COLLEGE OF SCIENCE AND TECHNOLOGY

ANNUAL REPORT

2015 - 2016

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Executive Summary

Mission
The mission of the College of Science and Technology is to prepare our students for a lifetime of professional work in our respective disciplines by providing the highest quality programs that lead to baccalaureate and master’s degrees in the areas of Mathematics, Science, and Technology. The College has a strong commitment to teaching and learning, research, outreach, and diversity. Furthermore, we provide general education for the larger student body and continue our long tradition of excellence in teacher preparation. The College provides leadership to community organizations and fosters collaborative partnerships that lead to opportunities for student research, internships, cooperative educational experiences, and pathways to employment.

Goals and Objectives
The College of Science and Technology will continue to distinguish itself as a center for excellence in the areas of mathematics, science, and technology that provides a dynamic academic environment in which students and faculty can grow professionally. We are committed to the preparation of graduates who solve problems, communicate effectively, work collaboratively, and demonstrate mastery of their disciplines.

Contribution to the University Strategic Plan
Departments integrate high-impact practices into their curriculum and degree programs in various ways, including:

- First-Year Seminar/Experience: Seven departments within the College have faculty teaching UNIV 103 courses.
- Service Learning: 27 courses from AEST, BIOL, CHEM, ESCI, GEOG, NURS, and UNIV.
- Internships: 74 students from seven departments within the College enrolled in 139 credits. An additional 27 students engaged in internships through OSEH 440 and multiple students participated in non-credit internships.
- Undergraduate Research: students from all departments including EHEM participated. There were over 240 sections of Independent Study (IS) for about 400 undergraduate credits. This initiative was funded for approximately $45,600 by the Office of the Provost to support academic year IS courses. Approximately 150 distinct students participated in about 175 projects.
- Study Abroad: Faculty-led study abroad courses were provided by Dr. L. Litowitz, ITEC 304 [Summer 1: Iceland; Summer 3: Costa Rica] along with informal experiences led by Drs. X. Catepillan (MATH) and L. Foels (Social Work) [Spring: Mexico; many students were in or previously in MATH 102]). Other students were able to participate in international experiences through individual work with faculty.
- All departments provide capstone experiences for their degree programs, as outlined in the Appendix.

Support for Underrepresented Minority Student Success
- As outlined in the College retention plan, departments are participating in a variety of initiatives to support student success. This includes the high-impact practices listed above along with other best practices such as integrating instructional activities based on education research into the curriculum, peer mentoring and learning communities, tutoring, student organizations, etc.
The College, and particularly the Department of Mathematics, continues to support Millersville Pre-Scholars program (formerly the Aim for Success) and other remedial programs. Departments also participate in a number of transitional experiences, such as the Department of Geography which offers non-major based sections of UNIV 103.

**Selected Highlights**

**Enhancements to program curriculum, student achievement of learning outcomes, or other program improvements**

- The following degree programs were approved by the Board of Governors: Automation and Intelligent Robotics Engineering Technology (AEST, led by Dr. John Wright, Dr. Len Litowitz, and Dr. Barry David) and the Doctor of Nursing Practice (DNP, NURS, led by Dr. Kelly Kuhns).
- The Department of Nursing launched three degree programs this year.
  - The first cohort for the DNP program began in May 2016,
  - an off-campus cohort for the MSN program, both family nurse practitioner and nursing educator, began at the Dixon University Center in the 2016 Spring semester, and
  - the online RN to BSN program began in the 2015 Fall semester.
- The fully on-line 15 credit Emergency and Disaster Management Graduate Certificate, led by Dr. Sepi Yalda (ESCI) received approval for the start in the 2016 fall semester.
- Dr. Sharon Brusic (AEST) led the implementation of the new Integrative STEM Education Methods (ISEM) minor for ERCH & ECSP majors that was launched this academic year.

**Special Events or Programs**

- The Department of Biology (led by Dr. Ryan Wagner, Dr. Aaron Haines, Dr. Carol Hepfer, and Dr. Judy Cebra-Thomas) hosted the 46th Commonwealth of Pennsylvania University Biologists annual meeting (over 230 biologists including 160 undergraduate students from across the State System attended the meeting).
- The College’s role in *Made In Millersville* was a key factor in doubling participation in this event. 84 of the 152 presentations were from the College of Science and Technology.
- The Watershed Education Training Institute (WETi) was established at the Creek Lodge facility with Dr. John Wallace (BIOL) and Dr. Nanette Marcum-Dietrich (Education Foundations) serving as co-coordinators.
- Drs. Mehmet Goksu (PHYS), Aimee Miller (CHEM), and Maria Schiza (CHEM) led the PA Central Region Science Olympiad Competition held at Millersville University, March 19, 2016. The successful hosting of this event was made possible through the efforts of approximately 120 volunteers, of which about 25 were MU faculty/staff and 45 were MU students. Due to their efforts, approximately 750 students from 19 middle schools and 31 high schools participated in this year’s event. This event was sponsored by *Phoenix Contact*.
- The 29th Women in Mathematics and Science Conference was held at Millersville University, April 5, 2016. The event, coordinated by Dr. Nazli Hardy (CSCI) and the conference committee, hosted 239 participants from 48 area schools and was supported by the *Hazeltine Family and Johnson & Johnson Consumer Products U.S.A.* That evening, a performance of ‘No Belles’ was shown to members of the University and Public (supported by the Office of the President, Provost, SCTE, AHSS, and through private donations).
- The 31st Brossman Foundation and Ronald E. Frisbie Science Lectureship was held at Millersville University, November 19, 2015. The event, coordinated by Dr. Lyman Rickard (CHEM) and the lectureship committee, hosted ≈ 600 attendees from grades 3 – 9 with over 120 virtual attendees.
for the afternoon presentation, 46 attendees for science competition, and ≈ 200 attendees from the general public. This event was supported by the Brossman Foundation and Ronald E. Frisbie and this year’s program included the Science Knowledge Competition Examination.

Special Faculty Achievements

- Dr. Jeremiah K. N. Mbindiyo (CHEM) received the American Chemical Society’s Committee on Environmental Improvement (ACS-CEI) Award for Incorporation of Sustainability into Chemistry Education (2016). He then gave an invited presentation "Incorporating sustainability in undergraduate chemistry education: A multi-faceted approach" at the Awards Symposium.
- Dr. Duane Hagelgans (ESCI) received the International Association of Emergency Managers, Student Ally of the Year Award (2015).
- Dr. Sepi Yalda (ESCI) received Millersville University’s Educator of the Year award (2016).
- Dr. Richard Clark (ESCI) received a NASA Langley Group Achievement Award for his work on the Deriving Information on Surface conditions from Column and Vertically Resolved Observations Relevant to Air Quality (DISCOVER-AQ) Science Team.

Student Achievements

- Mervin Fansler (CSCI and MATH) was the 2016 winner of the Syed R. Ali-Zaidi Award for Academic Excellence for the PA State System of Higher Education.
- Jennifer L. Houtz (BIOL) and Jose F. Urena (CHEM) received 2016 Honorable Mentions for the Barry Goldwater Scholarship and Excellence in Education.
- The Association of Technology, Management, and Applied Engineering (ATMAE) Semi-Autonomous Robotic Manipulator Contest (2015) (Dr. Mehmet Goksu – PHYS and Dr. John Wright – AEST, advisors with ATMAE student chapter robotics team). 1st Place Overall (National Champions), 1st Place Fan Vote, 1st Place Fabrication/Innovation, 1st Place Poster, 1st Place Team Presentation/Technical Report, 1st Place Performance (Relay Race), 2nd Place Performance (Obstacle Course), 2nd Place Electrical/Controller Methodology.
- Joe Receveur (BIOL) was the recipient of the 2016 A. G. Breidenstine award for his honors thesis entitled “ENSO related storm event impact on mosquitoes: ecological implications on larval habitats and microbial community response to control methods.” Dr. John Wallace served as research mentor.
- Ashley Orehek (ESCI/Meteorology) received the American Meteorological Society’s Named Scholarship for 2016-2017 academic year.

Notable Alumni Achievements

- Thomas Bernhardt, Ph.D. (1996, CHEM) was the recipient of the 2016 Young alumni Achievement Award.
- Scott Jacobs (1988, ESCI/Meteorology) received the 2015 Russell L. DeSouza Award by the Unidata Users committee. The DeSouza Award, named after former MU Meteorology Professor Dr. Russel DeSouza, honors “individuals whose energy, expertise, and active involvement enable the Unidata Program to better serve the geosciences.” Mr. Jacobs is currently with the National Centers for Environmental Prediction (NCEP).
- Jeff Jumper (2016, MSEM) was selected as Pennsylvania’s first state meteorologist. Mr. Jumper serves as the subject matter expert in meteorology for the Commonwealth. His primary role is to forecast for state agencies and other stakeholders in the emergency management community and
to provide onsite meteorological support in PEMA’s emergency operations center during an emergency.

External Grants or Contracts Funded

- Dr. Mark Atwater (AEST) was awarded a National Science Foundation CAREER Award (2016-2021; CAREER: Faculty Early Career Development Program).
- Dr. Jack Ogutu (AEST) was awarded a NIOSH Training Program Grant for a five-year period.
- Dr. Judy Cebra-Thomas (BIOL) received a multi-year grant award from the National Science Foundation to fund her research on the development of the turtle shell.
- Dr. Stephanie Schwartz (CSCI) coordinated a grant from the National Institute of Standards and Technology that provided funding for three students to participate in the Summer Undergraduate Research Fellowship program at NIST in Summer 2015.

Suggested Areas for Improvements

- Continuing the good work the College is already achieving.
- Recruitment of calculus-ready students.
- Overall retention of calculus- and non-calculus-ready students, particularly students traditionally underrepresented in STEM disciplines.
- Continue to explore ways of offering on-line courses in support of the University’s General Education program.
- Acquiring financial support (both internal and external) to meet the instructional, scholarly, and service needs of the faculty and students for programs that are extremely equipment and computationally intensive.
- Exploring new partnerships, both formal (affiliation agreements) and informal.
Appendix – Selected Highlights

The items selected for this Appendix highlight the breadth and depth of faculty and student accomplishments. Not all accomplishments have been selected for this Appendix. For a full list of accomplishments, please see departmental submissions.

Examples of Faculty Awards

a. Dr. Len Litowitz (AEST) received the Technology & Engineering Education Association of Pennsylvania (TEEAP) Silver Service Award for lifetime achievement (2015).

b. Dr. Joseph McCade (AEST) received the Michael Whitman Memorial Outstanding Service Award for his extensive service to the organization at the TEEAP Conference (2015).

c. Prof. Donna Painter (AEST) received the TEEAP President’s Special Recognition Award (2015).

d. Dr. Thomas Bell (AEST) was inducted into Gamma Epsilon Tau, an honor society for excellence in graphic communications.

e. Dr. Aaron Haines (BIOL) received the Outstanding Popular Article Award ‘To Catch a Poacher’ co-authored with S. Webb and Aaron Haines for outstanding contribution to natural resource management and conservation, The Oklahoma Chapter of the Wildlife Society, (2016).

f. The PA Association of School Nurses & Practitioners (PASNAP) awarded the 2016 Friend of School Nursing Award in recognition of Dr. Barbara Zimmerman’s (NURS) dedication and significant contributions to the school nursing profession.

g. Dr. Jenny Monn’s poster “Evidence-Based Strategies to Improve Influenza Immunizations in College Students” won second place at the PA Coalition of Nurse Practitioners Annual Conference, November (2015).

h. Dr. Mehmet Goksu (PHYS) received the “Distinguished Service Award” by American Association of Physics Teachers – Central Pennsylvania Section (AAPT-CPS).

Examples of Student Awards

a. AEST students successfully competed in several events at the Technology & Engineering Education Collegiate Association Eastern Regional Conference (2015). Results were: 2nd place in Robotics (Al Gallo, Amanda Piergallini, Adam Kennedy, John Zug, and Dan Simms); 3rd place in the Technology Challenge Quiz Bowl (Shane Waters, Matthew Dietrich, Darcie Jones, Derek Hakes); 3rd place in K-5 STEM Design (Abigail Sweeney, Joshua Handshaw, Lauren Coker); 3rd place in Instructional Module (Grace Painter, Darcie Jones, Lexi Lagnemma).

b. Korbin Shearer (AEST) received the Donald Maley Spirit of Excellence Outstanding Undergraduate Student Citation at the ITEEA conference.

c. TEECA @ MU (Dr. Sharon Brusic, advisor) received Outstanding Chapter award at the ITEEA conference AND the Chapter Service award at the ITEEA conference. TEECA = Technology & Engineering Educators Association; ITEEA = International Technology & Engineering Educators Association.

d. TEECA @ MU’s Student President Grace Painter received the Outstanding Chapter Service award in recognition of a student who has exemplified leadership within the
local chapter reflecting well on TEECA and the field of Technology & Engineering Education.

e. Joe Receveur (BIOL) Outstanding Undergraduate Researcher, Entomological Society of America, October, 2015. Dr. John Wallace served as research mentor.

f. Calen Wylie (BIOL) won 2nd place in the Undergraduate poster division for the Medical Urban Veterinary Entomology section of the meeting. Dr. John Wallace served as research mentor.

g. Sarah Way (BIOL) was awarded a full scholarship ($31,645) to attend the fall semester at Williams College’s Maritime Studies Program in Mystic (http://mystic.williams.edu). Williams-Mystic is a 17-week immersion semester focused on the science, history, policy, and literature of the world’s oceans, offering extensive research opportunities at the undergraduate level, and field seminars (this fall) to the Great Lakes, the California coast, and Louisiana. Dr. Dominique Didier (Biology) served as mentor.

h. The following Biology majors won student awards at the 2016 Commonwealth of Pennsylvania Biologists (CPUB) Annual Meeting: Kayli Thomas, Alex Sandercoc & Kelsi Nagy (2nd place, Platform); Victoria Coutts (1st place, Poster); Hannah Beville (1st place, Poster); Christina Michael (1st place, Poster); Sherrie Moyer (2nd place, Poster); and Calen Wylie (2nd place, Poster).

i. Shayne Macintosh (CSCI; Mentors Drs. Stephanie Schwartz and Gary Zoppetti) won the Best Undergraduate Student Paper award at PACISE (Pennsylvania Association of Computer and Information Science Educators) for his paper “Optimizing the Multiclass Perception Through Parameter Tuning and GPU Utilization” (2016).

j. Jason Zimmerman (CSCI) received a NASA internship to work at the Houston Space Flight Center during the spring semester on software for the Orion project.

k. Millersville University’s programming team (Ryan Peterson, Hugh Quinn, and Steve Zelek; Todd Echterling served as advisor) received 1st place in the PACISE Programming Team competition (2016).

l. Amber Liggett and Alyssa Cannistraci (ESCI/Meteorology) were selected for the NOAA Hollings 2016-2017 Scholarship. Amber Liggett was also selected for the University Corporation for Atmospheric Research Significant Opportunities in Atmospheric Research and Science (SOARS) program.

m. Christian Boyer (ESCI/Meteorology) was accepted for the NCAR Undergraduate Leadership Workshop.

n. Jon Buerele (MSEM) received the International Association of Emergency Managers, Student of the Year Award (2015).

o. Kevin Piaskowski (PHYS) received an Undergraduate Research Presentation Award at the April Meeting of the American Physical Society on “One and Two-Dimensional Random Walks with One-Step Memory”. Dr. Michael Nolan (PHYS) served as his research mentor.

Examples of Alumni Awards and Accomplishments

a. Jared Bitting (AEST) at Fleetwood Middle School received the Innovative Educator Award in recognition and celebration of extraordinary talent, creativity, ingenuity, and enthusiasm by an innovative teacher in the field of Technology & Engineering Education.
b. Megan Stearns Jones (2009, BIOL) recently completed her Ph.D. dissertation in Microbiology and Immunology at the University at Buffalo. She will be starting a post-doc.

c. Chris Lituma, Ph.D. (2005, BIOL) has accepted a tenure track assistant professor position as an Avian Ecologist in the Division of Forestry and Natural Resources at West Virginia University.

d. Gina Mazzuca (ESCI/Meteorology), currently a graduate student at the University of Maryland, won the AMS 18th Conference on Atmospheric Chemistry Outstanding Student Platform Presentation Award.

e. James Kurdzo (ESCI/Meteorology) completed his PhD in Meteorology at the University of Oklahoma and has joined the Technical Staff at MIT Lincoln Laboratory. While at the University of Oklahoma, he received the Tommy C. Craighead Award for Best Paper in Radar Meteorology, a 1st Place Oral Presentation at the 2015 4th International Symposium on Earth-Science Challenges, and a 2nd Place Oral Presentation at both the 2015 31st AMS Conference on Environmental Information Processing Technologies and the 2015 5th AMS Conference on Research to Operations.

f. Ned Bushong (ESCI/Geology) received the North Museum Board of Directors’ Prize for Excellence in Science Education.


Examples of Student Placements

a. Joseph Receveur (BIOL 2016) has accepted a research assistantship to pursue a Master’s degree in the Entomology Department of Michigan State University in East Lansing, MI.

b. Colin Hansen (BIOL 2016) was accepted to the University of Pennsylvania’s Veterinary School.

c. Pineal Bekere (CHEM 2016) will be attending the Loyola University of Chicago Medical School.

d. Nikki Wolford (CHEM 2016) will be attending the University of Rochester for graduate school in chemistry.

e. Mervin Fansler (CSCI and MATH, 2016) will be pursuing graduate studies in Bioinformatics at Cornell University.

f. Jared McAndrews (CSCI) will be a Software Engineer at Fidelity Tech in Reading, PA.

g. Kevin Avila (CSCI) will be a Software Developer at Computer Aid in Allentown, PA.

h. Kevin Piaskowski (CSCI and PHYS) will be a Modeling and Simulation Engineer in the Applied Physics Lab at Johns Hopkins University.

i. Talyor Lagler (MATH) will be pursuing graduate studies in biostatistics at the University of North Carolina.

j. Rachel Chioda (MATH) has accepted a teaching position at Dauphin County Technical School, PA.
Examples of Faculty and Student Presentations


c. J. Spengler (BIOL) presented her research at the Annual Meeting of the Pan-American Society for Evolutionary Developmental Biology in Berkley, CA August 5-9, 2015. Dr. Judith Cebra-Thomas (Department of Biology) supervised Ms. Spengler’s research.


i. D. Hagelgans (ESCI) provided keynote address “Regionalization, Lessons Learned from the Amish Nickle Mines Shooting” for the New Mexico State Emergency Management Conference (2015) and was an invited speaker at the Colorado State Emergency Management Conference and the New Mexico Department of Education's Safe School Summit (2016).


k. A. Kumar (ESCI) and N. Murry, “Coastal Bays and Sea Level Rise: a long term analysis of Chincoteague Bay Barrier Island System,” 2016 Ocean Sciences Meeting.


n. J. Eastman, N. Heitmann (MATH) and R. Buchanan (MATH), “Inducing Alternans in Cardiac Models using Delay Differential Equations,” AMS-MAA-SIAM Special Session on Research in Mathematics by Undergraduates and Students in Post-Baccalaureate Programs, Joint Mathematics Meetings (2016).
Examples of Publications


b. Frank Caccavale (AEST) published an article entitled “Promote or perish” in the Technology and Engineering Teacher, *75* (6), pp. 8-11, 2016. The article was written by Mr. Caccavale while he was a student in EDTE 646: Writing the Professional Paper with Dr. Mark Snyder.


i. Dr. Brent Horton (BIOL) co-authored “Genes located in a chromosomal inversion are correlated with territorial song in white-throated sparrows,” *Genes, Brain and Behavior*, September (2015).

r. N. W. Hardy (CSCI) and C. R. Hardy (BIOL), “Broadening the Scope of Computer Science Education: Introducing and Incorporating Biodiversity Informatics Education to a Computer Science Curriculum,” proceedings of The 17th *International Conference on Bioinformatics & Computational Biology* (2016).
t. B. Liffick (CSCI), G. Zoppetti (CSCI), S. Yalda (ESCI), and R. Clark (ESCI), “GEOpod: Using a Game-Style Interface to Explore a Serious Meteorological Database,” HCI International (2016).
v. A. DeCaria (ESCI) published a book titled Python Programming and Visualization for Scientists via Sundog Publishing of Madison, WI.
y. Dr. Jenny Monn (NURS) published “An Evidence-Based Project to Improve Influenza Immunizations,” *Journal for Nurse Practitioners*, April (2016).


bb. X. Catepillán (MATH) and W. Szymanski, Mathematics in a Sample of Cultures, Dubuque, IA: Kendall-Hunt Publishing Co. (2016).

c. C. E. Taylor (MATH), M. Rehm (MATH), and X. Catepillán (MATH), “Maya calendars in the classroom,” Mathematics Teaching in the Middle School, 21(2), 106-113 (2015).


