Technology program. Over the past five years, students and faculty in the Technology and Earth Sciences departments have enrolled in ENT422, Machine Design II, a design course in the Buffalo State Mechanical Engineering (remotely operated vehicle). Both the flume and wave tank were designed and constructed by students in our courses and undergraduate research projects. Within a day's drive are the Adirondacks, Canadian Shield, and Lake Erie. Housing in an urban area with easy access to Devonian stratigraphy, the Lake Erie shoreline, glacial sediments, and a variety of research vessels, assorted sediment and water column sampling equipment. There are two boat laboratories, both the flume and wave tanks were designed and constructed by students in our courses and undergraduate research projects. One of the most interesting features documented through this research are sedimentary furrows (pictured above-right). The December 2004 issue of the CUR Quarterly includes a review of the NCUR-Lancy Program: A Centennial Celebration of the Pan-American Exposition.

The Buffalo River (aerial view of the river showing active grain elevators) Flows along the southern boundary of the City of Buffalo and its watershed includes both agricultural and urban (industrialized and residential) landscapes. It is a designated area of Concern (one of 42 within the Great Lakes basin) and is subject to problems associated with water quality and contaminated sediments. Since 1990, J. Singer, working with collaborators at the Laboratory of Orogenic Studies (LOS) and the Buffalo State College of the State University of New York (SUNY), has been working on projects related to the Buffalo River. Scientific research on the Buffalo River has resulted in senior theses at Middlebury College, honors theses at Buffalo State College and more than a dozen independent undergraduate research projects. One of the most interesting features documented through this research are sedimentary furrows (pictured above-right) that are persistent within one segment of the river.

College's Office of Undergraduate Research

Buffalo State has identified increased undergraduate research opportunities as a priority in its academic strategic plan. As part of our efforts to institutionalize undergraduate research, the College established in 2003 the Office of Undergraduate Research and appointed a half-time director (currently J. Singer). The Office coordinates and promotes undergraduate research and creative activities on campus. There are a number of programs administered by the Office:

- Annual student research and creativity celebration (in its 7th year)
- Undergraduate summer research fellowship program (also in its 7th year)
- Research support for student attendance at meetings, conferences, performances, and/or art exhibits to present their research/creative work (in its 4th year)
- Grant writing workshops
- Laboratory of Orogenic Studies

Established Fall 2000, the Laboratory for Orogenic Studies (LOS) brought together the research and teaching interests of Gaye Solar and her graduate students by forming a field and laboratory research team. The LOS laboratory houses a research-grade petrographic microscope (with attachments for microphotography) and has links to the larger community. There are also equipment for mineral separation and thin section preparation. Projects conducted by the LOS focus on mountain building processes using techniques of structural geology and petrology. Field areas and projects to date include the Grenville orogen of the southern Adirondacks, Appalachian orogen of Pennsylvania, and parts of New England. Pictured from left to right are Professor Solar and her students conducting fieldwork in Canton, NY; Western Massachusetts; Miss Hills Granite Quarry, Raynham, CT; and Erith Gulf, Boston, MA. By 2000, four students have completed departmental honors theses and 14 students have completed independent research projects. Most students have received either travel assistance or campus facilities to support their research.

There are a number of programs administered by the Office: annual student research and creativity celebration (in its 7th year) undergraduate summer research fellowship program (also in its 7th year) providing student stipends and travel/supply money to support 8 weeks of full-time research travel support for students to attend meetings, conferences, performances, and/or art exhibits to present their research/creative work (in its 4th year) small grants program to provide support for academic year research/creative activities several programs aimed at faculty development.

The Office maintains a website at: www.buffalostate.edu/undergradresearch.

NSF-STEP Program

“Creating Opportunities for Success through Recruitment, Retention and Faculty Development” is a five-year (2005-2009) $1 million project awarded to Buffalo State by the NSF-DUE. J. Singer is the project director and all seven STEM departments at the College are participating. The primary goal of the project is to increase the number of students entering STEM majors and increase the number of students receiving baccalaureate degrees in the STEM disciplines. In order to accomplish our project goals, a number of activities will be carried out, including:

- Recruitment activities in area high schools
- Introduction of a year-long learning community with the theme “the urban environment” open to students expressing an interest in becoming a STEM major
- Offering Freshman Seminar STEM courses for those students entering the College as freshmen that are either interested in becoming STEM majors or with a declared STEM major
- Providing an early undergraduate research experience for students interested in becoming a STEM major, or for students that declared a STEM major as a result of participating in either the learning community or Freshman Seminar programs
- Increased support services for any student enrolled in introductory STEM courses that are the gateway to the majors by establishing peer tutoring centers in all seven STEM department and by introducing problem-solving sessions in math (pre-calculus through calculus II and statistics)
- Faculty development opportunities to support substantive revision of introductory courses to change from primarily lecture to guided inquiry with an emphasis on developing problem-solving skills

The Office maintains a website at: www.buffalostate.edu/undergradresearch.