

## RESEARCH AT YSU

Youngstown State University is committed to fostering high quality, nationally competitive research to promote faculty and student development in support of the teaching mission of the University. As noted in its mission statement, "The College of Graduate Studies supports the continued development of faculty scholarship and serves as the principal point of coordination for both internally- and externally-funded programs at Youngstown State University." These coordination efforts are directed at obtaining the resources necessary to mount and maintain scholarly and educational programs of excellence and, in some cases, to target specific areas for regional and/or national prominence.

Youngstown State University faculty members are heavily invested in scholarship on an individual basis. Graduate faculty research interests are listed for each degree program in the catalog and also individual faculty members web pages accessible from departments/websites. Excellence in research and scholarship by faculty and students is highlighted in our *New Frontiers* publication.

### Center of Excellence in Materials Science and Engineering

The program, comprised of 22 faculty and staff from six departments in the College of Science, Technology, Engineering and Mathematics, is devoted to the preparation, advancement and development of a variety of materials for basic research, educational experiences and practical applications.

### Advanced Manufacturing Research Center

The center will lead YSU efforts in the development and practice of advanced manufacturing technologies, including additive manufacturing, robotics, reverse engineering, digital metrology and hybrid manufacturing.

### Williamson College of Business Administration Center of Excellence in International Business

The center capitalizes on and integrates the strong and varied WCBA international business activities already in place, including the Williamson Center for International Business and the Ohio Small Business Development Center/Export Assistance Network.

### Center for Sports Medicine and Applied Biomechanics

Biomedical science and technology has grown dramatically over the last two decades and has become a major academic and industry research area. This center, along with a new minor program in Biomechanics and joint master's program in Biomedical Science, will serve to address these growing needs. Faculty in the College of STEM and in the Bitonte College of Health and Human Services have collaborated to build a state-of-the-art laboratory for medical science and biotechnological research.

### Centofanti Center for Health and Welfare for Vulnerable Populations

The center is committed to serving the needs of vulnerable individuals impacted by debilitating illness, poverty, disability and/or discrimination throughout the Youngstown community. The center currently provides health and human service trainings to faculty, staff and community members. It will continue collaboration through the establishment of student-driven programs that improve the health and well-being of patients attending the Midlothian Free Health Clinic.

### Institute For Applied Topology & Topological Structures

The Institute, located within the Department of Mathematics and Statistics, promotes, facilitates, and supports topological research, education, and application at the University, in the State of Ohio, and throughout the world, and helps implement the University's role as an Urban Research University. This mission includes the growing and strengthening the topology group at Youngstown State University and its alliance with other topologists in the United States and abroad, particularly with the topology groups at Slippery Rock University and other universities in the region. Toward that end, the Institute supports any activity that facilitates research and scholarly growth or funding for the topology group and its collaborating organizations.

### Natural Gas & Water Resources Institute

The YSU Natural Gas and Water Resources Institute will provide bachelor's degree level courses in science and engineering that will lead to an academic minor in gas technologies and also will provide research opportunities for industry focusing on analysis of water used in the shale gas extraction process. Because of YSU's location in the Utica shale region of Ohio, this new Institute will meet the educational and research needs of this new and growing industry.

The Utica shale is a large rock formation thousands of feet below the surface spanning an area from eastern Ohio to Pennsylvania and across the Canadian border. Gas contained in the Utica shale is expected to become a dominant source of natural gas for the United States in this decade. A recent study showed that more than 200,000 jobs, including nearly 9,000 in professional and technical services, will be created or supported by 2015 due to exploration, leasing, drilling and pipeline construction for the Utica shale reserve.

### Regional Economic Development Initiative (REDI)

The Regional Economic Development Initiative (REDI), located in the Office of Research at Youngstown State University (YSU), was established in 1967 as the Center for Urban and Regional Studies (CURS) to act as a research and public service arm of YSU.

The mission of CURS has been to integrate professional staff, faculty, students, and other University resources to focus on issues and problems of urban and regional development through an ongoing program of basic and applied research and technical assistance and by providing training for local government, community, and economic development organizations and businesses.

During the fall of 2015, CURS transitioned to REDI and toward the role as "Navigator" in research-based, implementation-focused economic development support services for the Mahoning Valley. REDI's change in focus and mission will reflect organizational focus on a plan-implement structure known as design-build, a model often seen in the architecture and construction industries. This focus will enable REDI to serve as the "Navigator" in economic development implementation and support services throughout the Mahoning Valley. Economic development partners throughout the region have affirmed YSU REDI's "Navigator" role.

REDI coordinates and leads monthly Economic Action Group (EAG) meetings in support of economic development in the city of Youngstown and Mahoning Valley. The EAG convenes and engages representatives from a broad cross-section of industries and organizations throughout the Mahoning Valley. REDI provides leadership on federal, state, and private grant-writing initiatives, and also provides valuable GIS mapping and data services to a number of local and regional government, nonprofit, and social service agencies throughout the Mahoning Valley and beyond.

As a lead member of the National Additive Manufacturing Innovation Institute (NAMII) located at the YBI, Youngstown State University is participating

in a national/regional network of industrial companies, government agencies/organizations, and universities and colleges focused on industry/manufacturing support, workforce training, and applications research for additive manufacturing. YSU's main role will be workforce development and applied research as appropriate. The University is also the lead institution and fiscal agent for a recent U.S. Department of Energy Grant establishing the Tech Belt Innovation Center, a business incubator in Warren Ohio, focused on developing clean and advanced energy technologies for commercial application.