

GEOLOGICAL SCIENCES

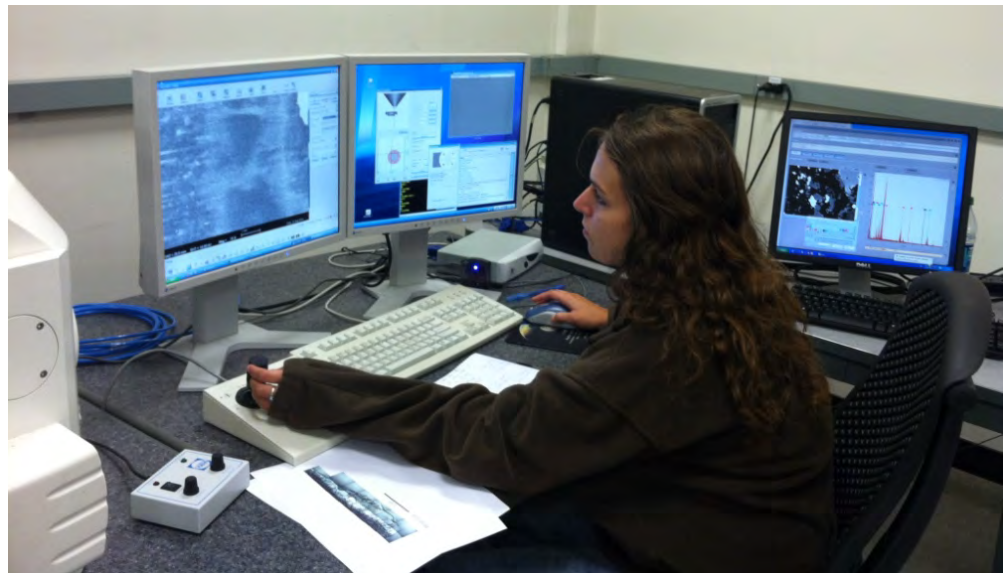
PROGRAM SUMMARY for PROSPECTIVE STUDENTS



Come explore with us



Imagine yourself here



Welcome to the Geological Sciences Program

At CCSU we pride ourselves in providing our students with an academic experience based on:

A hands-on education

Field work is a very important component of our instructional program and is integrated into most courses. Geological Sciences students have many opportunities to participate in field trips that will facilitate the study of earth processes, earth resources, earth history and environments that people have modified.

A research focus

All students have the opportunity to work on active research projects. We highly encourage you to get involved as soon you feel comfortable in your academic program. It is not unusual to have students participate in research in their sophomore, or even freshmen year. So, as you get to know your professors, make your interests known.

We require our students to do a “senior project” as a capstone experience to their degree. This project enables a student to work on under the supervision of a faculty member, write a research report and present the results at a professional conference. This is excellent preparation for graduate school and/or the workplace.

We are always available to answer questions and/or provide a tour of our facilities. Please contact:

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1615 Stanley Street
New Britain, CT. 06050

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Mark Evans, Professor
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Check out our website: <http://www.ccsu.edu/ge> Email: evansmaa@ccsu.edu

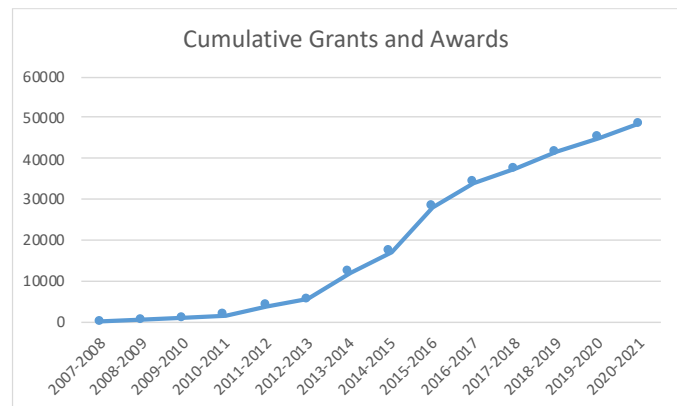
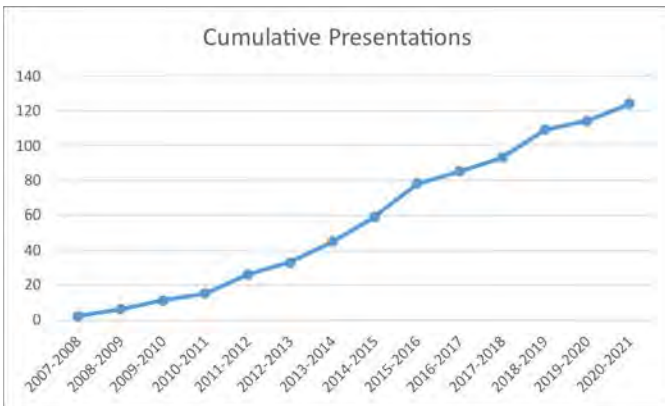
Check out our Blogs: <https://ccsugeologyrocks.1>
<https://ccsuniverse.wordpress.com/>