Examples of Science Outreach programs

a. The Center for Disaster Research and Education (CDRE), under the direction of Drs. Sepi Yalda and Duane Hagelgans (ESCI) held its second annual Preparedness Day that involved local, state and federal emergency management agencies, the local fire service, and five student organizations with over 200 students, faculty, staff, and visitors in attendance. Other events were also held by the CDRE such as the 2nd Annual Central Pennsylvania Integrated Weather Impacts Team (IWIT) Meeting and Workshop.

b. Undergraduate meteorology students participate in the Campus Weather Service service-learning activities under the direction of Weather Center Director Mr. Eric Hörst (ESCI) along with multiple other activities such as the annual Public Weather Awareness Day.

c. Dr. Nazli Hardy (CSCI) chaired the committee responsible for hosting the Women in Mathematics and Science Conference held at Millersville University, April 5, 2016. The event hosted 239 participants from 48 area schools and was supported by the Hazeltine Family and Johnson & Johnson Consumer Products U.S.A. That evening, a performance of 'No Belles' was shown to members of the University and Public (supported by the Office of the President, Provost, SCTE, AHSS, and through private donations).

d. The Department of Mathematics hosted several academic competitions this year including:
   - the annual MU High School Mathematics Contest (led by Dr. Michael Wismer with questions largely developed by Dr. Bruce Ikenaga) that brought 86 students from 21 schools throughout the region, and
   - the annual IU-13 AP Calculus and AP Statistics simulations. This year, the AP Calculus simulation brought 24 high school teachers to campus to assist in evaluating 336 students responses while the AP Statistics simulation brought 19 teachers who assisted in evaluating 341 student responses.

e. The Department of Nursing (led by Dr. Jenny Monn) hosted the Xi Chi local chapter’s Annual Distinguished Lectureship, featuring Dr. Ruth McDermott Levy presenting her research on the impact of the natural gas boom on individuals living in fracking areas.
Examples of Faculty and Staff in External Leadership Roles

**International/National**

a. Dr. Scott Warner (AEST), Annual Conference Program Committee Chairperson, International Technology and Engineering Educators Association.

b. Dr. James Cosentino (BIOL), Director of the International Organization for Chemical Sciences in Development, Microscience Program.

c. Dr. Steven Bonser (CHEM), Chair of the Awards Subcommittee for the Committee on Science, American Chemical Society.

d. Dr. Stephanie Schwartz (CSCI), Steering Committee member and the General Conference Chair for the 9th International Conference on the Theory and Application of Diagrams (2016).

e. Dr. Richard Clark (ESCI), Members Nominating Committee of the University Corporation for Atmospheric Research (UCAR) and serves as their chair, and the American Meteorological Society’s (AMS) Committee on Environmental Stewardship.

f. Dr. Todd Sikora (ESCI), Editor of the *Journal of Applied Meteorology and Climatology*, published by the AMS.

g. Dr. Sepi Yalda (ESCI), Unidata Strategic Advisory Group, Emergency Management Institute’s Higher Education Group (Higher Education Accreditation Task Group), and on the AMS Centennial Committee.

h. Dr. Kathleen Schreiber (GEOG), Chair of the AMS Committee on Environmental Stewardship.

i. Dr. Ximena Catepillan (MATH), member of the Mathematical Association of America Committee on Sections.

**State/Regional**

a. Dr. Ebrahim Karan (AEST), State TSA Contest Coordinator.

b. Dr. Christopher Hardy (BIOL) chaired a meeting of the Survey's Plants Technical Committee which makes formal recommendations to the Commonwealth of Pennsylvania regarding conservation status of plants deemed endangered or otherwise threatened.

c. Dr. David Hutchens (CSCI), Board Member, PACISE.

d. Dr. Talor Walsh (ESCI), member of the State of Pennsylvania’s Geological Mapping Advisory Committee.

e. Dr. Kathleen Schreiber (GEOG), Executive Leadership Committee member for the Pennsylvania Environmental Resource Consortium.

f. Dr. Kevin Robinson (MATH), President PA Chapter of the American Statistical Association.

g. Dr. Kelly Kuhns (NURS), Executive Board Member, PA South Central Evidence-Based Practice Consortium, Harrisburg, PA.

h. Dr. Rebecca Modene (NURS), President of the Pennsylvania State Nurses Association, District 16 (Lancaster, York, and Lebanon).

i. Dr. Mehmet Goksu (PHYS), President of the American Association of Physics Teachers – Central Pennsylvania Section (AAPT-CPS).
Examples of Faculty and Student Highlights

- This past academic year, the following faculty were featured in the Center for Academic Excellence Innovative Practices Spotlight: Dr. Alex DeCaria (ESCI), Dr. Duane Hagelgans (ESCI), Dr. Scott Warner & Dr. Louise Manfredi (AEST), Dr. Steven Kennedy (CHEM).
- Dr. Tom Bell (AEST) served as President of the Accrediting Council for Graphic Communications (ACCGC).
- Dr. Louise Manfredi and Dr. Mark Atwater (AEST) worked on a service project at the Water Street Rescue Mission that includes a partial redesign of the facility.
- The Department of Biology taught 6 courses (8 sections) having a significant service learning component. This involved 153 undergraduate students and comprised a total of 793 hours of service learning.
- The Department of Chemistry had its largest graduating class: 42 students (50% female; 6 African American; 6 Asian; and 4 Latino with students from 6 different African and Asian countries. 7 graduates have been accepted into Ph.D. Programs; 2 to Medical School; 2 to Pharmacy School; 18 currently have jobs/job offers in the private sector in the field of chemistry.
- Students in four different geography courses, across multiple sections, participated in service-learning activities and programs through various partnerships with such organizations as the City of Lancaster, Elizabeth R. Martin Elementary School and the Lancaster Inter-Municipal Committee.
- The Department of Nursing helped coordinate (led by Dr. Jenny Monn) the 4th Annual Breast-A-Ville (2015).
- The Department of Physics hosted multiple outreach programs at area middle and high schools.
Recruitment Plan (GB S1.1.a) – College of Science and Technology

Passive
- Departments will maintain updated websites that include 4-year degree plans, curricula, and/or degree requirements. Some departments (e.g. ESCI) also create annual newsletters.
- College and Departments will maintain promotional materials such as cut sheets and brochures.
- College and Department websites will include student spotlights and/or videos from current and former students.
- College and Departments will participate in University Open Houses. Departments also offer group (e.g. Friday’s ESCI hosting of campus visitors through the Admissions Office) and individual tours to both prospective students and their families.
- Scholarships and other student support will remain a university priority (University, College, and Department Scholarships; funding for undergraduate research experiences; proposed development of a Calculus-Ready Scholarship).

Active
- Departments can reach out to high school teachers when students perform well in introductory courses and students who have graduated (e.g. Chemistry).
- Departments invite prospective high school students to “Shadow a senior” during a visit to the University (e.g. Chemistry).
- Departments can participate in off-campus recruitment activities (e.g. College and Career fairs, conferences, etc).
- Departments can participate in follow-up communications with students (e-mail and/or phone) who indicated their interest in the University. This includes students who signed up for Open Houses and Tours as well as admitted students who haven’t yet paid their deposits.
- Participation in outreach programs at the College (Summer Science Training Program, Brossman-Frisbie Science Lectureship and Science Knowledge Competition Examination, Science Olympiad, etc) and Department (e.g. Calculus and Statistics AP Simulations, High School Mathematics Competition, Spotlight on Mathematics, Science, and Technology) level.
- Pre-admission advising performed at Community Colleges (e.g. Nursing).

Question: Would it be beneficial for departments to gain access to the student information acquired by the University from SAT/ACT/AP? For example, could departments use this information when recruiting students (via e-mail, phone, etc)?
Retention Plan (GA S1.1.a2) – College of Science and Technology

- The key to retention is a good recruitment plan, one that identifies ways of recruiting calculus-ready students. This is a key component to student success for many of the programs within the College of Science and Technology.
- Departments have developed and offer transitional courses related to their discipline(s) (such as UNIV 103).
- As appropriate, departments have developed and participate in living-learning communities related to their discipline.
- Departments will continue to seek out and provide financial support to students through traditional scholarships and other professional opportunities such as tutoring and paid research/internship experiences.
- Departments will continue to incorporate high impact practices into their curriculum. All programs offer a capstone experience for students. For example, chemistry, geography, and physics all require a research or internship experience while other programs offer a variety of field experiences. Departments have identified capstone experiences for their various degree programs.
- The College will ensure that students are adequately placed into introductory courses and that they receive sufficient support.
  - The Math and Chemistry Placement Exams are respectively managed by the Departments of Mathematics and Chemistry.
  - Access to the Math Assistance Center and tutoring in a variety of introductory courses is available to all students at no cost. For high-risk students, additional individualized tutoring is also available.
  - Departments identify courses (or other obstacles) that impede progress within the major such that additional support can be strategically directed to assist with student success. Many of the academic programs within the College have a highly sequenced curricular structure.
- Departments will continue to encourage faculty to assist in managing curricular costs by considering the use of OpenStax (free, open-source) textbooks and/or ensuring desk copies are available in the library for students to use.
- Ensure students are engaged with peers and faculty in the discipline so that they can learn more about and continue to pursue their desired career paths.
  - Departments have active, award-winning student organizations to assist students in developing a sense of community and belonging. Other unique opportunities that exist for students to participate in on our campus include the Campus Weather Service and a student-led mentoring program (e.g. meteorology).
  - Departments will maintain a seminar series and/or continue hosting guest speakers.
  - The College will continue to support activities that embrace inclusivity. Some examples have included bringing the production of ‘No Belles’ to the Millersville University campus and advocating for gender inclusive bathrooms.
Faculty advising. For example, departments have 4-year degree plans and students/advisors can use these as degree templates to assist in designing and customizing their degree plan (now available on-line through Degree Works).

Question: Are there ways we can strengthen the faculty advisor/advisee relationship? This is a critical component to student success and retention. For example, at both registration rallies, a significant number of students did not go back to their advisor when they ran into difficulty registering because they did not want to bother them. Advisors may want to further emphasize the need to reconnect with them if issues arise along with encouraging students to explore the degree audit system further (e.g. the 4-year degree planner, the ‘What If’ feature, etc).

Department chairs and advisors will continue communicating with one another to coordinate the schedules for courses that are co-requisites. This should help minimize time conflicts that could unnecessarily delay student progress in the major.

For high-risk students, a mentoring program is available within the university. There are also examples at other institutions that faculty are aware of, however those have significant resource implications.

Closing the loop. Exit surveys of graduating seniors are administrated to gain their perspective regarding the experience they had at the University.

The College will investigate collaborating with the Office of Academic Advisement to conduct exit interviews of graduating students. What was their experience like and how did they successfully navigate the University? Information from students traditionally underrepresented in STEM fields would be particularly useful.
Capstone Experience Summary (GA S4.3.b)

AEST
- BS in AETE: IETC 492, BAUD 452, and Advanced lab course (Industrial Organization, Productions and Operations, R&D lab work, all students, required)
- BSE in EDTE: EDSE 461 & 491 (student teaching & seminar, all students, required)
- BS in OSEH: OSEH 410 & 440 (program management & internship, all students, required)

Biology
- BS in Biology: BIOL 472 (Biology seminar, all students, required)
- BA in Biology: BIOL 472 (Biology seminar, all students, required)
- BSE in Biology: BIOL 473 & EDSE 461 (methods of teaching biology & student teaching, all students, required)
- BS in Allied Health Technology: (clinical laboratory study/athletic training, all students, required)

Chemistry
- BS in Chemistry: CHEM 498 (Research, all students, required)
- BA in CHEM: CHEM 487 & 488 (Seminar, all students, required)
- BSE in CHEM: CHEM 487 & 488 (Seminar, all students, required) AND EDSE 461 (student teaching, all students, required)

Computer Science
- BS in Computer Science: CSCI 420 (Software Engineering, all students, required)

Earth Sciences
- BA in Earth Sciences: none
- BS in Geology: ESCI 421 (Advanced Geology, all students, required)
- BS in Meteorology: ESCI 441, 443, and 444 (Synoptic Meteorology Lecture-Laboratory, Climate Dynamics, and Mesoscale Meteorology, all students, required)
- BS in OSCS: ESCI 468 (Ocean Data Analysis and Presentation, all students, required)
- BSE in Earth Sciences: EDSE 461 (student teaching, all students, required)

Geography
- BA in Geography: GEOG 300 or 488 (internship or thesis, all students, required)
- BSE in Social Studies: EDSE 461 (student teaching, all students, required)

Mathematics
- BS in Mathematics: MATH 464 (Real Analysis, all students, required)
- BA in Mathematics: MATH 464 (Real Analysis, all students, required)
- BSE in Mathematics: MATH 405 (teaching mathematics in secondary school, all students, required)

Nursing
- BSN: NURS 478 Transformational Leadership (includes practicum, all students, required)
Physics
  o BS in Physics: PHYS 498 (Research, all students, required)
  o BA in Physics: PHYS 498 (Research, all students, required)
  o BSE in Physics: PHYS 498 (Research, all students, required) AND EDSE 461 (student teaching, all students, required)
Degree Plans/Requirements (GA S1.3.a)

AEST
- BS in AETE: 
- BSE in EDTE: 
  [http://www.millersville.edu/aest/four-year-programs/TECE-prog.pdf](http://www.millersville.edu/aest/four-year-programs/TECE-prog.pdf)
- BS in OSEH: 
- BS in ARET: 
  [http://www.millersville.edu/academics/educ/aest/four-year-programs/AIRET.pdf](http://www.millersville.edu/academics/educ/aest/four-year-programs/AIRET.pdf)

Biology
- BS in Biology, BA in Biology, BSE in Biology, BS in Allied Health Technology (and all options): 
  [http://www.millersville.edu/academics/scma/biology/files/four_year_path.pdf](http://www.millersville.edu/academics/scma/biology/files/four_year_path.pdf)

Chemistry
- BS in Chemistry, BA in Chemistry, BSE in Chemistry (and all options): 
  [http://www.millersville.edu/academics/scma/chemistry/curriculum/requirements.php#BachelorofScienceinChemistry](http://www.millersville.edu/academics/scma/chemistry/curriculum/requirements.php#BachelorofScienceinChemistry)

Computer Science
- BS in Computer Science: 

Earth Sciences
- BA in Earth Sciences, BS in Geology, BS in Meteorology, BS in OSCS, BSE in Earth Sciences: 

Geography
- BA in Geography, BSE in Social Studies (and all options): 

Mathematics
- BS in Mathematics: 
- BA in Mathematics: 
- BSE in Mathematics (and all options):
  http://www.millersville.edu/academics/scma/math/programs/bs_math_ed.php

**Nursing**
- BSN: All students enter as transfer students. Therefore, they must meet with a faculty advisor to discuss the specifics needed for either the face-to-face or on-line programs.

**Physics**
- BS in Physics, BA in Physics, BSE in Physics (and all options):

**MDST program information**
- BA in Entertainment Technology:
  http://www.millersville.edu/mdst/approved-programs/entertainment-technology.php
- BA in Environmental Hazards and Emergency Management:
**Dean’s Funding Priorities (GB S3.1.a) – College of Science and Technology**

While keeping existing programs fully funded, here are a few priorities I would like to see the College pursue.

**Priority 1: Equipment Acquisition and Maintenance Endowment**

Today, cutting edge technology is integrated heavily into every department within this College. Consequently students and faculty need access to up-to-date equipment and software. These endowments should be strong enough to upgrade technology and software as appropriate and/or provide new faculty with start-up funds to establish a research facility that will advance the discipline while providing our students meaningful faculty-mentored research experiences. Additionally, this program could also be used to provide matching funds for faculty seeking external grant funding to acquire equipment and software as well as to sustain its effective use.

**Priority 2: Student Research Fellowships**

These research fellowships would provide support to students to engage in faculty mentored research during the summer. Initially, our goal would be to have 8 to 10 summer fellowships funded so that students would receive a $3,000 to $4,000 stipend while the faculty mentor would receive $1,000 to support their research. Eventually, it would be nice to grow the program so that it is similar to other institutions (some provide 30+ summer research fellowships across all departments annually having greater stipend support as well as support for research-related travel and supplies).

**Priority 3: Scholarships**

The College is fortunate to have many scholarships with each department having at least one scholarship. With increasing costs and more than 80% of our students seeking need-based tuition support scholarships, more support can always be used. This is also one of the best understood needs by the greatest number of alumni, parents, and friends.

