MAKING AN IMPACT

Improving the quality of life and economic competitiveness for Marylanders
Towson University—Serving Maryland

Long before the word innovation became the mantra it is today, Towson University was leading the way. Maryland’s leaders realized that public higher education pays untold dividends in the well-being of individuals, their families, and their communities. They broke from the norm and created a place where qualified teachers could be trained. In 1866, we opened our doors as the State Normal School. Although it seems like a simple idea today, it was actually quite innovative for the time.

150 years later, Towson University is still leading the way. Our focus has been expanded and that spirit of innovation has been extended to include professions relevant to an ever-changing economy and workforce.

- TU is a major educator of health professionals in our region. Over the last six years alone, we have sent nearly 1,000 nurses into the workforce.
- TU is educating students to meet the needs of children through the Teacher as Leader in Autism Spectrum Disorder Master of Education degree program.
- TU is the only institution in Maryland to be named a National Center of Academic Excellence in Cyber Operations. And, our students are placed in roles at highly coveted NSA cyber security agencies.
- TU is providing Maryland’s leaders and legislators with the tools and information they need to make critical decisions through the Center for GIS and Regional Economic Studies Institute (RESI).
- TU is raising student achievement by infusing arts instruction across disciplines through the Arts Integration Institute.

Not only does our continued focus on innovation and applied research enhance academic excellence and student success, it facilitates partnerships and fosters the growth of entrepreneurship among our faculty, staff, and students. We are committed to working both within the university and with our neighbors across the region to ensure we meet the needs of our community.

With 92,000 current alums living in Maryland, it is Towson graduates that are running our cities, starting businesses, building families, and creating a thriving economy. And for the next 150 years, Towson University will continue to lead the way.

Dr. Timothy Chandler
Interim President
Towson University
Towson University faculty, students, and professional staff actively pursue basic and applied research, often in collaboration with community partners. The solutions we develop and produce positively impact our region’s economy, environment, health, and education system.

**KEY INDICATORS**

11% – FEDERAL
46% – STATE
27% – CORPORATE
4% – FOUNDATIONS
12% – OTHER

**RESEARCH PORTFOLIO**

TU students participated in for-credit internship experiences in the 14-15 academic year.

**BY THE NUMBERS**

$18 mil
TU received over $18 million in research awards in FY 2015

7,508
TU students participated in for-credit internship experiences in the 14-15 academic year

2,557
People received workforce and career training and continuing education instruction from the Center for Professional Studies in FY 2015

**ECONOMIC IMPACT DATA**

Over the past 150 years, Towson University has evolved into Maryland’s community-engaged, public university with a total current enrollment of over 22,000. Our commitment to education, research, partnerships, and workforce development makes us a driving force for Maryland’s economy.

- **$139.4 BILLION**
  Total Economic Impact
  1866–2014

- **150,000**
  ALUMNI

- **46,000**
  DEGREES AWARDED IN THE LAST 10 YEARS

- **92,000**
  TOWSON ALUMNI LIVE IN MARYLAND

- **$887 MILLION**
  IN OUTPUT CONTRIBUTED BY TOWSON STEM GRADUATES

- **$2.2 BILLION**
  STATE AND LOCAL TAX REVENUES
  1866–2014

- **$176.9 MILLION**
  IN EVENT SPENDING
  1963–2014

Innovation, Entrepreneurship, and Applied Research 2015 Report Towson University
ECONOMIC AND WORKFORCE DEVELOPMENT

Putting Resources to Work

Towson University cultivates an ecosystem that prepares students to achieve greater success in the workforce by conferring degrees and certifications at the undergraduate, graduate, and professional studies levels. The Center for Professional Studies (CPS) allows students and business professionals alike to make themselves more valuable by offering marketable credentials in high-growth industries.

Responding to market demands, our academic offerings and continuing education programs—project management, STEM, cyber security, and applied information technology—are tied to our state’s business and industry strengths, making Towson University the workforce hub for the University System of Maryland.

Over the past 50 years, we have awarded nearly 40,000 STEM-related degrees.
Towson University continues to serve the needs of Maryland’s workforce, specifically in the high growth fields of healthcare, occupational and speech therapy, construction-related technology, and information security. With a combination of high quality degree and non-degree programs that are driven by industry, we are able to meet employer demand by providing programs that address critical skill gaps and strengthen Maryland’s talent-driven economy.