Check out our Facebook Page: <https://www.facebook.com/ccsugeology/>

Student Success

In the past 13 years our program has grown, evolved and become successful. In the 2019-2020 academic year, and so far in the 2020-2021 academic year, we have again shown impressive accomplishments by Geological Sciences students.

Since 2007, our students have received nearly \$50,000 in scholarships and grants from organizations like: NASA, Environmental Professionals of Connecticut (EPOC), American Institute of Professional Geologists (AIPG), Geological Society of America (GSA), and CCSU. In addition, our students have made 124 presentations at national and regional professional meetings.



In the Past 10 Years, Where Have our Majors Gone....

One Third of our Geological Sciences majors go to Graduate School (in all cases, with all tuition paid and with a stipend, usually \$18,000 to \$20,000 per year).

Upon graduation from CCSU our majors have gone to Graduate Programs in the geosciences at:

Baylor University
Boston College
Bowling Green State University
Louisiana State University
Montana Tech University
New Mexico State University
North Carolina State University
Oklahoma University (3 students)
Penn State University
Portland State University
SUNY Albany
University of Buffalo
University of Connecticut
University of Maine
University of Munster, Germany
University of Nebraska (directly to PhD)
University of New Mexico
University of Rhode Island
University of Tennessee
University of Texas, El Paso (2 students)
University of Vermont
Washington University, St. Louis
Wesleyan University (2 students)
West Virginia University

Over a third of the students who have received their Masters degree have then gone on to PhD programs in the geosciences at:

Arizona State University
Penn State University
Portland State University (2 students)
SUNY Albany
University of Buffalo
University of Houston
University of Maine
University of New Mexico
University of Tennessee (2 students)
Washington University, St. Louis

Two Thirds of Geological Sciences majors go directly into employment with local or national firms such as:

- 3D Imaging, Inc.
- Beta Analytic
- BHP Billerton (after graduate school)
- BL Companies
- AECOM Engineering
- Arcadis Inc.
- ATC Group
- Cadmus Group
- Cardno ATC
- Collins Aerospace
- Connecticut Natural Gas Corp.
- Connecticut Department of Energy and Environmental Protection
- EMSL Analytical, Inc
- Connecticut Department of Public Health
- Corrosion Control Consultants
- Direct Solar Energy
- Directional Technologies, Inc.
- Electric Boat
- Enviromed Services
- Firefly Engineering
- Fuss and O'Neill, Inc.
- Garmin International
- GeolInsight
- Geo SubSea LLC
- General Dynamics Electric Boat
- HRP Associates
- Hydroenvironmental Solutions (after graduate school)
- LaBella Associates
- Langan Engineering
- Leidos (after graduate school)
- Loureiro Engineering Associates (after graduate school)
- NASA (after PhD)
- Naval Information Warfare Center Atlantic (after PhD)
- Nebraska Geological Survy (after PhD)
- Noble Energy (after graduate school)
- SanAir Technologies Laboratory, Inc
- ScanX3D
- SCS Engineering
- Shell Oil (after graduate School)
- Sikorsky Aircraft
- SLR Consulting
- Travelers Insurance
- Triumph Group
- UConn Soil Testing Laboratory
- Western Connecticut State University
- Wetherford Labs (after graduate school)
- Woodard and Curran