Other programs to consider include:

1. Expanding the Undergraduate Travel Fellowship program to include more individual support (up to $500/student) and more awards;
2. Expanding the Travel Fellowship program concept to an Undergraduate Research Supplies Grant program whereby students could apply for up to $500 of funding to cover the costs associated with conducting their research (chemicals, software, consumables, etc).
3. Facilitating equipment donation programs, internship programs, expanding the faculty research release program, etc.
Independent Study Undergraduate Student Research Projects Conducted with Millersville University Faculty

1. Allan Abel, Biology, (mentor: Dr. Daniel Yocom), *Soil Invertebrate Study.*
2. Riya Aleid, Biology, (mentor: Dr. James Cosentino), *Cadaver Dissection.*
8. Laura Bankert, Chemistry, (mentor: Dr. Jeremiah Mbindyo), *Catalytic Activity of Multimetal Nanostructures.*
9. Joshua Bard, Biology, (mentor: Dr. Jean Boal), *Possible Mimicry in Cat Vocalizations.*
10. Joshua Bard, Biology, (mentor: Dr. Jean Boal), *Songbird Recognition of Cat Vocalizations.*
12. Brianna Beasley, Physics, (mentor: Dr. Natalia Dushkina), *Fiber Optics.*
16. David Bludis, Earth Sciences, (mentors: Drs. Richard Clark and Todd Sikora), *Examining the Nocturnal Stable Boundary Layer and Low-Level Jet during PECAN.*
17. Derek Borigo, Physics, (mentor: Dr. Michael Nolan), *Boundary Return Probability of Random Walks.*
18. George Bracelin, Applied Engineering, Safety & Technology, (mentor: Dr. Mark Atwater), *Advanced CNC Machining.*
19. Mike Burns, Earth Sciences, (mentor: Dr. Ajoy Kumar), Ecology of Chincoteague Waters.
21. Matthew Carta, Chemistry, (mentor: Dr. Steven Kennedy), *Amide bond formation studies en route to Hunanamycin A.*
23. Liana Christmas, Earth Sciences, (mentor: Dr. Sepi Yalda), *Earth Science Applications.*
24. Keith Coasey, Physics, (mentor: Dr. Xin Li), *Antenna Design.*

26. Paolo Cornielio, Chemistry, (mentor: Dr. Aimee Miller), Measuring Mg2+ Levels in Yeast.

27. Victoria Coutts, Biology, (mentor: Dr. Carol Hepfer), Cloning of Twitchin Gene from Distinct Squid Muscles.

28. Connor Dearth, Earth Sciences, (mentors: Drs. Richard Clark and Todd Sikora), Examining the Nocturnal Stable Boundary Layer and Low-Level Jet during PECAN.

29. Michael DeCaria, Mathematics, (mentor: Dr. Ronald Umble), Explorations in Geometry and Topology.

30. Austin DeHaven, Chemistry, (mentor: Dr. Maria Schiza), Gold and Silver Nanoparticles Used for Raman Signal Enhancement.

31. Cara Discavage, Biology, (mentor: Dr. Susan DiBartolomeis), Bacterial Contamination on Equipment.

32. Angela Ditri, Earth Sciences, (mentor: Dr. Ajoy Kumar), Sea Surface Temperature Variability.

33. Lindsey Ditzler, Earth Sciences, (mentor: Dr. Talor Walsh), Appalachian Techtonics.

34. James Dreer, Chemistry, (mentor: Dr. Steven Kennedy), Reductive amination en route to Hunanamycin A.

35. Justin Eastman, Mathematics, (mentor: Dr. Noel Heitmann), Numerical Solutions to Differential Equations.


37. Mervin Fansler, Computer Science, (mentor: Dr. Carol Hepfer), Development of Rapid Computer Simulation for Sequential Digestion of Nucleic Acid Sequences.

38. Mervin Fansler, Mathematics, (mentor: Dr. Ronald Umble), Topology of the n-Brunnian Links.


41. Jessica Fink, Earth Sciences, (mentors: Drs. Richard Clark and Valbona Kunkel), Comparison of the GOES X-ray data with EUVI brightness of the source regions of the CME.

42. Kalen Fisher, Earth Sciences, (mentors: Drs. Richard Clark and Todd Sikora), Examining the Nocturnal Stable Boundary Layer and Low-Level Jet during PECAN.

43. Brooke Frye, Biology, (mentor: Dr. Aaron Haines), Small Mammal Trapping.

44. Katherine Geating, Biology, (mentor: Dr. Carol Hepfer), Evaluation of Differential Gene Expression In Distinct Squid Muscles.

45. Cara Geiger, Earth Sciences, (mentor: Dr. Ajoy Kumar), Sea Surface Temperature Variability.
46. William Gervasio, Computer Science, (mentor: Dr. Gary Zoppetti), *Splatting Distance Fields*.
47. Steve Gillen, Applied Engineering, Safety & Technology, (mentor: Dr. Scott Warner), *Study of Historical Furniture Construction*.
48. Christopher Gojda, Physics, (mentor: Dr. Sean Hendrick), *X-Ray Analysis of SNRs N49 & N49B*.
49. Jonathon Gojda, Physics, (mentor: Dr. Mehmet Goksu), *The Optimization of Wind Turbines*.
50. Matthew Green, Earth Sciences, (mentors: Drs. Richard Clark and Valbona Kunkel), *Dependency of Magnetic Field of the CME on Other Physical Quantities on the Sun*.
51. Matthew Green, Earth Sciences, (mentors: Drs. Richard Clark and Todd Sikora), *Examining the Nocturnal Stable Boundary Layer and Low-Level Jet during PECAN*.
52. Samuel Greer, Chemistry, (mentor: Dr. Michael Elioff), *Ab Initio Quantum Mechanics*.
53. Justin Griffin, Chemistry, (mentor: Dr. Jeremiah Mbindyo), *Synthesis of Multimetal Nanowires*.
54. David Habig, Geography, (mentor: Dr. Jessica Kelly), *The Geography of Ring Roads*.
55. Cecilia Hall, Physics, (mentor: Dr. Natalia Dushkina), *Structural Colors of Birds*.
57. Lindsay Harrison, Biology, (mentor: Dr. Ryan Wagner), *Effect of Herbivory on PPO*.
58. Joel Hassell, Biology, (mentor: Dr. Sharmin Maswood), *Cognitive Behavior After Tropisetron in Estrogen Primed Female Rats*.
59. Joel Hassell, Biology, (mentor: Dr. Sharmin Maswood), *Do estrogen and progesterone act synergistically to accentuate the cognitive effects of a serotonergic antagonist in female rats?*
60. Melinda Hatt, Earth Sciences, (mentors: Drs. Richard Clark and Valbona Kunkel), *Dependency of Magnetic Field of the CME on Other Physical Quantities on the Sun*.
63. Tyler Helsel, Computer Science, (mentor: Dr. Stephanie Schwartz), *Exploring Virtual Reality*.
64. Andrew Herr, Chemistry, (mentor: Dr. Jeremiah Mbindyo), *HPLC Separation of Sugars*.
65. Franklin Herr, Biology, (mentor: Dr. John Wallace), *Blackfly Microbionic Project*.
67. Ryan Hikins, Biology, (mentor: Dr. James Cosentino), Cadaver Dissection.
68. Ryan Hikins, Biology, (mentor: Dr. James Cosentino), Ratfish Venom Biochemistry.
70. Jennifer Houtz, Biology, (mentor: Dr. Brent Horton), Molecular Determination of Offspring Sex Ratios in White-crowned Sparrows.
71. Amber Howe, Biology, (mentor: Dr. James Cosentino), Cadaver Dissection.
72. Vanessa Hower, Earth Sciences, (mentors: Drs. Richard Clark and Todd Sikora), Examining the Nocturnal Stable Boundary Layer and Low-Level Jet during PECAN.
73. Isidore Iradukunda, Chemistry, (mentor: Dr. Lyman Rickard), Surface Enhanced Raman Spectroscopy.
74. Amanda Isabella, Biology, (mentor: Dr. Daniel Yocom), Forest Quality Affect Soil Invertebrate Community.
77. Ivanny Jacome Ottati, Chemistry, (mentor: Dr. Steven Bonser), The Synthesis and Reactions of Some 1,2-Diacylidiaziridines.
78. Shane Kacskos, Chemistry, (mentor: Dr. Edward Rajaseelan), Synthesis of Nitrite Complexes of Iridium.
79. Shane Kacskos, Chemistry, (mentor: Dr. Edward Rajaseelan), Synthesis of Novel Iridium Nitrite Complexes.
80. Alexander Kaltenbaugh, Earth Sciences, (mentors: Drs. Richard Clark and Todd Sikora), Elevated Mixed Layers observed during OWLeS.
81. Amanda Kato, Biology, (mentor: Dr. Ryan Wagner), Behavioral Analysis of Spodoptera frugiperda in relation to Volatile Chemicals of Ailanthus altissima.
82. Sarah Kennedy, Chemistry, (mentor: Dr. Lyman Rickard), Rotating Disk Voltammetry.
83. Anthony Kessler, Biology, (mentor: Dr. Aaron Haines), Radio-tracking Pheasants/Teaching Project.
84. Anthony Kessler, Biology, (mentor: Dr. Aaron Haines), Analysis of Pheasant Data.
85. Taylor Lagler, Mathematics, (mentor: Dr. James Fenwick), Discriminant Analysis.
86. Taylor Lagler, Mathematics, (mentor: Dr. Lewis Shoemaker), The Magnetic Poles and Global Warming.
87. Chelsea LaPenta, Biology, (mentor: Dr. Jean Boal), Cat and Bird Vocalization.
88. Chelsea LaPenta, Biology, (mentor: Dr. Jean Boal), *Cat Vocalizations.*
89. Richard Lees, Applied Engineering, Safety & Technology, (mentor: Dr. John Wright, Jr.), *Active Sensory Perception for Mobile Robotics.*
90. Beth LeFevre, Geography, (mentor: Dr. Charles Geiger), *Local Impacts of Expanding a Concentrated Animal Feeding Operation.*
91. Amy Lehr, Chemistry, (mentor: Dr. Kathryn Allen), *Polymeric Materials Synthesis and Applications.*
92. Amy Lehr, Chemistry, (mentor: Dr. Kathryn Allen), *Modification of Valerolactone.*
93. Amber Liggett, Earth Sciences, (mentor: Dr. Sepi Yalda), *A case study analysis of WSR-88D's gust front detection algorithms.*
94. Amber Liggett, Earth Sciences, (mentor: Dr. T. Yu), *Gust Front Detection Using Neuro-Fuzzy Algorithm with Polarimetric WSR-88D.*
95. Kelsey Lopez, Biology, (mentor: Dr. Aaron Haines), *Small Mammal Trapping.*
96. Sabiel Lopez, Biology, (mentor: Dr. Carol Hepfer), *Analysis of Squid Muscle Genes.*
97. Andrew Lytle, Biology, (mentor: Dr. Judith Cebra-Thomas), *The Evolution of Epidermal Appendages.*
98. Megan McAuliffe, Earth Sciences, (mentors: Drs. Richard Clark and Valbona Kunkel), *Dependency of Magnetic Field of the CME on Other Physical Quantities on the Sun.*
99. Megan McAuliffe, Earth Sciences, (mentors: Drs. Richard Clark and Todd Sikora), *Examining the Nocturnal Stable Boundary Layer and Low-Level Jet during PECAN.*
100. Troy McGuigan, Emergency Management, (mentor: Dr. Sepi Yalda), *Fundamentals of Safety and EM.*
101. Shayne McIntosh, Computer Science, (mentor: Dr. Stephanie Schwartz), *Leveraging CuDNN.*
102. Erin McIntyre, Chemistry, (mentor: Dr. William Kittleman), *Construction of SfnAD Expression Plasmid.*
103. Natalie Midzak, Earth Sciences, (mentor: Drs. Richard Clark and Valbona Kunkel), *Dependency of Magnetic Field of the CME on Other Physical Quantities on the Sun.*
104. Natalie Midzak, Earth Sciences, (mentors: Drs. Richard Clark and Todd Sikora), *Examining the Nocturnal Stable Boundary Layer and Low-Level Jet during PECAN.*
105. Edward Monborne, Chemistry, (mentor: Dr. William Kittleman), *Production of SfnAD Enzyme.*
106. Kyle Morganti, Earth Sciences, (mentor: Dr. Ajoy Kumar), *Validation of Satellite Data.*
107. Kyle Morganti, Earth Sciences, (mentors: Drs. Richard Clark and Todd Sikora), *Examining the Nocturnal Stable Boundary Layer and Low-Level Jet during PECAN.*
108. Sherrie Moyer, Biology, (mentor: Dr. Christopher Hardy), *Horticulture Independent Study*.
109. Sherrie Moyer, Biology, (mentor: Dr. Ryan Wagner), *Altissima Regulation of Seed Germination*.
110. Kenton Mummert, Chemistry, (mentor: Dr. Steven Kennedy), *Eugenol isolation and derivatization for incorporation into synthesis laboratories*.
111. Maria Muniz, Chemistry, (mentor: Dr. William Kittleman), *HPLC Assay Development for SfnaC*.
113. Linh Nguyen, Chemistry, (mentor: Dr. Aimee Miller), *Purification of HRP as a Biochemistry Lab Project*.
114. Nicholas Oakes, Applied Engineering, Safety & Technology, (mentor: Dr. Jack Ogutu), *Exposure to Toxic Byproducts in Smoke and Their Effects on Cancer in Firefighters*.
115. Ashley Orehek, Earth Sciences, (mentor: Dr. Richard Clark), *The Correlation between Mercury, Ions, and Weather Conditions at PA-47*.
116. Ashley Orehek, Earth Sciences, (mentors: Drs. Richard Clark and Valbona Kunkel), *Comparison of the GOES X-ray data with EUVI brightness of the source regions of the CME*.
117. Ashley Orehek, Earth Sciences, (mentors: Drs. Richard Clark and Todd Sikora), *Examining the Nocturnal Stable Boundary Layer and Low-Level Jet during PECAN*.
118. Dalton Patterson, Physics, (mentor: Dr. Sean Hendrick), *SNR N63A in the Large Magellanic Cloud*.
119. David Perillo, Chemistry, (mentor: Dr. Maria Schiza), *Green Synthesis of Silver and Gold Nanoparticles*.
120. Ryan Peterson, Computer Science, (mentor: Dr. Gary Zoppetti), *Independent Game Design in the Unreal Engine*.
121. Cody Petsch, Physics, (mentor: Dr. Tariq Gilani), *Electrical Properties of Thin Films*.
122. Quang Pham, Chemistry, (mentor: Dr. Edward Rajaseelan), *DSA Method Development*.
123. Kara Piarulli, Earth Sciences, (mentor: Drs. Richard Clark and Valbona Kunkel), *Comparison of the GOES X-ray data with EUVI brightness of the source regions of the CME*.
125. Zachary Piasecki, Geography, (mentor: Dr. Derek Shanahan), *London: Land Use Change*.
126. Kevin Piaskowski, Physics, (mentor: Dr. Michael Nolan), *One and Two Dimensional Random Walks with One-Step Memory*.

129. Kristen Pozsonyi, Earth Sciences, (mentors: Drs. Richard Clark and Valbona Kunkel), *Examining the Nocturnal Stable Boundary Layer and Low-Level Jet during PECAN.*

130. Christina Prestine, Earth Sciences, (mentors: Drs. Richard Clark and Valbona Kunkel), *Comparison of the GOES X-ray data with EUVI brightness of the source regions of the CME.*

131. Christina Prestine, Earth Sciences, (mentors: Drs. Richard Clark and Todd Sikora), *Examining the Nocturnal Stable Boundary Layer and Low-Level Jet during PECAN.*

132. Diana Rabchuk, Physics, (mentor: Dr. Tariq Gilani), *Mobility of Charged Carriers in Thin Film.*


134. Joseph Receveur, Biology, (mentor: Dr. John Wallace), *Microbiome of mosquitoes and their habitat.*

135. Brian Reilly, Biology, (mentor: Dr. John Wallace), *Entomological Collection Curation.*

136. Christopher Reuling, Physics, (mentor: Dr. Mehmet Goksu), *Harnessing Columnar Vortices for Power Generation.*

137. Orlando Alberto Ricetti Neto, Earth Sciences, (mentor: Dr. Ajoy Kumar), *Archaeological Oceanography.*

138. Irena Riley, Biology, (mentor: Dr. James Cosentino), *Cadaver Dissection.*

139. Michael Rosen, Physics, (mentor: Dr. Natalia Dushkina), *Laser Spectroscopy.*

140. Emily Rosenthal, Earth Sciences, (mentor: Dr. C. O'Dell), *A Comparison of Cloud and Aerosol Measurements between OCO-2 and CALIPSO.*

141. Jevica Salim, Chemistry, (mentor: Dr. Steven Kennedy), *Alkene migration studies en route to Altersolanol P.*

142. Rachel Saunders, Biology, (mentor: Dr. James Cosentino), *Cadaver Dissection.*

143. Leah Schwartz, Biology, (mentor: Dr. Jean Boal), *Social Dominance in Goats.*

144. Leah Schwartz, Biology, (mentor: Dr. Jean Boal), *Reproductive Behavior of Goats.*

145. Leah Schwartz, Biology, (mentor: Dr. Aaron Haines), *Zoology Database.*


147. William Shelton, Chemistry, (mentor: Dr. Jeremiah Mbindyo), *Pd-Ni Nanocatalysts for Green and Sustainable Chemical Transformations.*

149. Curtis Silverwood, Earth Sciences, (mentors: Drs. Richard Clark and Valbona Kunkel), *Comparison of the GOES X-ray data with EUVI brightness of the source regions of the CME.*


152. Renee Stover, Chemistry, (mentor: Dr. Michael Elioff), *Dye-Sensitized Solar Cells.*


154. Nicholas Strickland, Earth Sciences, (mentors: Drs. Richard Clark and Todd Sikora), *Examining the Nocturnal Stable Boundary Layer and Low-Level Jet during PECAN.*

155. Glorines Suarez-Rivera, Chemistry, (mentor: Dr. Jeremiah Mbindyo), *Immunoassay Analysis of Atrazine in Environmental Samples.*

156. Nicole Sundo, Chemistry, (mentor: Dr. Lyman Rickard), *Capillary Electrophoresis.*


158. Matthew Thompson, Chemistry, (mentor: Dr. Kathryn Allen), *Polymer Synthesis.*

159. Katelyn Thompson, Geography, (mentor: Dr. Jessica Kelly), *Channelized Migration and Refugee Success in Receiving Communities.*

160. Gina To, Chemistry, (mentor: Dr. Steven Kennedy), *Shikimic acid isolation and derivatization for incorporation into synthesis laboratories.*

161. Jose Urena, Chemistry, (mentor: Dr. Steven Bonser), *The Synthesis and Reactions of 1,2-Diacyldiazipidines.*


163. Nicholas VanLeuven, Chemistry, (mentor: Dr. Steven Bonser), *Synthesis of 1-Aroyldiazipidines.*

164. Jenna Waite, Biology, (mentor: Dr. Brent Horton), *Endocrine Disruption in Birds.*

165. Ryan Walker, Biology, (mentor: Dr. John Wallace), *Development of a mosquito identification key for Hunterdon County, NJ.*

166. Crystal Wanner, Applied Engineering, Safety & Technology, (mentor: Dr. Mark Atwater), *Carbon Deposition Kinetics on Fe-Cu Alloys.*
167. Connor Whitman, Applied Engineering, Safety & Technology, (mentor: Dr. Ebrahim Karan), Planned Service Project.
168. Devon Whooley, Chemistry, (mentor: Dr. Jeremiah Mbindy), Analysis of Pharmaceutical Products in Water by HPLC.
170. Calen Wylie, Biology, (mentor: Dr. John Wallace), Mosquito Control Using Plants.
171. Andrew Yarosh, Earth Sciences, (mentor: Dr. Richard Clark), The Correlation between Mercury, Ions, and Weather Conditions at PA-47.
172. Darcey Young, Biology, (mentor: Dr. James Cosentino), Medical Illustration.
175. Steve Zelek, Computer Science, (mentor: Dr. Gary Zoppetti), Independent Game Design in the Unity Engine.

