, Mathematics, and Health professions.

In previous years, the students built Lego robotic arms, and went to Androscoggin Valley Hospital where they put on scrubs and got a tour of the operating room. Programs have included a Forensic Science "crime scene", Veterinary Science and Dental Simulator, and wilderness first aid scenario. The camp concluded with rocket building, a rocket launch, and a family lunch.

June 20-24 2016 (9 am-3pm): 22 students participated this past summer

Spend Your Summer Exploring Science and Engineering!

The UNH College of Engineering and Physical Sciences, the UNH College of Life Science and Agriculture, the InterOperability Lab (IOL), the Center for Coastal & Ocean Mapping (CCOM), the Portsmouth Naval Shipyard (PNSY), Maine Missile, Math, and Science Club, and Wildlife Encounters

Residential Tech Camp for Middle and High School Students

UNH-Durham, NH

Typically 1-2 weeks in duration

http://ceps.unh.edu/techcamp

UNH Tech Camp – July 2016, UNH Durham campus

Engineeristas - Girls Grades 6-8: This one-week camp features explorations into environmental engineering, ocean marine engineering, computer science, animation and mechanical engineering and material science presented by female professionals.

51 girls attended: 45 from across **NH**, 4 from **MA**, and 2 from **ME**. 25 campers commuted; 26 stayed in the college dormitory.

TechSplorers - Boys & Girls Grades 6-8: A two-week camp explores electrical, mechanical, civil, environmental engineering along with robotics, animation and computer technology.

56 campers attended – 12 girls and 44 boys. 48 from **NH**, 2 from **MA**, 3 from **ME**, 2 from NY, and 1 from **WY**. 36 campers commuted; 20 stayed in the college dormitory.

TechVenturers - Boys & Girls Grades 8-10: advanced version of TechSplorers.

48 campers attended – 9 girls and 39 boys. 37 from **NH**, 8 from **MA**, 2 from **ME**, and 1 from **AZ**. 24 campers commuted; 24 stayed in the college dormitory.

UNH Tech Camp – July 2016, at UNH Durham campus

TechLeaders - Boys & Girls Grades 10-12: This camp features leadership and entrepreneurship activities for those considering careers in STEM.

13 campers attended – 2 girls and 11 boys. 9 from **NH**, 2 from **ME**, and 1 from **CT**. 8 campers commuted; 5 stayed in the college dormitory.

TechTeachers - Teachers Grades 5-12: TechTeachers provides an individualized learning workshop for middle and high school teachers.

12 teachers attended: 11 from **NH** and 1 from **PA**. The teachers commuted each day.

Space Grant funded three students from the UNH Chapter of the NSBE who developed and taught some of the modules under a UNH faculty mentor

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Science & Mathematics Achievement through Research Training

University of New Hampshire

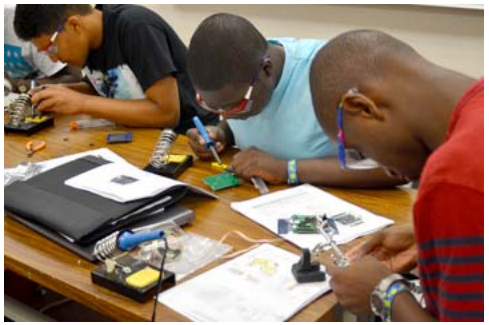
http://www.smart.unh.edu

SMART is a four-week summer institute for high-school students, held at UNH. Students stay in dorms.

Three areas of study:

- Biotechnology and Nano-technology
- Space Science
- Marine and Environmental Science

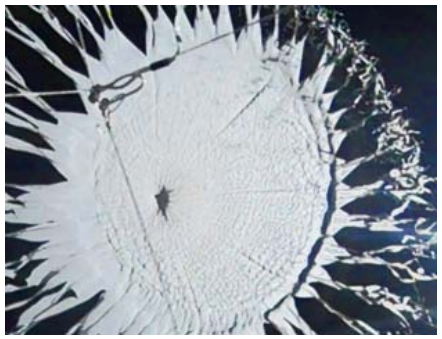
Project SMART
SPACE SCIENCE



The **space science program** includes classroom time, workshops, seminars, research projects with UNH Space Science Center faculty mentors, and a group balloon build.

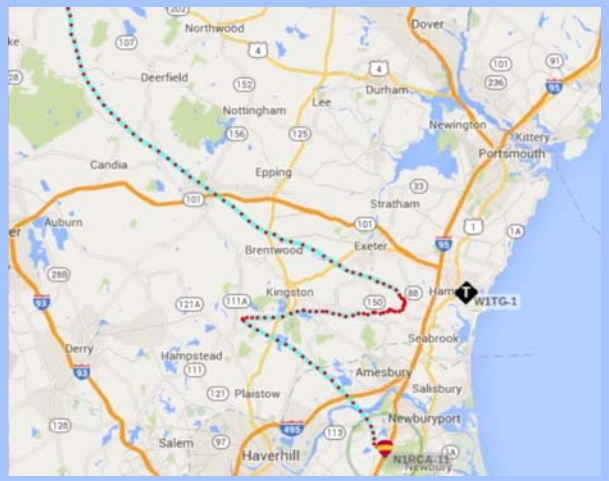
The curriculum focuses on:

- space physics
- studies of inertia
- circuit design and construction
- microcontroller programming
- payload integration



Students do real hands-on activities

Space Science segment culminates in a balloon payload integration and launch



Project SMART
SPACE SCIENCE

At the closing ceremony, each student presents a project poster recapping their research.

Participation this past summer:
24 HS Students in the full program
(**7** in the Space Science Module)
and **3** HS Teachers

Project SMART
SPACE SCIENCE

Space Science module was supported by **8** UNH SSC Faculty and **8** graduate students

Student Research topics included:

- Examination of newly discovered 0.1 Hz waves in the **Voyager** data
- Tests of pickup ion characteristics using **STEREO**
- Study of EMIC waves using **RBSP**
- Prototyping a magnetometer boom for a **Cubesat**
- Two **Balloon** launches: The first failed after about 10 minutes and took all day to recover. The second flew toward Boston and got some very nice stratospheric air samples and infrared measurements of the Earth before landing in MA. Students built the infrared instrument.

- **Balloon https://www.youtube.com/watch?v=MfEXJnj1vFw**