Also, numerous high schools around Connecticut as 7-12 teachers

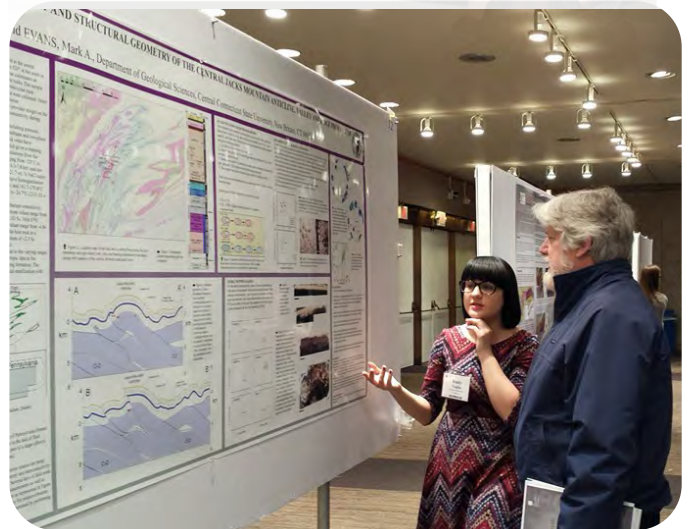
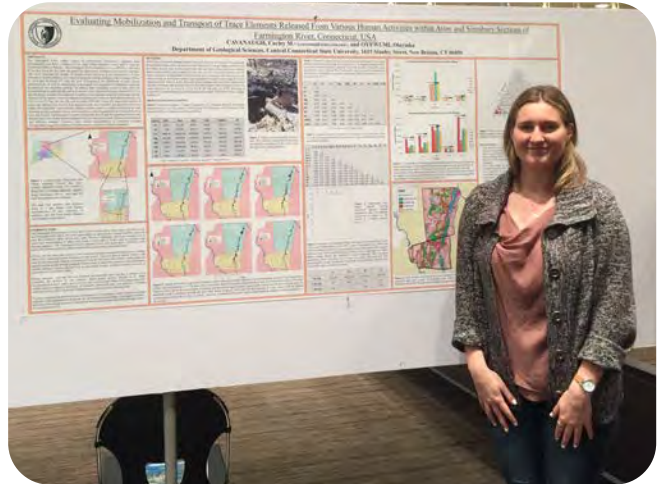
Our Research Focus

An integral part of our Geological Sciences program at CCSU is developing a culture of student research. We feel that this is important because it provides students with a real-world experience that can be directly transferrable to future employment and/or a graduate program. It not only gives the students the joy of scientific discovery and accomplishment, but also gives them perspective of the time needed for gathering data, and the frustrations of 'dead ends' and negative results. This culture of research has been 'contagious,' as seniors who are presenting their work at professional meetings serve as examples for new students coming up through the ranks and now see that they want to do a project also.

To illustrate our success, for the past eight meetings of the Northeast Section of the Geological Society of America, CCSU was in the top five in number of undergraduate presentations by a university.

Whereas some institutions only have undergraduate students participate in research in their senior year, if at all, we encourage our students to become involved as early as the freshman or sophomore year. Even though may not have all of the necessary background at that point, just the fact that they can participate in a project builds confidence and faculty-student relationships. Students who do research projects are much more likely to be accepted into graduate programs, particularly with full support.

For a complete list of student presentations at professional meetings go to: <http://www.ccsu.edu/geosci/research.html>



Emily Gajda at GSA in Albany, NY

Outside the Classroom

Our program advocates professional growth outside the classroom as soon as possible. These opportunities, some of which are listed below, are excellent ways to learn more about the sciences, fellow geoscientists, and potential professional opportunities by networking with professionals outside the Department.

- 1) Formal and informal lectures from geoscientists (including ex-CCSU students) from industry, academics and government agencies. Recent lectures include Glacial Geology of Connecticut, Remediation at a Pratt & Whitney plant, Geologic studies in Mongolia, New Insights into the Origin of Crocodylians, and A Geologic Adventure to Ireland.
- 2) Fieldtrips organized by the Geology and Planetary Science Club, the Geological Society of Connecticut, and the New England Intercollegiate Geological Conference (NEIGC). Past trips included mineral collecting in western Connecticut, quarries in central Connecticut, the American Museum of Natural History, Howe's Cavern and Herkimer Diamond Mine, and the geology of vineyards in eastern Connecticut.
- 3) The Geological Society of Connecticut annual meeting is an evening event and includes a social hour, dinner, and after dinner speaker. The meeting is held at a nearby venue (e.g., recently at ECSU, Yale, Wesleyan, Dinosaur State Park) in early November and is a great way to meet professionals from around the state.
- 4) The Northeast Section Meeting of the Geological Society of America is attended by over 1000 geoscientists from around New England. Each year several CCSU Geological Sciences majors present their research at this meeting that is held for 3 days around spring break time. We encourage all students that are interested to attend the meeting, even if not presenting. The Geology and Planetary Science Club provides funds for transportation and housing for students who wish to attend. Recent locations include Burlington, VT (20 GSCI students attended!), Albany, Pittsburgh, Baltimore, Buffalo, Portland, ME, Durham, NH, Lancaster, PA, and Bretton Woods, NH.
- 5) When it is close to Connecticut (Baltimore, Boston, Philadelphia), we also take our students to the Annual Meeting of the Geological Society of America. This is really a special event that gives our students the opportunity to participate in scientific discovery with over 8000 other geoscientists from around the world.