Please note that some students participated in projects on this list during both fall and spring semesters.
Independent Study Graduate Student Research Projects Conducted with Millersville University Faculty

2. Jill Buchle, Nursing, (mentor: Dr. Kelly Kuhns), Mentorship.
3. Frank Caccavale, Applied Engineering, Safety and Technology, (mentor: Dr. Scott Warner), Effective Promotions.
5. Ryan Haugh, Applied Engineering, Safety and Technology, (mentor: Dr. Scott Warner), Application of Laser Cutting Technology to Emulate Traditional Marquetry.
7. Lindsey Kornbau, Nursing, (mentor: Dr. Kelly Kuhns), Nursing Education.
10. Molly Miller, Applied Engineering, Safety and Technology, (mentor: Dr. Sepi Yalda), Impacts of Elementary Stem Exposure.
<table>
<thead>
<tr>
<th>First Name</th>
<th>Last Name</th>
<th>Department</th>
<th>Faculty Supervisor</th>
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<tbody>
<tr>
<td>Elizabeth</td>
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* Only includes students enrolled in XXXX 300, 400, and 500. Does not include students enrolled in courses such as OSEH 440.
**SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016**

**Action Plan GA S1.1.** Collaborate with Enrollment Management and Student Affairs to create a new Student Success Center that integrates a wide variety of student support services to improve undergraduate student retention by 1 percentage point annually.

**Goal A:** To engage learning to contribute positively to contemporary and future workplaces and communities.

**Strategy 1 (GA S1):** Create a learning-focused environment that contributes to student success.

**Success Indicator(s):**
- Improve the freshman retention rate by 1 percentage point annually.
- Support the design and development of the Student Success Center, especially in the areas of tutoring and academic advising.
- Enhance credential attainment by promoting the student use of degree plans that provide educationally-appropriate timelines for students to graduate within desired timeframes.
- Serve at least 700 students in enhanced and new high-impact living learning communities.

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<th>Start Date: 2015</th>
<th>End Date: 2017</th>
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<tr>
<th>Action Item(s) and Expected Outcomes</th>
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<tbody>
<tr>
<td><strong>(a2)</strong></td>
<td>Design and provide a Retention Action Plan template for academic departments and AA units; share at College Councils.</td>
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<tr>
<td><strong>(b)</strong></td>
<td>Continue to create and promote common tutoring sessions that target high DFW courses in disciplines such as ECON and BUAD. Identify metrics for success.</td>
</tr>
<tr>
<td><strong>(d)</strong></td>
<td>Use Smart Scheduling A-Team recommendations to improve course registration experience for students, including transfer students.</td>
</tr>
</tbody>
</table>

SCTE Department Chairs have also reviewed and made recommendations on amendments to the University transfer equivalency lists, providing feedback on over 35 proposed affiliation agreements with community colleges, revision of Advanced Placement equivalencies, approval of over 20 Affiliation Agreements for the Department of Nursing and other programs including Respiratory Therapy, Nanofabrication program, and student/faculty research.
### SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016

**Action Plan GA S1.3. To streamline credential attainment.**

**Goal A: To engage learning to contribute positively to contemporary and future workplaces and communities.**

**Strategy 1 (GA S1): Create a learning-focused environment that contributes to student success.**

**Success Indicator(s):**
- Improve the freshman retention rate by 1 percentage point annually.
- Support the design and development of the Student Success Center, especially in the areas of tutoring and academic advising.
- Enhance credential attainment by promoting the student use of degree plans that provide educationally-appropriate timelines for students to graduate within desired timeframes.
- Serve at least 700 students in enhanced and new high-impact living learning communities.

**Start Date: 2015**  
**End Date: 2020**

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<tr>
<th>Action Item(s) and Expected Outcomes</th>
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<tr>
<td>(a) 100 percent of all undergraduate programs will articulate a plan for appropriate length pathways (e.g., four years for bachelor's degree programs) using a common template and 75 percent of all programs will have posted the pathways online.</td>
<td>All undergraduate programs in SCTE have developed documents providing four-year pathways of program completion. All of the programs have published them on the web with the exception of Nursing (since they are not four-year programs and students must work individually with a faculty advisor based on their incoming transfer credits). A summary is listed in the Appendix.</td>
</tr>
<tr>
<td>(b) Of departments that offer intersession courses, post projected list of winter and summer course offerings through summer 2016 (include disclaimer); CGSAL will publish through summer 2016. (Operationalize as standard practice during 2015-2016.)</td>
<td>Intersession courses and programs are maintained by Dr. Victor DeSantis with input from our College.</td>
</tr>
<tr>
<td>(c) Accelerated programs will be identified for viability through the use of intersessions with blended / online emphasis by 2020.</td>
<td>Programs within our College are generally highly sequenced and thus are not viable for accelerated formats. However, we have fully on-line programs: RN to BSN (undergraduate) and MS in Emergency Management (MSEM; graduate).</td>
</tr>
</tbody>
</table>
**SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016**

### Action Plan GA S1.4. *Living Learning Community development.*

**Goal A:** To engage learning to contribute positively to contemporary and future workplaces and communities.

**Strategy 1 (GA S1):** *Create a learning-focused environment that contributes to student success.*

**Success Indicator(s):**
- Improve the freshman retention rate by 1 percentage point annually.
- Support the design and development of the Student Success Center, especially in the areas of tutoring and academic advising.
- Enhance credential attainment by promoting the student use of degree plans that provide educationally-appropriate timelines for students to graduate within desired timeframes.
- Serve at least 700 students in enhanced and new high-impact living learning communities.

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<th>Start Date:</th>
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**Action Item(s) and Expected Outcomes**

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<th>Action Item(s) and Expected Outcomes</th>
<th>Academic Unit Action(s) / Outcome(s)</th>
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<tr>
<td>(b) Continue to create new Living Learning Communities (LLCs), to bring the total opportunities for students to engage in an LLC experience to 175.</td>
<td>In 2015-16, SCTE departments participated in the following LLCs: Earth Sciences, Mathematics, Physics, and students interested in environmental issues. UNIV 103 courses were taught by the following SCTE departments: AEST, CHEM, CSCI, ESCI, GEOG, MATH, and PHYS. BIOL 101 incorporates several elements of UNIV 103 courses into its curriculum. NURS students do not enter the university as first-year students.</td>
</tr>
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</table>
### SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016

#### Action Plan GA S2.1.  *Redesign how employees are trained.*

**Goal A:** To engage learning to contribute positively to contemporary and future workplaces and communities.

**Strategy 2 (GA S2):** *Develop a faculty and staff that distinguish themselves as creative, innovative and learner-focused leaders.*

**Success Indicator(s):**
- Double the resources for faculty development to support new modalities of teaching.
- Double the resources for faculty development to support engagement in external leadership roles and research.

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<tr>
<td>(a) Increase resources for faculty development. Provide a wider array of online and on-demand resources to supplement the traditional in-person sessions that the CAE provides.</td>
<td>In 2015-16, the College provided direct support for a variety of faculty initiatives (approximately $5,000 for faculty travel to conferences to present their scholarly activities and approximately $550 to acquire equipment that supports classroom instruction).</td>
</tr>
<tr>
<td>(b) Engage faculty in experiences that promote development of doctoral faculty skills.</td>
<td>Department of Nursing held a Doctoral Faculty Professional Development Day on January 13, 2016 led by Dr. Nancy Sharts-Hopko, Director of the PhD program, College of Nursing at Villanova University.</td>
</tr>
<tr>
<td>(c) Continue to enhance instructional design support for online program design.</td>
<td>Dr. DeSantis has led the development of the online RN to BSN degree program.</td>
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<tr>
<td>(d) Support faculty group interested in enhancing undergraduate student writing.</td>
<td>SCTE faculty provided feedback on the MDST science writing degree program proposal. The resource analysis for the program is currently being performed.</td>
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</table>
SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016

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<tr>
<th>Action Plan GA S3.2. <strong>Continue to implement the two-year plan to offer an online pathway</strong> for <strong>COMM, MATH and WELL</strong> through general education.</th>
</tr>
</thead>
</table>

Goal A: To engage learning to contribute positively to contemporary and future workplaces and communities.

Strategy 3 (GA S3): *Identify student interests and workforce needs and prepare students to become career-ready across and within disciplines, including preparation for post-graduate education.*

Success Indicator(s):
- Offer multiple online paths through the general education curriculum.
- Attain a combined 60 percent participate rate on the annual, one-year out alumni job and graduate school placement surveys.

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<td>(b) Pilot online testing in online Math course(s) in 2016.</td>
<td>An on-line testing program for MATH 130/235 was piloted and adopted for use. Resources will be needed for this program to be implemented in future sections of MATH 130/235 as well as for other on-line courses.</td>
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<tr>
<td>(c) Market online general education program completion opportunity to students.</td>
<td>SCTE departments contribute to the general education (GE) program through on-line courses in G2 (ESCI 101, 104, 107/109 [L], 202), G3 (EHEM 201, EHEM 305, EHEM 316, GEOG 101, 141, 227, 242, 281, 342 [W]), Diversity (BIOL 207 [G2, W], ESCI 350 [P]; GEOG 120 [G3], ITEC 303 [P]), and Perspective (ESCI 350, 385, GEOG 343, ITEC 301) areas of GE. Departments also provide access to Remedial courses (e.g. CHEM 110). SCTE Departments will continue to explore ways to offer on-line courses in support of the University’s GE program.</td>
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SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016

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<tr>
<th>Action Plan GA S3.4. <strong>Report annual alumni job placement</strong> (6 to 10 months out) survey results that are the same or higher than the average of the last two years to Cabinet and the Council of Trustees by Spring 2016.</th>
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<tbody>
<tr>
<td>Goal A: To engage learning to contribute positively to contemporary and future workplaces and communities.</td>
</tr>
<tr>
<td>Strategy 3 (GA S3): Identify student interests and workforce needs and prepare students to become career-ready across and within disciplines, including preparation for post-graduate education.</td>
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<tr>
<td>Success Indicator(s):</td>
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<tr>
<td>• Offer multiple online paths through the general education curriculum.</td>
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<td>• Attain a combined 60 percent participate rate on the annual, one-year out alumni job and graduate school placement surveys.</td>
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<th>Responsible DC Member(s)</th>
<th>Academic Unit Action(s) / Outcome(s)</th>
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<tr>
<td>(a) Annually conduct and report alumni job placement and continuing education survey results.</td>
<td>Shibley</td>
<td>This information should be provided by Dr. Shibley.</td>
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</table>
**SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016**

**Action Plan GA S4.1./GA S4.3.** Work with faculty leaders to explore how students may be required to engage in at least 2 out of 6 **high-impact learning opportunities**, such as first-year experience, undergraduate research, service learning, internships, study abroad, or capstone experiences.

**Goal A:** To engage learning to contribute positively to contemporary and future workplaces and communities.

**Strategy 4 (GA S4):** Lead in the development and adoption of experiential and innovative strategies that enhance student learning.

**Success Indicator(s):**
- Engage all graduating seniors in two or more high impact practices (HIPs).
- Increase student internship placements by 60%, which is more than 10% in each of the next five years.
- Triple the direct institutional support to students engaged in research.
- Increase by 30% the undergraduate research support derived from extramural grants.
- Establish a graduation requirement so that each student engages in at least 2 out of 5 experiential learning opportunities such as undergraduate research, service learning, internships, study abroad or first-year experience.

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<tr>
<td>(a) Share high impact practice (HIPs) definitions (based upon AACU definitions) with faculty and staff.</td>
<td>High impact practices (HIP) have been shared and discussed at several College Councils.</td>
</tr>
<tr>
<td>(b) Departments identify the high impact experiences within their programs by June 2016.</td>
<td>First-Year Seminar/Experience (All departments except Biology and Nursing have faculty teaching UNIV 103 courses), Service Learning (27 courses from AEST, BIOL, CHEM, ESCI, GEOG, NURS, and UNIV), Internships (Summer 2015: 41 students, 60 credits; Fall 2015: 13 students, 19 credits; Winter 2016: 4 students, 12 credits; Spring 2016: 16 students, 48 credits; all departments except Nursing and Physics; an additional 27 students engaged in internships through OSEH 440), Undergraduate Research (all departments including EHREM, over 240 sections of Independent Study for about 400 undergraduate credits; approximately $45,600 was provided by Provost to support IS courses during the academic year; approximately 150 distinct students participated in about 175 projects), Study Abroad (faculty-led study abroad: L. Litowitz, ITEC 304 [Summer 1: Iceland; Summer 3: Costa Rica] and an informal experience led by X. Catapillan (MATH) and L. Foels (Social Work) [Spring: Mexico; many students were in or previously in MATH 102]), Capstone Experience. A summary of these activities can be found in the Appendix.</td>
</tr>
<tr>
<td>(c) Programs align HIPs engagement within curriculum; connected to student learning outcomes.</td>
<td>Programs are in the process of aligning HIP within their curricula to student learning outcomes.</td>
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**SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016**

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<th>100% of capstone experiences (culminating senior experiences) are used to assess programmatic student learning outcomes by 2018.</th>
<th>Programs are in the process of aligning their capstone experiences to assess programmatic student learning outcomes.</th>
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<tr>
<td>(d)</td>
<td>Integrate HIPs within program curriculum, particularly a culminating senior experience and then the five other engagement areas (first year seminar, service learning, internships, undergraduate research, study abroad) so that by 2020, 90 percent of graduating seniors participate in at least two HIPs.</td>
<td>See items c &amp; d above.</td>
</tr>
<tr>
<td>(e)</td>
<td>Increase support from donors to support student engagement in all HIPs.</td>
<td>This information should be provided by Advancement.</td>
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</table>
### SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016

**Action Plan GA S4.2.** Continue to *increase institutional* support for undergraduate research by *increasing Student Research Grants* to triple the direct institutional support for students engaged in research and increase by 30% the undergraduate research support derived from outside grants by 2020.

**Goal A:** To engage learning to contribute positively to contemporary and future workplaces and communities.

**Strategy 4 (GA S4):** *Lead in the development and adoption of experiential and innovative strategies that enhance student learning.*

**Success Indicator(s):**
- Engage all graduating seniors in two or more high impact practices (HIPs).
- Increase student internship placements by 60%, which is more than 10% in each of the next five years.
- Triple the direct institutional support to students engaged in research.
- Increase by 30% the undergraduate research support derived from extramural grants.
- Establish a graduation requirement so that each student engages in at least 2 out of 5 experiential learning opportunities such as undergraduate research, service learning, internships, study abroad or first-year experience.

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<td>Provide seed money or matching grants to incentivize external funding for undergraduate research</td>
<td>The College returns all indirect costs it receives to the PI. The College also supports a number of other initiatives that encourage (but does not require) seeking out other sources of funding.</td>
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<tr>
<td>(c)</td>
<td>This past year, the College also provided direct support for a number of student research initiatives including:</td>
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<td>• Implementing an Undergraduate Travel Fellowship program for students majoring within SCTE;</td>
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<td></td>
<td>• Student Travel: ≈ $7,700 (operating) and $1,050 (Foundation);</td>
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<td>• Student Research (library fellows): $2,800 (operating); and</td>
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<td>• the Made In Millersville initiative by covering the cost of printing poster presentations for students majoring in the College (over $700). It is worth noting that 84 of the 152 presentations were from the College of Science and Technology.</td>
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<td>• SCTE continued to support the research performed by our undergraduates through the Fall Student Research Poster Display and Spring SCTE Research Recognition Ceremony along with successfully integrating prior School activities into University activities (e.g. Spring Student Research Poster Display into Made In Millersville).</td>
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<td>Finally, SCTE students are also encouraged to seek out other funding sources. For example, 22 students were the recipients of the Neimeyer-Hodgson research grants. Sponsored Projects should provide all of the student grant information.</td>
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<td>Other examples can be found in the Appendix and department reports.</td>
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</table>
**Action Plan GB S6.3.** Increase by 10% each year the number of students studying abroad, including campus exchanges, faculty-led study abroad and international internships.

**Goal B:** To ensure long-term success of the University.

**Strategy 6 (GB S6):** Through the new academic master plan, invest in the development of new, innovative academic programs or the revision of existing programs to meet emerging workplace needs.

**Success Indicator(s):**
- Increase experiences in study abroad by 50%, including student exchanges, faculty-led study abroad, and international internships.
- Continue to achieve Carnegie Classification for Civic Engagement and President’s Distinguished position on the National Honor Roll.

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<td>(a) Increase by 10% each year the number of students studying abroad, including campus exchanges, faculty-led study abroad and international internships.</td>
<td>As mentioned in Section GA S4.3.b, there were three faculty-led study abroad experiences this year: L. Litowitz, ITEC 304 [Summer 1: Iceland; Summer 3: Costa Rica] and an informal experience led by X. Catepillan (MATH) and L. Foels (Social Work) [Spring: Mexico].</td>
</tr>
</tbody>
</table>
### SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016

#### Action Plan GA S4.2. *Expand institutional support for graduate student research.*

**Goal A:** To engage learning to contribute positively to contemporary and future workplaces and communities.

**Strategy 4 (GA S4):** *Lead in the development and adoption of experiential and innovative strategies that enhance student learning.*

**Success Indicator(s):**
- Engage all graduating seniors in two or more high impact practices (HIPs).
- Increase student internship placements by 60%, which is more than 10% in each of the next five years.
- Triple the direct institutional support to students engaged in research.
- Increase by 30% the undergraduate research support derived from extramural grants.
- Establish a graduation requirement so that each student engages in at least 2 out of 5 experiential learning opportunities such as undergraduate research, service learning, internships, study abroad or first-year experience.

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<td>(a) Track external support for graduate student research, distinguish between master’s and doctoral levels.</td>
<td>This information should be provided by Sponsored Projects &amp; Research Administration. Graduate Student Research was conducted in SCTE (≈$9,000 provided for 48 credits of Independent Study; approximately 14 distinct students participated in projects in AEST, EMGT, MATH, and NURS).</td>
</tr>
</tbody>
</table>
**SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016**

### Action Plan GA S5.1.

*Enhance civic and community-based learning and research opportunities for students and faculty that contribute to the community.*

### Goal A: To engage learning to contribute positively to contemporary and future workplaces and communities.

### Strategy 5 (GA S5):

*Nurture relationships between faculty, staff, and students with individuals and partners in our community.*

### Success Indicator(s):

- Increase the number of University cultural and other partnerships through continuing education initiatives, master classes, guest artist interaction with students, and community-based research opportunities.

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| Provide a wide-range of opportunities that promote civic and community-based learning and research experiences. | SCTE provided a range of activities designed to promote civic and community-based learning and research experiences. This includes the establishment of the Watershed Education Training Institute (WETi) and activities performed by the Center for Disaster Research and Education (e.g. CERT training opportunities and partnerships with groups such as the Pennsylvania Emergency Management Agency) as well as the Millersville University section of the American Meteorological Society (Public Weather Awareness Day).