Towson University is meeting the demands of a projected shortfall of registered nurses and physician assistants. The Essex Physician Assistant Program is the oldest and most well established program in Maryland. Our nursing department was the first educational program in Maryland to offer the associate-to-bachelor’s (ATB) program, in which students pursue associate and bachelor’s degrees concurrently. In 2015, The College of Health Professions’ Department of Nursing received a $1.65 million grant to expand the ATB program.

The BIM Institute at Towson University was created to support the construction industry’s need for education and training in BIM (building information modeling) and other construction-related technology in Maryland. Our professional development opportunities allow students to meet the demand for higher-level skills now required in our region’s construction industry.

Using BIM technology allows professionals to produce drawings and three-dimensional models in less time. Complicated design and construction issues become apparent in the model, rather than at the construction site, saving time and money.
Towson University values and supports applied research across the institution. Faculty and staff from the Division of Innovation and Applied Research and our six colleges perform research that addresses real-world issues that directly impact our communities, government, and private and non-profit sectors.

**Efficiency in Government**

**MAKING THE EMEDICAID SYSTEM BETTER FOR ALL**

The Division of Innovation and Applied Research worked with the Maryland Department of Health and Mental Hygiene to develop and host the eMedicaid web-based applications. These apps support Medicaid’s Health Care Provider community and have expanded provider access; standardized the exchange of information; increased the speed of communication; lowered the per unit cost of transactions; and increased the accuracy of business processes.

**LEVERAGING GIS SKILLS ACROSS MARYLAND**

GIS (geographic information systems) technology allows policy makers to make better informed decisions based on location analytics. With assistance from Salisbury University and WBCM Architecture, Engineering, and Construction, the Center for GIS provides classroom and online instruction in GIS to Maryland state employees and contractors through the Statewide GIS Training Program. With this training, employees are able to capture, analyze, and present data in a spatial form, helping with decisions that affect Maryland’s economy, government, and environment.

**CREATING EFFICIENCIES FOR MARYLAND AGENCIES**

Strategic planning is essential for the efficiency and effectiveness of any organization. The Center for Professional Studies facilitates strategic planning for the Department of Labor, Licensing, and Regulation. This allows the agency to develop goals to improve operations and service to citizens, reduce costs, train staff, and use resources more efficiently. Each goal advances Governor Larry Hogan’s four initiatives: Fiscal Responsibility, Economic Growth, Government Reform, and Customer Service.
Veterans, the Military, and the Defense Industry

Maryland is heavily dependent on the defense industry, with several military bases, the National Security Agency, and other defense-related businesses and organizations located in the State. The Regional Economic Studies Institute (RESI) is working with the Maryland Department of Commerce to formulate a strategy to lessen this dependency, to replace lost jobs, and to grow industry clusters in certain communities. RESI is compiling a report that includes a supply chain map; a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis; and an industry cluster analysis documenting the growth of defense-related businesses.

Pre K-12 Access, Success, and Completion

Mapping Childcare Across Maryland

The Maryland Child Care Mapping Tool allows parents to easily and quickly locate child care services close to their homes or to local public schools. The Center for GIS (CGIS) helped develop this tool for the Division of Early Childhood Development in the Maryland State Department of Education. CGIS hosts the tool, develops enhancements, and provides support.

Early Childhood Education: A Key to Future Success

Units within the Division of Innovation and Applied Research are working to provide access to high-quality early childhood education across Maryland. The Regional Economic Studies Institute (RESI) is conducting an assessment of Pre-K Head Start students in Baltimore City and County for the YMCA of Central Maryland to determine the effectiveness of MSDE-trained teachers in these programs. Additionally, the Office of Partnerships and Outreach hosts professional development workshops and forums to share information about best practices in early childhood education. The Center for Professional Studies has also created a series of informational videos about Maryland’s early childhood programs.