Overview: Geological Sciences Bachelor of Science Options

Students majoring in Geological Sciences have Six BS programs to choose from depending upon their interests and their goals after graduation. Although not required, we encourage all of our students to consider graduate school as an option at graduation because it will open up many opportunities not available with a BS.

Geology Degrees (for students intending on becoming a professional Geologist):

Earth Science: Geology Specialization BS:

The Geology Specialization is designed for students planning a career as a professional geologist with government agencies (e.g. geological surveys), and geotechnical, mining, and energy industries. In addition, students will be prepared for graduate-level studies in geology or related fields.

Earth Science: Environmental Geology Specialization BS:

The Environmental Geology Specialization is designed for students planning a career as a professional geologist with government agencies (e.g. environmental protection), and environmental industries. In addition, students will be prepared for graduate-level studies in geology or related fields.

Earth Science: Planetary Geology Specialization BS

The Planetary Geology Specialization is designed for students planning a career as a professional geologist with government agencies (e.g. NASA) or the remote sensing industry. In addition, students will be prepared for graduate-level studies in geology or related fields.

Earth Science Degrees (for students who want the Earth Science background but do not intend on being professional Geologists):

Earth Science: Environmental Earth Science Specialization BS:

The Environmental Earth Science Specialization is designed for students who want to study geological sciences with an environmental focus, but who are not intending to work as professional geologists. This degree is appropriate for someone interested in pursuing a liberal arts education with a less rigorous course of study in geological sciences and supporting sciences. Thus, students are allowed more flexibility for additional courses that complement their goals. This Specialization is appropriate for students planning a career in public policy relating to environmental issues, environmental education, resource management, business (environmental consulting), environmental hazards, environmental law, or environmental medicine.

Earth Science: General Earth Science Specialization BS:

The General Earth Science Specialization is designed for students who want to study geological sciences, but who are not intending to work as professional geologists. This degree is appropriate for someone interested in pursuing a liberal arts education with a less rigorous course of study in geological sciences and supporting sciences. Thus, students are allowed more flexibility for additional courses that complement their goals. This Specialization is appropriate for students planning a career in public policy relating to earth science issues, earth-science education, resource management, museum/observatory management, science journalism, library science, technical writing, or business.

Facilities and Equipment

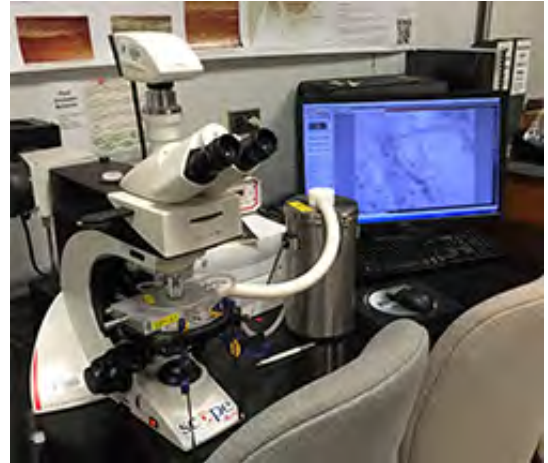
As a Geological Sciences major you will receive training and experient in a wide variety of equipment and instruments that are used in industry. You will be well prepared for the work force or graduate school.

We have the following facilities available for you

Microscopy Laboratory

The Microscopy Laboratory is dedicated to student and faculty research. Includes workstations for fluid inclusion microthermometry, palynology, and petrography.