Events sponsored by faculty and students across the College included:

- Summer Science Training Program (33 attendees from rising grades 8 through 12). Along with contributing funding for scholarships $175, SCTE provided ≈ $2,700 for direct support of the program.
- 9th Annual Central PA Science Olympiad (51 schools participating with about 15 students per school; 44 MU student volunteers and 24 faculty volunteers). Event is sponsored with private funding.

An example at the department level was the Department of Biology’s hosting of the annual Rare Plant Forum of the Pennsylvania Biological Survey. Other examples can be found in the Appendix and department-level reports. |
SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016

Action Plan GA S5.2. Collaborate with Student Affairs and the President’s Office to offer a diversity of multicultural programming and events.

Goal A: To engage learning to contribute positively to contemporary and future workplaces and communities.

Strategy 5 (GA S5): Nurture relationships between faculty, staff, and students with individuals and partners in our community.

Success Indicator(s):
- Increase the number of University cultural and other partnerships through continuing education initiatives, master classes, guest artist interaction with students, and community-based research opportunities.

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| (a) Create connections among guest artists and lecturers with local schools or community agencies. | SCTE faculty offer science programs to area schools through our Spotlight on Science program. Next year the program will be named Spotlight on Mathematics, Science and Technology. Events sponsored by faculty and students across the College included:
  - 31st Brossman-Frisbie Science Lectureship (~600 attendees from grades 3 – 9; with over 120 virtual attendees; 46 attendees for science competition, and ~200 attendees from the general public). Event is sponsored with private funding.
  - There are a number of other programs as well, such as the No Belles performance described in Goal B, section 4.a. |
| (b) Identify how academic departments and Academic Affairs program units (e.g., general education, Office of Global Education & Partnerships) support cultural engagement within the community. | SCTE faculty work with a variety of agencies within the immediate area (e.g. AEST and NURS faculty with Water Street Mission and Water Street Health Services, respectively) and across the world (BIOL faculty with UNESCO and the African Academy of Sciences). |
**SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016**

**Action Plan GB S1.1.** In 2014-15, *identify recruitment initiatives* in specific academic departments to support goal to increase out-of-state enrollment by 400 students by 2020.

**Goal B: To ensure the long-term success of the University.**

**Strategy 1 (GB S1):** *Develop and execute a strategic enrollment management plan that identifies strategies to enhance markets for out-of-state and out-of-country recruitments and additional markets such as transfer students and program completers with the goal to systematically grow the University headcount to 10,000 by fall 2020.*

**Success Indicator(s):**
- Increase headcount enrollments to 10,000 students.
- Eliminate the gap in under-represented minority students’ retention and graduation rates with respect to the University average.
- Increase international student enrollment by an additional 200 students.
- Enroll 1,200 adult learners including 400 degree completers in online programs.

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<td>Within SCTE, the AEST Technology Education program will continue to participate actively in OOS recruitment events</td>
<td>AEST actively recruits OOS at various conferences and open houses. Meteorology’s current OOS population is ≈ 34% of the total number of majors in meteorology (113). This is due in part to national reputation (serving on boards and committees; national recognition among our peers), program promotion at career fairs and conferences, and open houses for visiting students. The recruitment plan for the College that highlights activities undertaken by SCTE departments can be found in the Appendix.</td>
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<tr>
<td>(a)</td>
<td>SCTE participated in multiple in-state recruitment events that include open houses and orientations (for first-year, transfer, and international students) and registration rallies.</td>
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<td>To enhance the College’s ability to recruit students having a greater chance to succeed in our programs, we have proposed a Calculus-ready tuition waiver, eligible for all students entering Millersville University regardless of their academic major. The program is scheduled to be piloted during the 2017 fall semester.</td>
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**Action Plan GB S1.2./GB S1.3.** To support the increase in 200 *additional* international students by 2020; international student support services will continue to be enhanced.

**Goal B:** To ensure the long-term success of the University.

**Strategy 1 (GB S1):** *Develop and execute a strategic enrollment management plan that identifies strategies to enhance markets for out-of-state and out-of–country recruitments and additional markets such as transfer students and program completers with the goal to systematically grow the University headcount to 10,000 by fall 2020.*

**Success Indicator(s):**
- Increase headcount enrollments to 10,000 students.
- Eliminate the gap in under-represented minority students’ retention and graduation rates with respect to the University average.
- Increase international student enrollment by an additional 200 students.
- Enroll 1,200 adult learners including 400 degree completers in online programs.

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<td>(a) Host delegations from international universities or programs (e.g., China, India, or Brazil) to build relationships with partner institutions, agencies, or government entities that lead to future international student enrollment.</td>
<td>Aside from meetings, presentations, and interactions held at the university level (e.g., several with delegations from China and India, activities with the Ryan Group, etc.), CDRE led the development of an MOU with the University of Reading in the UK.</td>
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**Action Plan GB S1.5.** Increase online program opportunities to enroll 1,200 degree completers or adult learners by 2020.

**Goal B:** To ensure the long-term success of the University.

**Strategy 1 (GB S1):** Develop and execute a strategic enrollment management plan that identifies strategies to enhance markets for out-of-state and out-of-country recruitments and additional markets such as transfer students and program completers with the goal to systematically grow the University headcount to 10,000 by fall 2020.

**Success Indicator(s):**
- Increase headcount enrollments to 10,000 students.
- Eliminate the gap in under-represented minority students’ retention and graduation rates with respect to the University average.
- Increase international student enrollment by an additional 200 students.
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<td>(a) Meet or exceed enrollment targets for RN to BSN program</td>
<td>Enrollment in this program is very strong. This information to be provided by Dr. DeSantis.</td>
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<tr>
<td>(d) Implement fully-online completion of general education program (see GA S3.2 above)</td>
<td>SCTE offers the on-line general education courses outlined in GA S3.2.c.</td>
</tr>
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</table>
SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016

**Action Plan GB S1.8.** Collaborate with Enrollment Management to strengthen initiatives like the Millersville Scholars Program and the Lancaster Partnership Program so *under-represented minority students succeed at or above the* University average by 2020.

**Goal B:** To ensure the long-term success of the University.

**Strategy 1 (GB S1):** Develop and execute a strategic enrollment management plan that identifies strategies to enhance markets for out-of-state and out-of-country recruitments and additional markets such as transfer students and program completers with the goal to systematically grow the University headcount to 10,000 by fall 2020.

**Success Indicator(s):**
- Increase headcount enrollments to 10,000 students.
- Eliminate the gap in under-represented minority students’ retention and graduation rates with respect to the University average.
- Increase international student enrollment by an additional 200 students.
- Enroll 1,200 adult learners including 400 degree completers in online programs.

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<td>Review and implement, as resources permit, respective recommendations from the Closing the Gap URM Retention Agility Team</td>
<td>On-going. College is continuing its support of existing programs such as the 29th Annual Glenna Hazeltine Women in Mathematics and Science Conference (239 participants from 48 area schools; next year we will host the conference under a new name: 30th Annual Glenna Hazeltine Women in Mathematics, Science, and Technology Conference) and new programs such as No Belles (performance ≈ 80 participants from the general public; brought to MU with support from the Office of the President, Provost, SCTE, AHSS, and a private donation). SCTE College Council also met with Dr. Mahaffy to discuss steps related to implementing the A-Team Closing the Gap report.</td>
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SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016

Action Plan GB S3.1. In collaboration with Advancement, to increase total endowed funds by the end of 2017 and raise $12.25 million in total private giving over the next three years.

Goal B: To ensure the long-term success of the University.

Strategy 3 (GB S3): Develop and execute a strategic enrollment management plan that identifies strategies to enhance markets for out-of-state and out-of–country recruitments and additional markets such as transfer students and program completers with the goal to systematically grow the University headcount to 10,000 by fall 2020.

Success Indicator(s):
- Implement school and college-level development plans.
- Increase overall dollars raised for undergraduate research via grants from external sources by 30 percent.
- Increase submissions and successful acquisition of large, multi-investigator collaborative grants.

| Start Date: | 2015 | End Date: | 2017 |

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<td>(a) Deans will articulate advancement priorities for 2015-16.</td>
<td>Advancement priorities were articulated and refined with Advance at the beginning of the 2015-2016 academic year as outlined in the Appendix.</td>
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<tr>
<td>(b) Seek support, in collaboration with Advancement, for external funds for investments in technology.</td>
<td>Some success was achieved. This information is to be provided by Advancement.</td>
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### SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016

**Action Plan GB S3.2.** *Create advisory committees* to enhance external support, with support from Advancement.

**Goal B:** To ensure the long-term success of the University.

**Strategy 3 (GB S3):** *Develop and execute a strategic enrollment management plan that identifies strategies to enhance markets for out-of-state and out-of-country recruitments and additional markets such as transfer students and program completers with the goal to systematically grow the University headcount to 10,000 by fall 2020.*

**Success Indicator(s):**
- Implement school and college-level development plans.
- Increase overall dollars raised for undergraduate research via grants from external sources by 30 percent.
- Increase submissions and successful acquisition of large, multi-investigator collaborative grants.

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<th>(b)</th>
<th>SCTE programs with existing Advisory boards will update missions and charters (e.g., AEST, CDRE)</th>
<th>Academic Unit Action(s) / Outcome(s)</th>
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<td>Completed through group meetings and individual meetings with Board members. Additionally, advisory boards for AEST (OSEH and TECE), CDRE, and MS-ISA met this year as well. The SCTE office supported the SCTE Advisory Board meeting, College Meeting, and other various receptions (graduation, research celebration, etc) with ≈ $3,500 of funding with its Foundation account.</td>
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### Action Plan GB S3.3
Submit and **acquire more large multi-investigator collaborative grants**. Specifically, increase by one each year the number of submitted multi-investigator grants of $250,000.

### Goal B: To ensure the long-term success of the University.

### Strategy 3 (GB S3): Develop and execute a strategic enrollment management plan that identifies strategies to enhance markets for out-of-state and out-of-country recruitments and additional markets such as transfer students and program completers with the goal to systematically grow the University headcount to 10,000 by fall 2020.

**Success Indicator(s):**
- Implement school and college-level development plans.
- Increase overall dollars raised for undergraduate research via grants from external sources by 30 percent.
- Increase submissions and successful acquisition of large, multi-investigator collaborative grants.

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<td>(a) Submit more large multi-investigator collaborative grants.</td>
<td>This information to be provided by Sponsored Projects &amp; Research Administration. Several grants were received by College faculty including the first NSF CAREER award to a faculty member at Millersville University.</td>
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</table>
SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016

**Action Plan GB S4.1.** Promote points of pride to support Millersville as a destination institution.

**Goal B:** To ensure the long-term success of the University.

**Strategy 4 (GB S4):** Promote Millersville as a destination university by focusing on rebranding and marketing efforts that promote our quality experiences and excellence of programs to attract new markets and grow current markets within Pennsylvania.

**Success Indicator(s):**
- Systematically review, document and report points of pride.

| Start Date: 2015 | End Date: 2017 |

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<td>Publish on paper and online, in collaboration with Marketing, cut sheets for every department</td>
<td>Cut sheets were designed and finalized for the College along with AEST (Advanced Manufacturing, Computer-Aided Drafting &amp; Design, Graphic Communication, Occupational Safety &amp; Environmental Health, Robotics &amp; Control Systems, Technology &amp; Engineering Education), BIOL (along with Allied Health), CHEM, CSCI, ESCI (along with Geology, Meteorology, Ocean Sciences and Coastal Studies), MATH, NURS, and the MDST programs Entertainment Technology, Environmental Hazards and Emergency Management. As of this date, only GEOG and PHYS are pending. Additionally, the College developed and provided funding to print a recruitment brochure (designed with DJ Ramsey’s assistance from AHSS) for prospective students and we provided feedback on the Degree Program cut sheet developed by Marketing &amp; Communications.</td>
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<tr>
<td>Revise or update websites that includes adding alumni profiles</td>
<td>This is an ongoing task being completed as carefully possible in the context of impending website redesign. This past year, on the College website, 15 student profiles were developed and uploaded.</td>
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<tr>
<td>Provide training to departments for maintenance, content currency, and trends in website development</td>
<td>Assistance was offered to departments for updating their websites. Given the impending change to websites, the College did not invest heavily in training.</td>
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</table>
SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016

**Action Plan GB S5.2.** By October 1, 2015, finalize the implementation (phase 2) of the *Academic Affairs restructuring plan* that includes physically relocating departments, updating websites, realigning budgets and other resources, and making adjustments to the student information system.

**Goal B: To ensure the long-term success of the University.**

**Strategy 5 (GB S5):** Through the new academic master plan, invest in the development of new, innovative academic programs or the revision of existing programs to meet emerging workplace needs.

**Success Indicator(s):**
- Enroll at least 50 students in at least three professional doctoral degree programs (i.e., DNP, DSW, and EdD).
- Graduate at least 60 BA in Multi-Disciplinary Studies students per year through approving at least three new BA in Multi-Disciplinary Studies options.
- Enroll at least 60 students in new masters and graduate-level certificate programs.
- Increase course offerings and enrollments in intersession courses.

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<tr>
<td>(a) Physically relocate departments, update websites, realign budgets and other resources, and make adjustments to the student information system.</td>
<td>Successfully completed.</td>
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**Action Plan GB S5.4.** *Doctoral program proposals and approvals* gained.

**Goal B:** To ensure the long-term success of the University.

**Strategy 5 (GB S5):** *Through the new academic master plan, invest in the development of new, innovative academic programs or the revision of existing programs to meet emerging workplace needs.*

**Success Indicator(s):**
- Enroll at least 50 students in at least three professional doctoral degree programs (i.e., DNP, DSW, and EdD).
- Graduate at least 60 BA in Multi-Disciplinary Studies students per year through approving at least three new BA in Multi-Disciplinary Studies options.
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<tr>
<td>(a) The DNP will be approved by BOG in fall 2015 and begin recruiting students for May 2016.</td>
<td>DeSantis, Shibley, Dean</td>
<td>Five students began the BOG approved program in May 2016.</td>
</tr>
</tbody>
</table>
**Action Plan GB S5.5.** Create *new undergraduate and graduate students (Masters) programs* based on documented, emergent workforce needs and enroll students, with support from Enrollment Management.

**Goal B:** To ensure the long-term success of the University.

**Strategy 5 (GB S5):** Through the new academic master plan, invest in the development of new, innovative academic programs or the revision of existing programs to meet emerging workplace needs.

**Success Indicator(s):**
- Enroll at least 50 students in at least three professional doctoral degree programs (i.e., DNP, DSW, and EdD).
- Graduate at least 60 BA in Multi-Disciplinary Studies students per year through approving at least three new BA in Multi-Disciplinary Studies options.
- Enroll at least 60 students in new masters and graduate-level certificate programs.
- Increase course offerings and enrollments in intersession courses.

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<td>(a) Every new program, including those developed in the last two years, will have a business plan and a marketing plan.</td>
<td>As new programs are being initiated, business and marketing plans are being developed in a manner similar to the RN to BSN, MSN, and DNP programs.</td>
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<tr>
<td>(e) Approve and offer graduate certificates in disaster and emergency management and Entrepreneurship.</td>
<td>Graduate certificate in emergency management has been approved.</td>
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### SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016

**Action Plan GB S6.4.** Provide support for the adoption of the *Climate Action Plan* and collaborate with the new Sustainability Director.

**Goal B:** To ensure the long-term success of the University.

**Strategy 6 (GB S6):** Through the new academic master plan, invest in the development of new, innovative academic programs or the revision of existing programs to meet emerging workplace needs.

**Success Indicator(s):**
- Increase experiences in study abroad by 50%, including student exchanges, faculty-led study abroad, and international internships.
- Continue to achieve Carnegie Classification for Civic Engagement and President’s Distinguished position on the National Honor Roll.

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<td>Provide support for the adoption of the Climate Action Plan and collaborate with the new Sustainability Director.</td>
<td>SCTE faculty have met with the new Sustainability Director and are working with him on a variety of initiatives.</td>
</tr>
</tbody>
</table>
SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016

<table>
<thead>
<tr>
<th>Action Plan GC S1.3. Each Cabinet member will conduct a <strong>comprehensive process review</strong> to identify and prioritize two processes per year for the next five years that could be eliminated, shortened, streamlined, enhanced or automated.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goal C:</strong> To embrace agility within our culture of excellence.</td>
</tr>
<tr>
<td><strong>Strategy 1 (GC S1):</strong> Establish new ways of doing business, reorganize structures, update technology, reconsider facility use, and review budgets and policies.</td>
</tr>
<tr>
<td><strong>Success Indicator(s):</strong></td>
</tr>
<tr>
<td>• Create Agility Teams that proposed accelerated solutions to enhance efficiency and effectiveness and to help our students succeed.</td>
</tr>
<tr>
<td><strong>Start Date:</strong> 2015</td>
</tr>
</tbody>
</table>
## SCTE Contributions to the Academic Affairs Strategic Plan Action Plan, 2015-2016

<table>
<thead>
<tr>
<th>Action Item(s) and Expected Outcomes</th>
<th>Academic Unit Action(s) / Outcome(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Continue to collaborate with IT to development a comprehensive list of technology needs, including how to address life cycling and deferred maintenance.</td>
<td>On-going. Equipment has been purchased with the technology fee (≈ $178k). Unfortunately for the second straight year, no equipment has been purchased with funding collected through the STEM fee and there is no indication this past funding will be provided to support the equipment needs for which the fee was created. The College has directly supported the purchase of equipment and supplies with ≈ $21,800 (one-time capital funding); ≈ $6,000 (Foundation); and ≈ $7,000 (operating). Additionally, the Provost has provided Annual Maintenance and Repair funding of $31,100 along with $20,700 in additional funding to support service agreements. Regarding the IT governance structure, members of SCTE serve on various advisory boards and within leadership roles. SCTE and members of the CSCI department meet regularly with IT.</td>
</tr>
<tr>
<td>(b) Streamline the TPTF process</td>
<td>On-going. This year 45 TPTF were reviewed within the College. Additionally, one manager, 6 TFTF, 6 promotion packets, 10 post-tenure, and 21 probationary faculty were reviewed.</td>
</tr>
<tr>
<td>(c) Based upon the PRR process and PRR Team Report, enhance the student learning outcomes assessment process.</td>
<td>On-going. This information should be provided by Dr. Shibley.</td>
</tr>
<tr>
<td>(d1) All programs created or updated their five year student learning outcomes assessment plan (including accredited programs by March 1, 2016. Programs will receive feedback on their assessment plans.</td>
<td>On-going. This information should be provided by Dr. Shibley.</td>
</tr>
<tr>
<td>(d2) Modify the reporting process for programs beginning with the 2015-16 Student Learning Outcomes Assessment Reports (SLOAR) to enhance emphasis of programs report closing the loop on assessment of student learning.</td>
<td>On-going. This information should be provided by Dr. Shibley.</td>
</tr>
<tr>
<td>(g) Support the development and implementation of event scheduling process in collaboration with Advancement.</td>
<td>On-going. Provided feedback to Advancement on their scheduling process that included facilitating the organization and management of the Native Plants Conference to an outside non-profit group. One challenge that remains is facilitating one-day programs such as the FIRST Robotics competition that was cancelled this year due to issues around scheduling.</td>
</tr>
<tr>
<td>Action Item(s) and Expected Outcomes</td>
<td>Academic Unit Action(s) / Outcome(s)</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>(a) Provide strategic leadership to charge an Agility to address Smart Scheduling</td>
<td>As mentioned, a report was submitted to Cabinet for consideration and we will be involved with its implementation. Additionally and related to this, department chairs in SCTE have reviewed and made recommendations on amendments to the University transfer equivalency lists. Members of SCTE also serve on a new agility team whose focus is University Communication and the University’s Strategic Advisory Council.</td>
</tr>
</tbody>
</table>
Department of Applied Engineering, Safety & Technology (AEST)

Department Mission

The Department of Applied Engineering, Safety & Technology is dedicated to preparing individuals with knowledge and expertise in technology, design, safety, environmental health and applied engineering who value leadership, ingenuity, problem solving, professionalism and teamwork. We are committed to outstanding teaching, creative scholarship, and relevant service to industry, education, and the community.