Creating STEM Pathways

All SySTEMs Go is a research-based approach to creating college and career pathways in STEM and improving student competitiveness. This approach, led by the office of TU Presidential Scholar Dr. Nancy Grasmick, pulls together several facets to help Maryland students move from K-12 through college and into a career. The three facets are STEM-certification for Maryland elementary school teachers; UTeach, a new way to prepare STEM teachers; and a partnership with the College Board to enhance student participation and success in AP calculus that includes:

- An innovative workshop for current AP calculus teachers
- A summer boot camp for students in advance of taking AP calculus and participation in Saturday workshops during the school year
- The creation of a pre-service seminar course on how to teach AP calculus that can lead to an endorsement on the Towson University transcript

Veteran-Friendly School

Towson University is the first university in Maryland to establish a Veterans Center. We have been recognized as one of the most veteran-friendly schools in the nation appearing on lists in U.S. Veterans Magazine, U.S. News and World Report, Military Advanced Education, and G.I. Jobs Magazine. The Veterans Center provides veterans with information about admissions, scholarships, and financial aid. It also provides counseling and disability support services, academic advising, and student activities.
Cybersecurity and Public Safety

SMART TECHNOLOGY: THE RIGHT TIME AND PLACE

Dr. Kelly Elkins (Department of Chemistry) and Dr. Subrata Acharya (Department of Computer and Information Sciences) have developed a toolkit to improve drug testing and interpretation at crime scenes and in forensic labs. The revolutionary tool enables investigators to aid in on-site evaluation using a cell phone application and/or a standalone device (Raspberry Pi) integrated into the respective mobile devices. An initial version of the app can be viewed at https://youtu.be/b9Z0iWDhJ2g.

Making Our Community Safer

Following the riots that occurred in Baltimore City at the end of April 2015, a State of Emergency was declared by Governor Larry Hogan and the State Emergency Operations Center was activated for a two week period. In response, the Center for Professional Studies was charged with developing a comprehensive after action report (AAR). This report includes recommendations about how to support the training and the operational needs of Maryland’s first responders in response to state emergencies.

COUNTERING CYBER ATTACKS

Cyber attacks are an ever-increasing threat in today’s society. Dr. Wei Yu (Department of Computer and Information Sciences) is working to address this threat through a National Science Foundation (NSF) Early Career Development (CAREER) Award. The project enhances the understanding of the impacts of cyber attacks on smart grid operation and end users. It will help communities to develop security countermeasures.

Community Health and Well-Being

PROMOTING ACCESS TO HEALTHY FOOD

Dr. Andrea Brace (Department of Health Science) is doing research on food deserts, locations with large proportions of low-income residents who have low access to healthy food. Her current research explores the relationship between food deserts and farmers’ markets to identify where these markets are located, the populations they serve, and whether they accept federal food assistance programs. Her research shows that more farmers’ markets could accept federal food assistance to help reduce food insecurity and additional farmers’ markets could be established in food deserts to increase food access. These changes would help better address issues such as obesity, diabetes, and hypertension.

ACCESSING SERVICES FOR INDIVIDUALS AFFECTED BY AUTISM

Karen Goldrich Eskow, Ph.D., is the principal investigator of a research project that explores the impacts of Medicaid Home and Community-Based Waiver Services on children and families affected by autism. Since 2008, Dr. Eskow has been researching these issues in collaboration with the Maryland State Department of Education; Dr. Jean Ann Summers from the University of Kansas; Towson University faculty in the College of Liberal Arts and the College of Health Professions; and faculty from the University of Maryland, Baltimore County. With funding provided by the National Institute on Disability, Independent Living, and Rehabilitation Research, Dr. Eskow’s research will lead to policy changes, a more responsive system of care, and improved supports and services for children and families affected by autism.

HELPING THOSE WITH ADDICTION

Dr. Mary Lashley (Nursing Department) is researching the vital role faith communities play in the pathway to recovery from substance abuse disorders. Her study, done in collaboration with staff at Helping Up Mission, explores an innovative model for evaluating the effectiveness of faith-based homeless health and residential recovery programs. Dr. Lashley’s research has shown significant improvements in health, character development, and employment outcomes. Further research of these programs is planned.

ADDRESSING HEALTH INEQUITIES AMONG AFRICAN AMERICAN WOMEN

Dr. Jameta Barlow (Department of Women and Gender Studies) is interested in the psychosocial and environmental stressors that contribute to health inequities among African American women, such as heart disease, obesity, and depression. Dr. Barlow’s current research involves a review on depression in African American women and addresses potential areas of improvement in health promotion; gaps in mental health policy; and alternate community engagement methodologies.