- Leica DM-2500 research trinocular petrographic microscope with UV and reflected light capability, Nikon 990 digital camera
- Nikon Labophot 2-pol binocular polarizing microscope
- Leitz Laborlux 12-pol binocular polarizing microscope
- Accu-scope inverted reflectance microscope
- Linkham heating-freezing fluid inclusion stage, plus controllers and liquid nitrogen dewar
- Two Bausch and Lomb research grade binocular stereo microscopes
- Assorted microscope objectives, including long-working distance and oil immersion, darkfield illuminator, quartz accessory plates, etc.
- Two Leitz five-axis universal stages



Sample Preparation Laboratory

Includes equipment used for preparing rock and mineral samples for petrographic and microthermometric analysis.

- Buehler Thin sectioning system
- Buehler Ecomet 3000 grinder polisher and Buehler grinder polisher
- 10" rock trim saw and 24" rock saw
- Sediment sieve shakers and Ro-tap sediment sieve shaker with assorted sieves
- Hydraulic rock splitter
- 15 inch vibrating lap and 24 inch vibrating lap
- Apparatus for heavy liquid separation



Hydrogeology/Geochemistry Laboratory

The Hydrogeology/Geochemistry Lab is both a research and teaching laboratory. It is used to investigate water quality and to prepare soil and sediment samples for geochemical analysis

- NEW: ThermoFisher Inductively-Coupled Plasma Optical Emission Spectrometer for parts per billion elemental analysis
- Milestone DMA-80, Direct Mercury Analyzer
- Low temperature oven
- Thermolyne muffle oven
- CEM microwave digester
- ThermoScientific Barnstead Smart2Pure 3 water purification system
- Shimadzu high-pressure liquid chromatograph with ion chromatograph
- Ohaus microgram electronic balance and Mettler PC4400 electronic balance
- Water quality testing kits, Hach pH meter, Hach conductivity meter, and Dissolved Oxygen/Conductivity meter with 50 foot cable, field spectrophotometer.



Sedimentology Laboratory

The sedimentology laboratory is used to investigate the origin and composition of sediments and sedimentary rocks.

- Sensors and Software Ground Penetrating Radar (GPR) unit with Smart Cart, 100Mhz and 250 Mhz antennas
- Rigaku Miniflex II benchtop X-ray diffraction unit
- Malvern Mastersizer sediment size analyzer
- Sediment sample splitters
- Leica DM-EP trinocular Petrographic microscope with accessory plates, Nikon 995 digital camera
- Mettler PC4400 electronic balance
- Radiation Solutions RS-230 hand-held spectrometer



Computer Laboratory

The computer laboratory is used by numerous Geological Sciences classes and labs.

- 24 PC workstations plus teaching station and projector system
- Software includes the Microsoft suite, Adobe suite, ArcGIS, Rockworks, groundwater modeling and geochemistry software
- HP 44 inch Designjet printer-plotter



Monitoring Well Field

One 20-foot-deep and five 15-foot deep groundwater monitoring wells are near Copernicus Hall. They were drilled in 2016 with the support of HRP Associates, Glacier Drilling, and the Environmental Professional of Connecticut (EPOC). These wells are used to teach groundwater flow, groundwater chemistry, and well testing.

Planetarium

Equipped with Spitz 512 Planetarium instrument in a 35 foot in diameter dome to simulate the night sky for astronomy demonstrations. 100 seats allow large audiences to view the shows. Video data projection system for planetarium presentations. Separate, portable, video data projection system available for normal classroom and lecture use within the planetarium. The Planetarium host over 5000 people per year for shows. We are always looking for students to work in the Planetarium.

Observatory

The Observatory is located on top of Copernicus Hall and houses a Group 128 16-inch Cassegrain telescope with an Equatorial mount and Drive system to track in right ascension. It is occasionally open for public viewing. Students have access after training.



- 10 inch Meade LX 200 GPS equipped Schmidt Cassegrain telescope with equatorial wedge and counter weight system for CCD photography. Mount is computerized with go-to capabilities.
- 13 inch Newtonian Reflector mounted on a Dobsonian alti-azimuth mount.
- 8 inch Newtonian Reflector mounted on a Dobsonian alti-azimuth mount.
- 5 inch Orion Refractor mounted on a German Equatorial mount.
- Coronado 60mm PST solar telescope for daytime observations of the Sun.
- 6 inch Schmidt Cassegrain telescope on equatorial wedge mount with solar filter binocular mount and three pairs of binoculars
- Santa Barbara Instrument and Meade Instrument astronomical CCD digital imagers.
- Group 128 16 inch Cassegrain telescope with an Equatorial mount and Drive system to track in right ascension.