Current Department Goals and Objectives.

1. Attract and develop diverse faculty, staff, and students of excellence.

2. Develop positive collaborative relationships with diverse populations within the educational and industrial community.

3. Ensure technology & engineering education, applied engineering and technology management, and occupational safety and environmental health programs of academic distinction through program development, assessment and continued accreditation.

4. Employ continual improvement as an on-going effort to maintain a regional center of state-of-the-art technologies and facilities for technology, applied engineering, and technical management studies.

5. Create an environment that promotes, encourages and guides professional development and scholarship opportunities for faculty.

6. Promote and recognize faculty accomplishments within the department, school, university and community.

Provide a brief description of at least three initiatives in the University Strategic Plan that your department and faculty supported or contributed to during 2015-2016.

- During the 2015/16 academic year the department engaged in a number of recruitment initiatives. Our departmental recruitment booth was present at a national conference, two state conferences, a local conference and several career fairs held at local high schools. Additionally, we have completed cut sheets for all degree programs and degree options within the department. We maintain a vibrant departmental website and are presently exploring some advertising means that fall outside the box in terms of what we have done historically such as billboard advertising.

- The department has actively encouraged internships as valued high impact experiences and the students are responding. Throughout the academic year including this summer there have been 21 Applied Engineering & Technology Management students registered for internships along with 43 Occupational
Safety & Environmental Hygiene students. The teacher preparation program within the department also placed 17 student teachers in the field during the academic year.

- Two faculty-led study abroad experiences were offered through the department for students of any major. Dr. Len Litowitz traveled to Iceland (Summer 1) and to Costa Rica (Summer 3) with his ITEC 304 perspectives classes on Energy Resources, Sustainability & the Environment.

What have you done to help underrepresented minority student success?

- The Departmental faculty has diversified over the years so as to provide a more welcoming environment to students and minority students in particular.

- The department responds to all requests for tutoring and provides tutoring for all students who request tutoring.

Selected Department Highlights

Enhancements to program curriculum, student achievement of learning outcomes, or other program improvements

- A revised scope and sequence of courses for the Construction Technology program was approved by the department along with two new courses to bolster the program and move it more toward Construction Management.

- A new minor in Integrative STEM Methods was launched during the past academic year. The minor caters to elementary education majors who would like to know more about using Integrative STEM methods in the elementary classroom. This minor leads to a STEM endorsement by PDE and has become instantly popular, with more than 60 students pursuing the minor.

Special Events or Programs

- Dr. Len Litowitz had a proposal accepted to host the 2017 Pupil’s Attitudes Towards Technology (PATT) international research conference.

Special Faculty Achievements (not listed in Part B, the Annual Summary Outcomes Form)

- Dr. Thomas Bell served as the keynote speaker for the annual breakfast of the Epsilon Pi Tau honorary fraternity for professions in technology at the annual conference of the International Technology and Engineering Educators Association conference held in National Harbor, MD on March 3, 2016.
Mrs. Donna Painter was the keynote speaker at the Litho Club of Baltimore’s Education Night held at the Western School of Technology in Catonsville, Maryland, on April 25, 2016.

Student Achievements

- **TEECA @ MU**'s Student President **Grace Painter** received the Outstanding Chapter Service award in recognition of a student who has exemplified leadership within the local chapter reflecting well on TEECA and the field of Technology & Engineering Education.

- **TEECA @ MU** received the **Outstanding Chapter Award** in recognition of the chapter which exemplifies the highest standards through activities and projects which reflect well on International TEECA and the field of Technology & Engineering Education at the International Technology & Engineering Educators Conference in National Harbor, Maryland, March 2-4.

- Students **Ramiz Chaudhary, Kevin Clark, Cody Dye, Patricia McEvoy, Austin Neider, Nicholas Oakes, Ryan Piselli, Joshua Smucker, Blessing Uko, Randi Warner, Margret Wilson** and **Michelle Elsasser**, all Occupational Safety & Environmental Health majors, received tuition scholarships from a NIOSH grant as administered by Dr. Jack Ogutu.

- **Shane Waters** and **Marie Leatherman**, both technology & engineering education students, each received $1000 scholarships from the International Technology & Engineering Educators Association. **Korbin Shearer** also received an Outstanding Undergraduate Student Citation.

- **Cody Martin**, (AEST) a sophomore AETM Robotics & Control Systems major, won 4th place in the Haig Vahradian Technology Challenge (Quiz Bowl Contest) at the Association of Technology, Management & Applied Engineering (ATMAE) Conference in Pittsburgh, November 11-13.

- MU (AEST) students successfully competed in several events at the Technology & Engineering Education Collegiate Association Eastern Regional Conference in Virginia Beach from November 8-10, 2015. Results were as follows:
  - 2nd place in Robotics (Al Gallo, Amanda Piergallini, Adam Kennedy, John Zug, and Dan Simms)
  - 3rd place in the Technology Challenge Quiz Bowl (Shane Waters, Matthew Dietrich, Darcie Jones, Derek Hakes)
  - 3rd place in K-5 STEM Design (Abigail Sweeney, Joshua Handshaw, Lauren Coker)
  - 3rd place in Instructional Module (Grace Painter, Darcie Jones, Lexi Iagnemma)

- The **Millersville University Robotics Teams** won The Association of Technology, Management, and Applied Engineering (ATMAE) Robotics Cup (2015). We believe Millersville University is the first team to have won this competition three times (2010, 2013, & 2015) since the program’s inception in 2002.

- **Erica Roth, Paul Thom, Shane Waters, Ben Gochenaur, Dr. Len Litowitz, Dr. Joseph McCade** and **Dr. Thomas Bell**, student and faculty officers of the Beta Phi chapter of Epsilon Pi Tau honorary fraternity for professions in technology, served as the initiation team for an Exemplary Initiation Ceremony at the annual conference of the International Technology and Engineering Educators Association conference held in National Harbor, MD on March 3, 2016.
Notable Alumni Achievements

The following awards were issued to alumni at the annual conference of the Technology & Engineering Education Association of Pennsylvania conference in November, 2015:

- Mr. Darren Grumbine, Cedar Crest High School – Ambassador Award in recognition of outstanding support of the Technology & Engineering Education program through recruitment and mentoring of future teachers and leaders.

- Mr. Andy Zellers, Conestoga Valley Middle School, and Mr. Kenneth Neumann, Martin Meylin Middle School – Cooperating Teacher Award in recognition of exceptional mentoring of teacher candidates and longstanding commitment to the preparation of the next generation of Technology & Engineering Education teachers.

- Ms. Leanna Carstetter, Brooklyn Park Middle School (Maryland) – Emerging Leader Award in recognition of outstanding leadership, commitment, and service to Technology & Engineering Education by a young professional.

- Mr. Jared Bitting, Fleetwood Middle School – Innovative Educator Award in recognition and celebration of extraordinary talent, creativity, ingenuity, and enthusiasm by an innovative teacher in the field of Technology & Engineering Education.

- Judy Hawthorn, Cedar Cliff High School (retired) – Lifetime Achievement award in recognition of extraordinary leadership, sustained commitment, and exceptional dedication to the advancement of Technology & Engineering Education over many decades.

External Grants or Contracts Funded over $5000

- Dr. Jack Ogutu was awarded a $204,171 NIOSH Training Program Grant for a five-year period.

- Dr. Mark Atwater (AEST) is the recipient of a $500,000 National Science Foundation CAREER Award (2016-2021).

- Dr. Louise Manfredi received a $5000 grant from the DART foundation to purchase 3-D printing equipment for teaching.

A. Curricular Changes

During the previous academic year some notable curricular changes occurred. The most significant change was the approval and subsequent addition of a new degree program entitled Automation & Intelligent Robotics Engineering Technology. Toward the conclusion of the academic year course revisions and a new course proposal were approved for our construction
technology option within the Applied Engineering & Technology Management degree program. These changes will help differentiate the AT degree in Construction Technology from the BS degree that will be retitled as Construction Management in order to better reflect the intent of the option. A new minor entitled Integrative STEM Education Methods (ISEM) minor for ERCH & ECSP majors was launched this academic year (approved June 2015). Within the first year, the program attracted 60 students.

B. Faculty Achievements

• **Dr. Mark Atwater** received $500,000 in external research funding from the *National Science Foundation*. He served as advisor to the MU chapter of the Society for Manufacturing Engineers and sponsored an undergraduate student to attend a national conference in materials science engineering. Dr. Atwater along with several undergraduate students published an article entitled *Using Mechanical Alloying to Create Bimetallic Catalysts for Vapor-Phase Carbon Nanofiber Synthesis* in the journal entitled Fibers.

• **Dr. Thomas Bell** continued his service as Region One Director for *Epsilon Pi Tau* the honorary society for professions in technology and engineering. He was instrumental in starting new EPT chapters in the region. Dr. Bell also served as the invited guest speaker for the *Epsilon Pi Tau* annual breakfast at the International Technology and Engineering Educators Association Conference (ITEEA), held in March of 2016 at National Harbor, MD. He is currently serving as President of the Accrediting Council for Graphic Communications (ACCGC).

• **Dr. Sharon Brusic** was the principal developer of the new *Integrative STEM Education Methods* (ISEM) minor for ERCH & ECSP majors that was launched this academic year (approved June 2015). MU’s first students graduating with the minor will complete their programs in the summer I term of 2016. Within the first year, the program attracted 60 students to this minor, a phenomenal number. Dr. Brusic led this effort in collaboration with colleagues in EMEE, and she serves as the advisor for all ISEM minors. The minor is housed in the AEST department.

• **Dr. Barry David** is in the midst of a term as President of the MU chapter of APSCUF, the faculty union.

• **Dr. Kenneth DeLuca** was on sabbatical leave studying in England for the 2012/16 academic year.

• **Dr. Ebrahim Karan** designed and proposed two new courses for B.S. majors and proposed a change in title and curriculum for the Applied Engineering & Technology Management concentration in Construction Technology. He also published three journal articles in collaboration with colleagues from Georgia Tech, Penn State, and Texas A&M universities.

• **Dr. Mehdi Khalighi** accompanied students to the CSP/AIHA Professional Development Conference at State College in April of 2016. He will also accompany students to the AIHA
annual conference in Baltimore in May, 2016. He served as a member of the International Studies Committee and as departmental APASCUF representative.

- **Dr. Len Litowitz** completed the second year of his first term as department chairperson. He was awarded the *Silver Service Award* for lifetime achievement by the Technology & Engineering Education Association of Pennsylvania in November of 2015. He was also the 2016 recipient of the Epsilon Pi Tau, *Region 1 Professional Practice Award*. Dr. Litowitz also presented some original research at a research conference in France. He continues to offer multiple sections of a course on *sustainability* with an international field visitation component each year.

- **Dr. Louise Manfredi** worked on a service project at the *Water Street Rescue Mission* in conjunction with Dr. Atwater to redesign a portion of the facility. She also successfully authored a $5000 grant from the *DART Foundation* that allowed for the purchase of multiple 3D printers for the Drafting & Design area.

- **Dr. Joseph McCade** included a Service Learning component to his Perspectives/Diversity course entitled *Technology Assessment: The Amish and others*. He also taught a new course entitled *Transportation & Automation* worked on putting more engineering content into the technology & engineering education curriculum. Dr. McCade also presented on research related to careers and career development.

- **Dr. Jack Ogutu Was** awarded his *Associate Safety Professional (ASP)* Certification by the Board of Certified Safety Professionals. He had two refereed publications during the 2015/16 academic year related to ergonomic issues. Dr. Ogutu submitted a grant to the EPA for $93,000 that would support student training (interns) while working with local partners. He was also awarded a NIOSH Training Project Grant entitled *Occupational Safety & Environmental Health Program* in the amount of $214,483.00. The primary goal of this grant is to provide financial assistance to *Occupational Safety and Environmental Health* students at Millersville University.

- **Mrs. Donna Painter** was recognized with a President’s *Special Service Award* in November, 2015 by the *Technology & Engineering Education Association of Pennsylvania*. She was also recognized as the Outstanding Member of the *Susquehanna Litho Club* for 2016. Mrs. Painter continues to spearhead most of the departmental recruitment initiatives.

- **Dr. Mark Snyder** had an article he co-authored with a colleague from Central Connecticut State University published in the *International Journal of Printing, Packaging & Allied Sciences*. Dr. Snyder served as program coordinator for the largest program in the department (Applied Engineering & Technology Management) and promoted and expanded the internship capabilities for majors in the degree program. A graduate student he taught in Spring 2015, Frank Caccavale, had an article published in the March 2016 issue of the Technology & Engineering Teacher journal. Another of his students, Ben Terry, was awarded an
Dr. Scott Warner was the point person for developing and implementing the new Technology & Innovation graduate degree program out of the Department of Applied Engineering, Safety and Technology. He also taught the first new course in that program, EDTE 603: Fostering Creativity by Design in the Fall of 2015. Dr. Warner wrote a chapter for an edited book that highlighted the exemplary teaching practices of a former student, Korbin Shoemaker. The chapter is in a book that will be released by the Council on Technology and Engineering Teacher Education in May of 2016. Dr. Warner also gave a presentation to the Mississippi Valley Conference on Technology Teacher Education entitled The Changing Landscape of Graduate Education. The presentation was to the leadership of the technology education profession on the dynamics of our new graduate program here at Millersville in Technology & Innovation.

Dr. John Wright launched a new B.S. degree in Automation & Intelligent Robotics that now has nine students enrolled. He continued to serve as Co-Advisor for the 2015/16 ATMAE Robotics Championship Team. Blind, Peer-Refereed National Presentation entitled Practical loop tuning – How to tune a PID loop! at the 2015 Association of Technology, Management, and Applied Engineering Conference Proceedings held in Pittsburgh.

C. Student Achievements

Nicole McNerney, an AETM major, was the recipient of a scholarship from the Printing & Graphics Scholarship Foundation.

TEECA @ MU’s Student President Grace Painter received the Outstanding Chapter Service award in recognition of a student who has exemplified leadership within the local chapter reflecting well on TEECA and the field of Technology & Engineering Education.

TEECA @ MU received the Outstanding Chapter Award in recognition of the chapter which exemplifies the highest standards through activities and projects which reflect well on International TEECA and the field of Technology & Engineering Education at the International Technology & Engineering Educators Conference in National Harbor, Maryland, March 2-4.

Ben Terry, an Undergraduate AETM major with a concentration in Graphic Communications won the Graphic Arts Association, Franklin Award for a printing project.

Students Ramiz Chaudhary, Kevin Clark, Cody Dye, Patricia McEvoy, Austin Neider, Nicholas Oakes, Ryan Piselli, Joshua Smucker, Blessing Uko, Randi Warner, Margret Wilson and Michelle Elsasser, all Occupational Safety & Environmental Health majors, received tuition scholarships from a NIOSH grant as administered by Dr. Jack Ogutu.
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• **Erica Roth**, **Paul Thom**, **Shane Waters**, **Ben Gochenaur**, **Dr. Len Litowitz**, **Dr. Joseph McCade** and **Dr. Thomas Bell**, student and faculty officers of the Beta Phi chapter of Epsilon Pi Tau honorary fraternity for professions in technology, served as the initiation team for an Exemplary Initiation Ceremony at the annual conference of the International Technology and Engineering Educators Association conference held in National Harbor, MD on March 3, 2016.

## D. Notable Alumni Achievements

The following awards were issued to alumni at the annual conference of the Technology & Engineering Education Association of Pennsylvania conference in November, 2015:

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- Mr. Andy Zellers, Conestoga Valley Middle School, and Mr. Kenneth Neumann, Martin Meylin Middle School – Cooperating Teacher Award in recognition of exceptional mentoring of teacher candidates and longstanding commitment to the preparation of the next generation of Technology & Engineering Education teachers.
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- Judy Hawthorn, Cedar Cliff High School (retired) – Lifetime Achievement award in recognition of extraordinary leadership, sustained commitment, and exceptional dedication to the advancement of Technology & Engineering Education over many decades.

E. Additional Progress Toward Our Bold Path

Goal A. Engage Learners

- The department has been proactive in pursuing state-of-the-art laboratory equipment through matching funds and grant programs in order help us engage the learners with contemporary equipment.

Goal B Ensure Long-term Success

- The department of Applied Engineering, Safety & Technology has engaged in a number of recruitment initiatives throughout the academic year including hosting groups on tour, printing new recruitment literature, updating our departmental web site, completing production of a marketing video for our teacher preparation program in conjunction with University Communication & Marketing, and participating in career fairs with local school districts and taking our departmental display booth to conferences.

- We have also undergone a number of facility improvement initiatives including new ceiling tiles, fresh painting, and new personality profiles for the hallway walls that highlight the successes of our alum. At present we are also pursuing some exterior signage to help market our programs.

Goal C Embrace Agility

- The department strives to be as agile as possible by streamlining committee work, maximizing facility usage and embracing and adapting to the new technologies we teach about.
F. **New faculty, new facilities, new Equipment**

- The department conducted a successful search that concluded with the hiring of Dr. Alex Johnson who will begin employment here at MU in August of 2016.

- The department was instrumental in obtaining funding for a number of MakerBot 3D printers as the result of a grant that was authored by Dr. Louise Manfredi and funded by the DART foundation.

- The department also received two new four-axis milling machines through a matching grant that was authored by Mark Atwater.

G. **Outcomes Assessment**

- By virtue of the fact that all of our recent Occupational Safety & Environmental Health alum have graduated from an ABET accredited undergraduate program 100% of them are granted the General Safety Professional (GSP) recognition. They will be allowed to sit for the Associate Safety Professional (ASP) after obtaining three years of experience in the field.

- All technology & engineering education majors must pass the technology & engineering specialty area Praxis exam in order to earn teacher certification. MU students have a 99% first-time pass rate on the subject area specialty exam.