ENHANCING HEALTH AWARENESS THROUGH GENETIC DISCOVERY

Knowing how important genetics are to diagnose, treat, and prevent diseases prompted Dr. Sharon Jones-Eversley, in the Towson University Family Studies and Community Development Department, to conduct research on this topic, particularly among the African American population. Her study assesses family health history as a way to raise awareness of health issues in the African American community; customize health education and promotion; and disseminate health information.
At Towson University, entrepreneurship is more than just a buzzword. It is a commitment that fosters and champions leadership development and business collaboration. Entrepreneurial values are layered horizontally across areas of study and extracurricular activities, allowing students to embrace a spirit of entrepreneurship that ultimately enriches our communities.
Classroom to Boardroom

THE ENTREPRENEURSHIP EXPERIENCE AT TU

We encourage students to develop their entrepreneurial potential through a concentration and a minor in entrepreneurship for business and non-business majors. Skills obtained from these tracks prepare our graduates to successfully start their own business or take over established family businesses.

With the growth of the creative economy, we are placing an emphasis on rich discussions that reach across disciplines. Arts Entrepreneurship courses place special focus on the artist as entrepreneur, allowing students to explore the unique aspects of translating their art into a business.

– Frank Bonsal III, Director of Entrepreneurship

TU Incubator

AN ENTREPRENEURIAL RESOURCE INSIDE AND OUTSIDE OF TU

As an economic engine for Maryland, Towson University is committed to supporting startups and entrepreneurs that contribute to the local economy. TU Incubator provides member companies with a customized program, first class facilities, and access to an exclusive mentor network to position themselves for growth and success.

TU Incubator leverages the University’s 150 years of expertise in teacher education to support a growing number of EdTech companies that call our campus home.

Student Launch Pad

EMPOWERING STUDENT IDEATION

With offices in Cook Library, Student Launch Pad allows students from across backgrounds and experiences to pursue entrepreneurship outside the classroom. Through Entrepreneur U, a series of interactive workshops, students can develop and refine their ideas. Students also have access to one-on-one coaching and consulting with experts.

Students ask questions on the importance of innovation to leaders from two of our region’s largest employers, Under Armour and Target, at a Student Launch Pad event.
Community Engaged Partnerships

While most universities place value on community service, Towson University stands out as one of the most community-engaged universities in the country and is recognized as such by the Carnegie Classification for Community Engagement. Our partnerships span teaching, student activities, athletics, research, and scholarship, connecting us to the region’s businesses, government organizations, schools, and non-profits.

Some of the ways that TU’s community relationships and partnerships have made a difference include:

- Supporting education in Maryland and improving college readiness and completion
- Providing quality professional development and training that fits Maryland’s needs
- Promoting community development
- Producing leaders and graduates who are prepared for a more global economy
- Improving Maryland’s economic competitiveness and addressing critical skills gaps

Towson University students, faculty, and staff partner with over 120 different schools across Maryland through the Professional Development School Network.
Partnership Stories

**SURFING OPPORTUNITY FOR CHILDREN WITH AUTISM**

Children with autism often struggle with sensory overload; surfing can offer relief from these symptoms. Each August, students in the Honors College and Department of Occupational Therapy and Occupational Science volunteer with camps provided by Surfers Healing Our Children with Autism. The camps sponsor professional surfers to provide free surfing opportunities to children with autism in Ocean City, Maryland.

**IMPROVING WORKPLACE SAFETY**

Reducing workplace injury and fatalities is a priority for Maryland. In 2015, Towson University’s Division of Innovation and Applied Research facilitated an industry-led workgroup to develop a set of recommendations for improving the Maryland Occupational Safety and Health program. The results of this process identified ways to reduce occupational injuries and illnesses, increase procedural efficiencies, and improve customer service.

Partnerships by the Numbers

- **170+** active community partnerships and relationships
- **96%** of community partnerships and relationships are happening in Central Maryland
- **3.1M** hours of community service performed by our students between 2005-2015
- **9,000** current students involved in TU’s community partnerships and relationships

Standing with Baltimore

**TU CAMPUS MAKING A POSITIVE IMPACT**

Riots in April 2015 left parts of Baltimore City in disarray, people in need of support, and communities in need of rebuilding. Currently, Towson University has 86 active partnerships with the City that are helping to make a difference in troubled areas.