Miscellaneous Equipment

- Pomeroy diamond rock drill and core orienting device
- USGS style AA and Mini current flow meters with Digimeter digital readout
- Auger soil/sediment sampler
- Schmidt hammer
- 15 Leica DM-EP binocular Petrographic microscopes for Mineralogy and Petrology classes
- 24 Leica 240EZ binocular student stereo microscopes
- Extensive mineralogy (over 1500 samples), petrology (over 500 samples), and paleontology (over 1000 samples) collections
- Field equipment including: hard hats, Brunton compasses, day-glow vests, day-glow highway cones, first aid kits, rock hammers, sledge hammers, and assorted chisels
- Surveying rods, Jacob staffs, hand levels, 100 m and 50 m tapes, multiple Garmin GPS units.

Meet the Faculty and Staff

While you are working through your degree, you will have a chance to meet and take classes with most, if not all of the Geological Sciences faculty. You will also meet and work with some of our support staff. We encourage you to introduce yourself to anyone you do not know, and to get to know them while you are here. Developing relationships with your professors will make your time here more enjoyable and will provide us the ability to know you well enough to write letters of recommendation when you graduate.

Geological Sciences Faculty

Mark A. Evans, Ph.D., Geology, Univ. of Pittsburgh, 1989. Dr. Evans' research specialties are the growth and development of ancient mountain belts and understanding the fluids (oil, gas, brine) that were present during deformation. In addition to introductory Geological Sciences courses, Dr. Evans teaches Structural Geology, Mineralogy, Petrology, Environmental and Engineering Geology, and Field Methods.

Kristine M. Larsen, Ph.D., Physics, Univ. of Connecticut, 1990. Dr. Larsen studies the intersections between science and society, including women in science, science and popular culture, and misconceptions of science. Dr. Larsen teaches Stellar and Galactic Astronomy, Astrophysics, Observational Astronomy, and Extrasolar Planets and Astrobiology.

Oluyinka Oyewumi, Ph.D., Virginia Tech, 2012. Dr. Oyewumi's research involves the characterization of surface water, groundwater, and soil contamination. He is currently setting up an aqueous geochemistry lab. In addition to introductory Geological Sciences courses, Dr. Oyewumi teaches Environmental Geochemistry, Hydrogeology, Field Methods and GIS applications in the Geosciences.

Jennifer L. Piatek, Ph.D., Geology: Univ. of Pittsburgh, 2003. Dr. Piatek's research focuses on understanding the geology of planetary surfaces through analysis of spacecraft images. In addition to introductory Geological Sciences courses, Dr. Piatek teaches Planetary Astronomy, Comparative Planetology, Volcanology, Planetary Image Analysis, Extrasolar Planets and Astrobiology, and Research Methods.

Michael C. Wizevich, Ph.D., Virginia Tech, 1991. Dr. Wizevich's research applies methods of geomorphology, sedimentology and stratigraphy to a variety of research projects including hydrocarbon reservoir and aquifer characterization, and investigating sedimentary rocks that contain unusual features, such as dinosaur footprints, and seismites (earthquake generated structures). In addition to introductory Geological Sciences courses, Dr. Wizevich teaches Stratigraphy & Sedimentology, Geomorphology, Glacial and Quaternary Geology, Field Methods, and Energy Resources.

Science Education Faculty

Jeff D. Thomas, D. Ed., Columbia University, 2008. Science Education, Secondary Dr. Thomas research involves investigating secondary science teachers' understanding of inquiry-based instructional methods and how it can improve students' understanding of science. More recently, his research has expanded to include investigating reading and writing literacy practices within the science discipline. Dr. Thomas teaches science education courses and Meteorology.

Marsha Bednarski, Ph.D., Science Education & Assessment, Univ. of Connecticut, 1997. Science Education, Elementary (Professor, tenured), Dr. Bednarski's research focuses on curriculum, instruction, and assessment aligned with the newly released national Next Generation Science Standards for use with pre-service and in-service teachers. Dr. Bednarski teaches science education courses.

Support Staff

Sandra O'Day. Mrs. O'day is the department secretary and one of the most important people for you to meet and know. She can answer just about any questions you have about course registration, class schedules, etc.

Carol Ivers, M.S., University of Massachusetts. Ms. Ivers is planetarium director. She organizes and gives planetarium shows to school groups and the general public.