- Applied Engineering & Technology Management majors have the option of sitting for an ATMAE professional certification exam. Of those who completed the exam within the last year, ___ % earned a passing score and obtained certification.
Department of Biology

Department Mission
The primary mission of the Biology Department is to foster quality teaching and learning. The practitioner of a discipline must be a master of the subject. There is no method for achieving mastery of a discipline superior to learning with a practicing mentor. While diverse techniques are employed and the time one may spend in the Biology Department may vary, everyone who comes among us should experience a climate of learning and enjoying Biology together. We also seek to uphold the premise that an enduring, civilized society must contain members who are competent in their vocation and who understand their responsibility to advance the good of that society through their discipline. To advance our mission we have constituted a diverse faculty whose members are trained in many sub-disciplines of Biology. This allows students with different interests and personalities to work with compatible mentors in the kind of Biology that interests them. Our goal is that, while different students will be well trained in one or a few fields of biology, all will be problem solvers who will continue to learn and advance the discipline and the good of society. Our second mission is to maintain an environment within which faculty and students learn together by conducting scholarly activities. The practice of scholarship is characteristic of a body of students and is a fundamental way to accomplish effective teaching, learning and mentoring. This endeavor can advance the body of knowledge, even while it provides the best forum for mentoring, for practicing the methods and thinking appropriate to learning new Biology, and for appreciating the discipline and those who strive for its advancement.

Current Department Goals and Objectives.
The Department conducted a five-year program review during the 2012-2013 academic year. The following items are from the report’s Action Plan.

1. The Chair will discuss with the Dean and Director of Admissions how to better manage enrollments in the Biology Department and how to recruit/select students better prepared to succeed in Biology.
   Status: Ongoing
   When the Provost met with the Department during the Fall 2014 semester, members of the faculty expressed their concerns that the Department’s resources (e.g. operating funds, faculty and staff positions) have not kept pace with the growth in the number of students. The Dean and Chair have also had conversations with members of the administration about these issues. To date, no action has been taken to slow the growth of Biology’s enrollments and the University’s need for tuition revenue make this unlikely in the near future, nor have additional resources be allocated to the Department.

2. Members of the Biology Graduate Program Committee and others will meet to discuss the future of our graduate program. Among other issues, they will explore whether a “biology track” can be added to the MS in Integrated Science program. The Chair will provide time on Thursday afternoons (4pm) for these meetings.
   Status: Not started

3. The Allied Health Curriculum Committee and others will meet to discuss how ALHT-RT students can complete their degree in those instances where they are not accepted into the hospital program. Among other issues, they will explore whether the BS in Multidisciplinary Studies (MDST) is a suitable alternative.
   Status: Completed
Only a small number of students (~1 per year) are unable to complete the hospital program. The Allied Health Coordinator advises them on how to complete the requirements for a different degree. In the MDST program, students have the option of completing individualized curricula. Thus, there has not been a need for a formal curricular track.

4. The Department recently formed an Assessment Committee charged with the continued development of our assessment efforts, and the analysis and reporting of the findings. The Committee will develop proposals on how to better use the MFAT and how to incorporate pre/post testing and embedded questions to assess our curriculum. The Chair will provide time on Thursday afternoons (4pm) for these meetings.

Status: Ongoing

The Committee has presented several proposals to the Department for discussion. For example, the use of embedded questions and pre-post testing has been adopted for several core courses. This past fall the Assessment Committee submitted revised Student Learning Outcomes to the Office of Assessment. Biology’s submission was very favorably received. Recently, the Assessment Committee reported on its efforts to the Department.

5. The Department will explore strategies for increasing retention (particularly for underrepresented students) and reducing D, F, and W rates. Members of the Department will attend presentations and workshops on these issues and report back to the Department for discussion. The use of voluntary online “preparedness tests” will also be discussed.

Status: Ongoing

During the Fall 2014 semester, the Chair participated in a Faculty Learning Community on “Making Scientists.” The Department supports the College’s efforts to recruit and retain students.

6. Representatives of the Biology Department will meet with representatives from the Departments of Mathematics and Computer Science to determine if the interest and expertise exists to develop a course in bioinformatics.

Status: Ongoing

The Chair of Biology discussed with the Chair of Computer Science (CS) whether any faculty in the CS Department might have the expertise and interest to collaborate on the development of a bioinformatics course. At present, a lack of faculty expertise and more pressing demands in both departments make this unlikely. However, in recent and future faculty searches for geneticists and molecular biologists, one of the stated preferences will be for expertise in bioinformatics. Our most recent hire, Dr. Jonathan Stoltzfus has some expertise in this area.

Provide a brief description of at least three initiatives in the University Strategic Plan that your department and faculty supported or contributed to during 2015-2016.

1. The Biology Department taught 6 courses (8 sections) with significant service learning components, involving 153 undergraduate students and comprising a total of 793 hours of service learning.
2. The Biology Department taught 12 course sections that involved capstone experiences or projects.
3. The Biology Department involved 56 students in independent research for credit (63 credits). In addition, 42 students participated in research experiences that were not part of a course (non-credit research experiences). The Department also hosted a PASSHE-wide meeting for undergraduate research.

What have you done to help underrepresented minority student success?
The Department fully supports and participates in the College of Science and Technology Recruitment and Retention Plan.

Department of Biology
Selected Department Highlights

Enhancements to program curriculum, student achievement of learning outcomes, or other program improvements

- BIOL 346, Ornithology, was approved as a (W)riting course effective Spring 2016.
- BIOL 415, Mammalogy, was approved as a (W)riting course effective Spring 2016.

Special Events or Programs

- The Department hosted the annual meeting of the Commonwealth of Pennsylvania University Biologists (CPUB). This was attended by several hundred faculty and students from 10 PASSHE universities.
- A record number of Biology majors presented at Made in Millersville.

Special Faculty Achievements (not listed in Part B, the Annual Summary Outcomes Form)

Student Achievements

- The Biology department had four students complete departmental honor theses:

  Jordan Card  
  Thesis Title: *Oviposition Behavior of Lepidopterans in Response to Secondary Metabolites of Ailanthus altissima’*  
  Thesis Supervisor: Dr. Ryan Wagner

  Lindsay Harrison  
  Thesis Title: *Mechanical and Biological Induction of Polyphenol Oxidase in Vegetative Tissue*  
  Thesis Supervisor: Dr. Ryan Wagner

  Joseph Receveur  
  Thesis Title: *ENSO related storm event impacts on mosquitoes: ecological implications on larval habitats and microbial community response to control methods*  
  Thesis Supervisor: Dr. John Wallace

  Leah Schwartz  
  Thesis Title: *Animal Species Diversity Database of Roddy Pond*  
  Thesis Supervisor: Dr. Aaron Haines

- Joseph Receveur received the Outstanding Student Award from the Entomology Society of Pennsylvania for 2015.
- Joseph Receveur has accepted a research assistantship to pursue a Master’s degree in the Entomology Department of Michigan State University, East Lansing, MI.
- Colin Hansen was accepted to the University of Pennsylvania’s Veterinary School.
- Melody Aleman has been awarded an NSF-REU at Colombia University to study marine plankton.
- Edwin Sanchez has been awarded an NSF-FEU for the University of Maryland Eastern Shore to participate in a marine biology-related project.

Notable Alumni Achievements

- Andrew Wolfgang (‘13) received a Graduate Assistantship at Tarleton State University.
• Jen Spengler (’15) accepted a research position in the lab of Dr. Paul Kulesa at the Stowers Institute, Kansas City, MO.
• Sarah Funck (’06) was hired by the Florida Fish and Wildlife Conservation Commission as the statewide Non-native Fish and Wildlife Program Coordinator.
• Megan Stearns Jones (’09) completed her Ph.D. dissertation in Microbiology and Immunology at the University at Buffalo.
• Allison Brun (’15) was accepted to Salus University for Optometry.
• Folake Meshe (’15) is employed as a Soil Technician at Agri Analysis Inc.
• Jordan Kmetz (’14) is employed by the Davey Resource Group as a contractor for First Energy Utilities.
• Veronica Votta (’13) began studies in the Veterinary School at Ross University.
• Chris Lituma, Ph.D. (’05) accepted a tenure track assistant professor position as an Avian Ecologist in the Division of Forestry and Natural Resources at West Virginia University.
• Matthew Smith (’14) was accepted into the M.S. Program in Forensic Science at Syracuse University with a partial scholarship.
• Heather Gochnauer (’14) has been accepted into medical school at Commonwealth Medical College.
• Bob Smith, Ph.D. (’00) accepted a tenure track position in Aquatic Ecology at Lycoming College, Lycoming, PA.
• Mark Johnson (’15) has accepted a position as an MS student with Dr. Matthew Barnes in the Department of Natural Resource Management at Texas Tech University.

External Grants or Contracts Funded over $5000
• Dr. Judy Cebra-Thomas received a multi-year grant award from the National Science Foundation to fund her research on the development of the turtle shell.
Department of Chemistry

1. Department Mission Statement:

The Millersville University Department of Chemistry offers American Chemical Society (ACS) approved programs of study to prepare students for basic and comprehensive learning in the field of chemistry. **This training readies students that complete the program for a wide range of graduate, professional, and industrial positions.** Our students benefit from a common core of courses that provide fundamental theory and skills vital for all bachelors degree programs in chemistry. The department is comprised of eleven experienced full-time faculty members, all of whom hold doctoral degrees and teach all chemistry lectures, recitations, and laboratories. Chemistry majors are each assigned an academic advisor within the department who works closely with them on academic planning, finding potential research opportunities and/or internships, finding learning in service and/or outreach opportunities, student teaching, and career placement services. The department’s well-equipped laboratories give our students “hands-on” training in the application and use of modern instrumentation and equipment.

2. Current Departmental Goals and Objectives:

We aspire to consistently...

a. Maintain our ACS approved program.
b. Maintain our practice of chemical hygiene and safety training.
c. Maintain and improve the infrastructure of instrumentation, laboratory space, chemicals, and supplies necessary to train chemists for modern work in the graduate, professional, and industrial areas where our students will likely find employment and professional development opportunities.
d. Maintain our learner-centered approach to chemical education.
e. Maintain the highest possible standards of training scientists.
f. Maintain our consistent inclusion of High-Impact Practices (HIPs) throughout our program: our HIPs include...
   i. First-Year Seminar for first-year chemistry majors.
   ii. Learning Communities such as our ACS Student Chapter, our Departmental Seminar Series, and our faculty lead undergraduate research opportunities.
   iii. Learning in Service by way of our ACS Student Chapter outreach programs and our culture of communicating the importance of, and the interdisciplinary nature of, undergraduate research and modern STEM research.
   iv. Internal Undergraduate Research within our department, which has always been an integral part of our program.
v. External Undergraduate Research experiences and/or internships, which have consistently been promoted by our department.

vi. Capstone Courses & Projects, such as our upper-level laboratory courses, upper-level lecture courses, research projects, and senior seminar.

vii. An Integrated Approach in which important parts of the training program are systematically spiraled throughout multiple levels of coursework. For example: safety and chemical hygiene are covered at all levels of instruction.

g. Maintain our culture of a supportive growth-minded community throughout our program.

h. Maintain a strong culture of mentorship and advising at all levels of the program, which includes helping our students to develop focused professional interests, passions, and goals.

i. Maintain our focus on student professional outcomes. Our students consistently obtain competitive positions in graduate programs, professional programs, and industry.

j. Maintain and improve the successful assessment program. The May 2015 MFAT results taken by 22 chemistry graduating seniors show all scores above the 86th percentile nationally in each of the sub disciplines except in Physical Chemistry (74th).

k. Reduce the W, D, and F grades in the introductory chemistry courses by introducing the Chemistry Placement Test, offering Chemistry 110 online during the 2016 summer session and face-to-face during the Fall 2016 semester, and through working with the tutoring center to improve the quality of chemistry tutoring services.

l. Encourage the faculty who teach introductory chemistry courses to investigate and incorporate modern research based best practice curricular and pedagogical innovations (POGIL, FLIP, online homework etc.) into their methods of instruction to successfully engage students of different learning preferences and/or styles.

m. Maintain and improve positive, mutually beneficial, and close long-term relationships with alumni through an annual alumni newsletter and a user-friendly web page.

n. Hire a permanent full time secretary to develop a professional and consistent front-of-the-house point of contact for our department, as well as consistent operational support.

o. Actively promote the department’s general education courses.

p. Further promote the Environmental, Polymer, Nanotech, and the 3+4 Pre-Pharmacy options.

q. Obtain external funding to support undergraduate research including a Research Experience for Undergraduates summer research grant from the National Science Foundation (NSF).

r. Develop a sustainable instrument repair, maintenance, and replacement plan with appropriate levels of funding.
s. Make a request to, and justify the case for, hiring a part-time technician to do the general and organic laboratory preparations. This would enable the current technician to devote his time and expertise to instrument maintenance and repair.

t. Investigate potential funding sources, and the operational steps, necessary to establish a post-doctoral teaching position to cover classes currently taught by adjunct faculty

3. Provide a brief description of at least three initiatives from the BOLD PATH that your department and faculty supported or contributed to during 2015-2016

a. We actively engage learners to contribute to the understanding and creation of new scientific knowledge through undergraduate research opportunities:
   i. We have a learner-focused department in which students are focused on leveraging both their content knowledge and their transferable skills to ensure long-term success
   ii. We are learner-focused leaders in our field
   iii. We including research-based best practice throughout our program
   iv. Our students have a strong track record of being career ready long before graduation
   v. We have a culture of employing experiential and innovative learner-focused best practice strategies through undergraduate research, capstone courses (including senior seminar), and internship opportunities

b. We actively engage learners to contribute to the promotion of STEM fields through outreach learning through service programs like the ACS Student Chapter programs, Science Olympiad, etc.

c. We ensure the long-term success of the University through maintaining a robust program that is structured to provide students with...
   i. Ample and consistent support necessary to foster strong interests,
   ii. Confidence and the desire to set big goals,
   iii. Practical plans and strategies to develop the skills necessary to pursue big goals,
   iv. Passion to obtain their big goals,
   v. And, the perseverance necessary to ensure long-term student success and achievement.

d. We continue to maintain our strong foundation, while continually growing our program to help increase enrolment.

e. We incorporate green-chemistry, environmental chemistry, stewardship of chemical resources, and sustainability throughout our curriculum and culture.
We maintain a robust tradition of recruitment and retention within our department that is independent of, and blends well with, current university recruitment and retention efforts.

Many faculty members participate at each open house to meet with perspective and/or accepted students, and their families, to promote the program and help with recruitment.

We send letters to high school teachers of successful freshmen and graduating seniors, thanking them for preparing their students well and sending them to Millersville. We also invite them to visit the department with their current students to learn more about our program, and to tour our facilities, to help with recruitment.

We embrace agility as a department by continually doing more with limited resources.

- We maintain many interdisciplinary relationships (research and otherwise) throughout the campus community
- We maintain a strong network throughout the regional, national, and international communities that we are connected to.
- We are willing to proactively move with change, as long as it does not hinder our ability to maintain our strong track record of stellar student success and achievement outcomes.

**4. What have we done to help underrepresented minority students succeed?**

- First-year seminar
- Robust and flexible academic advising at all stages of program; 3, 4 or 5-year planning; course planning; research and internship planning, career planning
- Peer mentors and learning community, via first-year seminar
- ACS student chapter participation strongly encouraged / required, to enable community building and cohort cohesion
- Strong peer identity and collaborations among majors of all background
- Group Tutoring / Individual Tutoring
- Placement testing, Mathematics 090 and Chemistry 110
- Learner-Centered, Active Learning, and best practice teaching methods based on modern chemical education research and practice
- Ample undergraduate research opportunities
- All other High-Impact Practices incorporated throughout the program
- Diverse chemistry faculty complement
- Departmental culture of community and growth
- Department culture of developing transferable skills (presenting, speaking, communicating, ethics, curiosity, grit, passion, perseverance, growth-mindset, etc.) along with the traditional liberal arts and content area skills.
5. Selected Department Highlights

a. Enhancement to Program curriculum/student achievement of learning outcome/other program improvements:
   - Reintroduction of the Chemistry Placement Test and Offering Chemistry 110 during the fall semester (face-to-face) and summer (and possibly winter) session (online) – to help underprepared students succeed in Chemistry 111.
   - First-year seminar and living learning community for incoming freshmen – to help students adjust to the college environment, improve study habits, explore career options, and encourage collaborative engagement with the curriculum.
   - ‘New’ options in Polymer, Environmental, Nanotechnology, and 3+4 Pre-Pharmacy – to meet the current interests of the students and help with recruitment.
   - Offering of upper-level Chemistry Courses; Polymer, Environmental, and Advanced Organic more regularly – to better prepare graduating students for graduate school/industry.
   - Using different pedagogical methods (FLIP and POGIL) in the chemistry classroom, as well as Learning Assistants outside the traditional classroom – to help students of different learning preferences and/or styles succeed.

b. Special Events/Programs:
   - Fall Chemistry Colloquium where scientists from leading National Labs, Research Universities, as well as nationally recognized award-winning young scientists gave presentations – to help students get admission at prestigious graduate programs and introducing them to current and cutting edge research.
   - Presentation of Recruiters from Eurofins – To help students secure employment/internships.
   - Science Olympiad, Science Lectureship, Women in Science and Math – opportunities for service learning by performing chemical demonstrations for high school students.
   - Presentations and Attendance at National ACS meeting and other regional/local scientific meetings – for students to network and better understand the professional options.

c. Special Faculty Achievements (Please see part B for details)
   - Dr. Aimee Miller
     - Symposium Presider on session “NMR Spectroscopy in the Undergraduate Curriculum”, 251st National meeting of the ACS, San Diego, CA.
• Dr. Jeremiah Mbindyo
  o Recipient of a major competitive National Award from the American Chemical Society. The ACS-CEI(Committee on Environmental Improvement) Award recognizes outstanding work on incorporating sustainability in chemistry curriculum.
  o Presented an invited talk at the 251st National ACS Conference, San Diego, CA.