- **The Revitalizing and Maintaining Public Community Spaces** program partners students with The 6th Branch, a military veteran-led organization that adopts neglected public spaces in East Baltimore and works to improve these spaces.
- **Community Health Nursing** program, nursing students gain real-world experience by working with Baltimore City Fire Department EMS to provide Bolton Hill residents with health education and screenings, and promoting healthy activities to high schoolers.
- **Students from the Anthropology by the Wire partnership** work with residents in disadvantaged communities to tell their stories to bring attention and funding to their neighborhoods.
STUDENT EXPERIENCE

Internship Stories

The following STEM students are gaining real-world experiences.

SUN YI LI
Making a Difference for the Chief Medical Examiner

Sun Yi Li, a senior in the Chemistry and Forensic Chemistry department, started her internship with the Maryland Office of the Chief Medical Examiner expecting to work on a project validating a new drug extraction method. However, an unexpected project developing an entirely new validation method from scratch popped up, teaching Sun Yi that in real life, things do not always go as planned. Working on these projects helped Sun Yi learn how to address uncertainty, work independently, and make changes to her approach, as needed. Her advice for other interns is to never be afraid to ask questions.

LABREEA HARGROVE
Propelling the St. Agnes Breast Link Program

LaBreea Hargrove is a senior in the Health Science program. She interns with the St. Agnes Breast Link Program, a non-profit organization that provides free mammograms to women regardless if they are insured, underinsured, or uninsured. LaBreea has enjoyed being a Breast Buddy, accompanying women to their mammograms and helping to ease some of their stress and worry. She has been able to use her prior retail and customer service skills to better assist the patients of the program. An unexpected skill she learned during this internship was networking. LaBreea has come to see how important networking is in addressing the needs of the community and providing essential services to these women.

MUHAMMAD WALED
Working on Meaningful Projects with IZI Medical Products

Muhammad Waleed, a Computer and Information Sciences junior, was not content to sit around and do nothing at his internship with IZI Medical Products. He was always seeking meaningful work in order to contribute and keep himself busy. One interesting project Muhammad worked on was the Food and Drug Administration (FDA) Unique Device Identification (UDI) label project. The UDI system gives a unique identifier to each product, which will help individuals to better report any issues. Muhammad has learned about networking and its importance, as you never know who you will meet.
EXPERTISE & SERVICES

DIVISION OF INNOVATION AND APPLIED RESEARCH

Applied Research and Technical Services
- Economic Analyses, Forecasting, Impact Studies, Statistical Evaluation
- IT Project Management, Business Process Consulting and Technical Writing, Application and Website Development, Web and Server Hosting
- Geospatial Web Development and Hosting, Enterprise GIS Solutions, Geospatial Database Development and Analysis, Custom GIS Training

Entrepreneurship
- Incubator Business Facilities, Workshops and Professional Development Opportunities, Customized Business Counseling
- Business Plan Competitions and Networking Opportunities, Student Launch Pad

Partnerships and Outreach
- Business Development Support, Community Partnerships Database and Resource Center, Affiliation and Partnerships Coordination and Management
- Integrated Marketing, Marketing Strategy Development, Website Design and Usability Testing, Video Production, Event Planning and Promotion

Continuing Education and Workforce Development
- Industry Professional Certifications, Customized Workforce Development Programs, Corporate and Government Training
- Lifelong Learning, Teacher Training and Professional Development

ACADEMIC AFFAIRS

College of Business and Economics
- Supply Chain Research
- Behavior-Based Marketing Evidence
- Securities and Investment Analytics

College of Education
- Teacher Preparation Programs
- Leadership Capacity in Schools
- Technology in the Classroom

College of Fine Arts and Communication
- 3D Printing and Modeling
- Museum Studies
- Digital Media Production

Jess and Mildred Fisher College of Science and Mathematics
- Cybersecurity
- STEM Teaching
- Conservation Research

College of Health Professions
- Research and Support for Adults with Autism
- Occupational Therapy Services and Programs
- Community Nursing Outreach to Homeless and Underserved Individuals and Families for Health Promotion, Disease Screening and Health Education
- Screening, Diagnostic, and Treatment Services to Improve Communication for Children and Adults with Communication Concerns
- Wellness Programs for the Community
- Audiology Services and Research

College of Liberal Arts
- Anthropological Research in Urban Areas
- Addressing Economic and Racial Inequality
- Environmental Planning
- Effective Technical Writing
- Foreign Language Training and Testing
- Working with Hospitalized Children
- Professional Ethics