• Dr. Katie Allen
  o Submitted a PRF UNI Grant for $55,000. (waiting to hear back)
  o Recipient of the Robertson Faculty Research Release Grant

• Dr. Michael Elioff
  o 2 Publications in peer reviewed prestigious journals (Advances in Physical Chemistry and Luminescence)

• Dr. Steve Kennedy
  o 2 Publications in CSSynthetic Pages (peer reviewed online database)
  o 3 Presentations on “Efficient methods for incorporating inverted pedagogy and active learning into lecture courses” (Lancaster Learns teaching Conference, HACC Lancaster; Innovative Practices Spotlight, CAE; RECAP, West Chester University)

d. Student Achievements:
  • 2015-16 graduating chemistry class profile:
    42 Graduates (the highest number ever)
    21 Women and 21 Men
    6 African American (3 Women); 6 Asian (4 Women); and 4 Latino (3 Women) from 6 different African and Asian countries
    13 BS (3 ACS certified); 13 BS (Biochem) (3 ACS certified);
    11 BS (Environmental); 4 BS (Nanotech); 1 BSE
    18 came in as chemistry freshmen and remained as fulltime students. Out of the 18, 15 students graduated in 4 years, 1 student in 3.5 years, and 2 students in 4.5 years.
    11 Latin Honors
    10 Departmental Honors (including 3 Honors College)
    7 have been accepted into Ph.D. Programs; 2 to Medical Schools; 2 to Pharmacy Schools; 18 have jobs/job offers (up to now) chemical industries.
### Students Completing a University or Department Honors Thesis:

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Thesis Title</th>
<th>Advisor’s Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximuck, William</td>
<td>Synthesis of N-Heterocyclic Carbene Catalysts for Transfer Hydrogenation Reactions</td>
<td>Edward Rajaseelan</td>
</tr>
<tr>
<td>Salim, Jevica B.</td>
<td>Alkene Migration Studies en Route to Altersolanol P</td>
<td>Steven Kennedy</td>
</tr>
<tr>
<td>To, Gina Giang</td>
<td>Natural Product Extraction for Incorporation into an Undergraduate Organic Synthesis Laboratory: Efficient Isolation and Derivatization of Shikimic Acid</td>
<td>Steven Kennedy</td>
</tr>
<tr>
<td>Bankert, Laura</td>
<td>Catalytic Activity of Multimetal Nanostructures</td>
<td>Jeremiah Mbindyo</td>
</tr>
<tr>
<td>Bekere, Pineal</td>
<td>Synthesis of Novel Green Catalyst</td>
<td>Edward Rajaseelan</td>
</tr>
<tr>
<td>Carta, Matthew</td>
<td>Amide bond formation studies en route to Hunanamycin A</td>
<td>Steven Kennedy</td>
</tr>
<tr>
<td>Dreer, James</td>
<td>Reductive amination en route to Hunanamycin A</td>
<td>Steven Kennedy</td>
</tr>
<tr>
<td>Kacskos, Shane</td>
<td>Synthesis of N-Heterocyclic Carbene Nitro Complexes</td>
<td>Edward Rajaseelan</td>
</tr>
<tr>
<td>Shelton, William</td>
<td>Palladium-Nickel Nanocatalysts for Green and Sustainable Chemical Transformations</td>
<td>Jeremiah Mbindyo</td>
</tr>
<tr>
<td>Wolford, Nikki</td>
<td>Synthesis and Characterization of an Iridium N-Heterocyclic Carbene Complex And it’s use as a Catalyst for Transfer Hydrogenation.</td>
<td>Edward Rajaseelan</td>
</tr>
</tbody>
</table>

### Students receiving Neimeyer-Hodgson and/or Student Research Grants:

- Amy Lehr (Dr. Allen)
- Matt Thompson (Dr. Allen)
- Kenton Mummert (Dr. Kennedy)
- Jevica Salim (Dr. Kennedy)
Gina To (Dr. Kennedy)
James Dreer (Dr. Kennedy)
Matt Carta (Dr. Kennedy)
Isidore Iradukunda (Dr. Rickard)
Nicole Sundo (Dr. Rickard)
Sarah Kennedy (Dr. Rickard)
Laura Bankert (Dr. Mbindyo)
Will Shelton (Dr. Mbindyo)
Ivanny Jacome Ottati (Dr. Bonser)
Jose Urena (Dr. Bonser)
Rachel Bechtel (Dr. Bonser)
Nicholas VanLeuven (Dr. Bonser)
Linh Nguyen (Dr. Miller)

- **Student Presentations at the National ACS Conference, March 2016, San Diego, CA.**

1. Hannah Ashberry; "Fluorescence Studies of Carboxylic Acid Dyes" (Michael Elioff)

2. Isidore Iradukunda; “Surface Enhanced Raman Spectroscopy Using Silver and Gold Nanoparticles” (Lyman Rickard)

3. Nicole Sundo; Capillary Electrophoresis of a Protein Mixture (Lyman Rickard)

4. Sarah Kennedy; Comparison of the Determination of Metal Ions in Water Samples by Rotating Disk Voltammetry and Atomic Absorption Spectroscopy (Lyman Rickard)

5. James Dreer; Studies toward the total synthesis of Hunanamycin A (Steve Kennedy)

6. Rachel Bechtel & Olivia Misner; The Synthesis and Chemistry of Some Novel Diaziridines (Steve Bonser)

7. Amy Lehr; Improvement of mechanical properties of polylactones through π stacking” (Katie Allen)

8. Laura Bankert; “Catalytic Activity of Au, Ni and Au/Ni Nanostructures in the Reduction of p-Nitrophenol” (Jeremiah Mbindyo)

9. Matthew Thompson; “Modification of Poly-valerolactone Through Hydrogen Bonding” (Katie Allen)
10. Emily Dalbey; "Synthesis and catalytic properties of a novel triazole based N-heterocyclic Iridium carbene complex" (Ed Rajaseelan)

11. Shane Kascos; "Synthesis and catalytic properties of Ir (I) NHC nitro complexes" (Ed Rajaseelan)

12. Nikki Wolford; poster based on REU at NC State

13. Nicholas VanLeuven; “Progress towards the synthesis and chemistry of [2alkyl-3-(4-substituted phenyl)diaziridin-1yl](4-nitrophenyl)methanones” (Steve Bonser)

14. James Dreer, Joy Thames, Emily Dalbey and Rachel Bechtel; “ACS Student Chapter at Millersville University” (Lyman Rickard)

• **Student Presentations at Undergraduate Research at the Capital, Harrisburg, PA, April 5th 2016.**

1. Jim Dreer and Matt Carta; “Studies toward synthesis of hunanamycin A” (Steve Kennedy)
2. Pineal Bekere and Nikki Wolford; “Synthesis of green inorganic catalysts” (Ed Rajaseelan)

• **Students who have been accepted into and will be attending graduate programs with fellowships/assistantships in chemistry for fall 2016:**

1. William Maximuck: Delaware, Tennessee, Florida, Indiana, Virginia Tech, Texas A & M.
3. Hannah Ashbury: Georgia, Kansas, Maryland, Indiana.
5. Rachel Bechtel: Delaware
6. Matthew Thompson; Univ. of Southern Illinois – Carbondale
7. Laura Guevara: MU(AEST)

• **Students attending Medical Schools in fall 2016:**

1. Pineal Bekere: Loyola University of Chicago Medical School
2. James Dreer : LECOM
• **Students attending Pharmacy Schools in fall 2016:**

1. Erin McIntyre: U. Pitt
2. Jennifer Cederberg: LECOM

• **Summer Research experience for Undergraduates Program (REU) 2016:**

1. Jose Urena: University of Illinois, Urbana-Champaign
2. Rachel Ashmore: Princeton
3. Renee Stover: University of New Orleans
4. Karam Idrees: NC State

• **Student Internship Experiences SU2015–SU2016:**

<table>
<thead>
<tr>
<th>Student</th>
<th>Internship</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobias Bentzel</td>
<td>K&amp;L Plating</td>
<td>FA15</td>
</tr>
<tr>
<td>Andy Herr</td>
<td>Cargill Cocoa and Chocolate</td>
<td>WI16</td>
</tr>
<tr>
<td>Gloria Chung</td>
<td>K&amp;L Plating</td>
<td>SP16</td>
</tr>
<tr>
<td>Nicole Sundo</td>
<td>Environmental Educator</td>
<td>SU15</td>
</tr>
<tr>
<td>Anthony Hertzler</td>
<td>Glatfelter, Spring Grove PA</td>
<td>FA15-SP16</td>
</tr>
<tr>
<td>Kayla Rafferty</td>
<td>K&amp;L Plating, Lancaster PA</td>
<td>SU16</td>
</tr>
<tr>
<td>Gloria Chung</td>
<td>Glatfelter, Spring Grove PA</td>
<td>SU16</td>
</tr>
<tr>
<td>Joy Thames</td>
<td>Eurofins</td>
<td>SU15-SP16</td>
</tr>
<tr>
<td>Deepak Rai</td>
<td>Adhesive Research Lab</td>
<td>SU15-SP16</td>
</tr>
<tr>
<td>Helen Mekonnen</td>
<td>QC Analyst</td>
<td>SU15-SP16</td>
</tr>
<tr>
<td>Amy Lehrer</td>
<td>QC control materials lab</td>
<td>SU15</td>
</tr>
<tr>
<td>Laura Guevara</td>
<td>CNF research</td>
<td>SU15-SP16</td>
</tr>
<tr>
<td>Quang Pham</td>
<td>Glatfelter, Spring Grove PA</td>
<td>SU15-SP16</td>
</tr>
<tr>
<td>Erin McIntyre</td>
<td>Pharm Tech Assistant</td>
<td>WI15-SP16</td>
</tr>
<tr>
<td>Manij Battle</td>
<td>Pharm Tech Assistant</td>
<td>WI15-SP16</td>
</tr>
<tr>
<td>Jennifer Cederberg</td>
<td>Pharm Tech Assistant</td>
<td>SU15-SP16</td>
</tr>
<tr>
<td>Laura Bankert</td>
<td>Pharm Tech Assistant</td>
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</tr>
<tr>
<td>Joy Thames</td>
<td>Eurofins</td>
<td>SU15-SP16</td>
</tr>
</tbody>
</table>

• **Student Awards:**

1. The Student Chapter of the American Chemical Society was the recipient of the Honorable Mention Award at the 251st National Conference of the ACS, March 2016, San Diego, CA.
2. Gina G. To was the recipient of the 2nd place award in the Chemical Sciences Division at the 18th Annual Undergraduate Research Symposium in the Chemical and Biological Sciences of UMBC, October 2016, Baltimore, MD.
3. Pineal Bekere is the recipient of the John K. Harley and Grace W. Evans University Award.

Department of Chemistry
4. Chemistry Department Awards:

William Maximuck  ACS Award in Organic Chemistry
                     ACS Award in Inorganic Chemistry
Laura Bankert      ACS Southeastern Pennsylvania Section Award
James Dreer        Millersville University Student affiliate of the ACS Award
Maria Muniz        ACS Award in Analytical Chemistry
                     American Institute of Chemists Award
Jillian Weissenrieder ACS Award in Analytical Chemistry
Karam Idrees       Chemical Rubber Company Chemistry Achievement Award
                     Gerald S. Weiss Chemistry Scholarship (2015)
Gillian Good       Gerald S. Weiss Chemistry Scholarship (2016)
Jose Urena         Polymer Education Undergraduate Award
Ivanny Jacome Ottati Cecil M. Upton Organic Chemistry Award
Kayla Bixler       Richard Sasin Scholarship in Chemistry
Courtney Kearns    Sandra A. Yeager Chemistry Scholarship

- Notable Alumni Achievements:

  Joshua Yablonski, 2010 (Ph.D. University of North Carolina –Chapel Hill)
  Daniel Stasiw, 2010 (Ph.D. North Carolina State University)
  Suzanne Woomer, 2012 (Naturopath Doctorate Degree and Masters of Acupuncture Degree, University of Bridgeport)
  Thomas Bernhardt, Ph.D. 1996 (2016 Young alumni Achievement Award)
DEPARTMENT OF COMPUTER SCIENCE

A. Curricular Changes

We introduced a new required course for CS majors, CSCI 366 Database and Web Development, in Spring 2016.

Dr. Ghazizadeh taught a Special Topics course in Vehicular Cloud Computing in Spring 2016.

Dr. Schwartz will teach a Special Topics course in Data Mining in Fall 2016.

B. Faculty Achievements

A summary of faculty professional activities such as publications and presentations can be found in the College Statistics section of this Annual Report.

Dr. Schwartz serves as the General Chair of the International Conference on Theory and Applications of Diagrams for 2016.

Dr. Schwartz serves on the Organizing Committee, 1st International Workshop on Multimedia Analysis and Retrieval for Multimodal Interaction, to be held in conjunction with the ACM Conference on Multimedia Retrieval (ICMR), New York City, NY, June 6, 2016.

Dr. Schwartz also serves on the Steering Committee (elected position), International Conference on the Theory and Application of Diagrams.

Dr. Schwartz was invited to serve as a National Science Foundation Panelist.

Dr. Hutchens serves on the Pennsylvania Association for Computer and Information Science Educators (PACISE) Board.

We have published 13 papers and continue to work on work on grants as detailed below.

Grants:

Dr. Schwartz coordinated a $28,500 NIST (National Institute of Standards and Technology) grant that allows three students to do a Summer Undergraduate Research Fellowship at NIST in Summer 2015.

Dr. Schwartz received a 20,000 NSF grant to fund Diagram Graduate Symposium at the 2016 International Conference on the Theory and Application of Diagrams.
Publications:


Nazli Hardy, Christopher Hardy, NatureAtlas.org: Exposing undergraduate computer science students to opportunities and concepts in biodiversity informatics, World Congress


C. Student Achievements

Our students have been very active this year as this summary shows.

CS Club Activities:

Our CS Club received $10,000 from Student Government to send 8 CS students to the 30th Edition Game Developers Conference in Moscone Center, San Francisco, CA, March 13-16, 2016.

They have also sponsored Tech Nights and Alumni Nights, inviting speakers and alumni to discuss aspects of our industry, job searches, etc.

Student Publication and Presentations:

Shayne McIntosh won the Best Student Paper Award (working with Stephanie Schwartz, and Gary Zoppetti) for *Optimizing the Multiclass Perceptron Through Parameter Tuning and GPU Utilization*, Proceedings of the 29th Annual Spring PACISE Conference, Kutztown University of Pennsylvania, April 1-2, 2016.

Shayne McIntosh, *Optimizing the Multiclass Perceptron through Parameter Tuning and GPU Utilization*, Made in Millersville, Millersville, PA, April 21, 2016.


Kevin Avila & Sam Rotella, Millersville University, *Introducing Clusters into Vehicular Cloud Computing*. Frederick Douglass Collaborative Institute Debate Society Competition, April 21, 2016.

Internships, Fellowships, and Research Opportunities:

Jason Zimmerman was an intern for NASA in Houston, TX, for Spring 2016. He worked on the Orion Ascent Abort Test -2.
Jamie Thorpe has a summer research fellowship at the Pacific Northwest National Lab in Richland, Washington, sponsored by the Department of Human Services.

Ryan Peterson has a summer research fellowship at the NASA/APL through Johns Hopkins in Laurel, Maryland.

Nicole Seese will work with AMALTHEA, an REU at the Florida Institute of Technology in Melbourne, Florida.

Dan Rabiega, Tyler Helsel, and Jason Zimmerman received National Institute of Standards and Technology Research Fellowships for summer 2015 in Gaithersburg, MD.

Eric Dougherty, Kelsey Fulton, and Sean Strange received National Institute of Standards and Technology Research Fellowships for summer 2016 in Gaithersburg, MD.

Computer science students worked on ten independent studies with faculty members on undergraduate research projects. Eight students participated in COOP opportunities for credit. The students and the titles of their research projects are listed in the College Statistics section of the Annual Report.

Competitions:

Six students attended the PACISE conference held at Kutztown University and participated in the programming contest. The team of Ryan Peterson, Hugh Quinn, and Steve Zelek took first place. The other team was: Nicole Seese, Kyle Hopkins, and Shayne McIntosh.

Six students participated in the ACM Regional Programming Contest at Shippensburg, PA. They were: Ryan Peterson, Ryan Holt, Mark Donato, Hugh Quinn, Merv Fansler, and Steve Zelek.

Our cyber defense team of 13 students participated in the preliminary round of the Mid-Atlantic Collegiate Cyber Defense Competition. They were: Shayne McIntosh, Lea Owrutsky, Kevin Piaskowski, Vince Smith, Frank Lacey, Cameron Eller, Kevin Hoerr, Ryan Holt, Lucas Tobin, Kyle Hopkins, Mark Donato, Vince Viggiano, and Rick Viola.

Awards:

Mervin Fansler received the PASSHE Ali Zaidi award.

Conner Mahaffey received the Computer Science award.

Ryan Peterson received the Beth Ann Barry award for a student with 30 to 70 credits that has demonstrated community service and great potential in computer science.
Jamie Thorpe won the Boyer Award for a computer science major excelling in mathematics. Jessica Butts won the Boyer Award for a mathematics major excelling in computer science.

**Graduates Plans:**

Mervin Fansler will pursue graduate studies in Bioinformatics at Cornell University.

The job market is strong and salaries are high. Our students are therefore finding employment. Some job examples:

Jared McAndrews, Software Engineer, Fidelity Tech, Reading, PA.
Jason Zimmerman, Software and Simulation Engineer, Metecs, Houston, TX.
Shayne McIntosh and Josh Peters, Software Developer, Listrak, Lititz, PA.
Vince Bruno, Software Developer, Webstaurant Store, Lititz, PA.
Kevin Avila, Software Developer, Computer Aid, Allentown, PA.
Kevin Piaskowski, Modeling and Simulation Engineer, Applied Physics Lab, Johns Hopkins, Laurel, MD.

Other employers include Lockheed Martin, King of Prussia, PA and Tait Towers, Lititz, PA.

**D. Progress Toward Department Goals / Five Year Program Review**

We have no outstanding 5-year review goals. We are preparing for re-accreditation.

**E. New Faculty, New Facilities / Equipment**

We have hired Ms. Ying Zheng as a one-year temporary faculty member to replace Dr. Liffick who will be on sabbatical leave for the 2016-2017 academic year.

We received funding through the student technology fee to replace one lab of computers. It was installed in summer 2015, replacing the machines in our Windows lab. The older machines were moved from the Windows lab to the Linux lab and the six year old machines from the Linux lab were retired.

**F. Outcomes Assessment**

We will meet, as usual, after the end of the spring term to analyze the data collected over the year.

A copy of our 2015-2016 analysis will be available after that meeting. The 2014-2015 analysis is attached.
Department of Earth Sciences

Department Mission
The mission of the Department of Earth Sciences is to provide a rich, authentic, and challenging learning experience in the areas of geology, meteorology, ocean science and coastal studies, Earth science education, and general earth sciences, for every student, both major and non-major. We strive to achieve this through enlightened and comprehensive curricula, modern facilities and equipment, meaningful opportunities for students to engage in extra-curricular activities, and by attentiveness to inter- and cross-disciplinary trends and opportunities for student engagement.

Department Vision
Provide a learning experience in the Earth Sciences that is second to none

Current Department Goals and Objectives.

Goal 1: Ensure student success

Objectives: Each objective is ongoing by design

- We will offer a challenging and transformative learning environment through an enlightened and comprehensive curriculum in each of the majors (Focus areas: Student Success, Curriculum, and Pedagogy)
- We will remain attentive to emerging trends and create opportunities for our students to engage and broaden their skill sets and portfolios in these areas (Focus areas: Student Success, Curriculum, Faculty Accomplishments, Integrated Planning)
- We will continue to sustain, and where possible increase, the number of research opportunities for students (Focus areas: Student Success and Faculty Accomplishments)
- We will remain steadfast in effort to sustain high first-year retention rates (>65%) well above the national and university averages in our disciplines (~ 55%), and continue to improve our 4-year and 6-year graduation rates, which currently are similar to the national averages (Focus areas: Student Success)
- We will focus on increasing enrollments in programs that can sustain greater capacity (Focus area: Integrated Planning)
- We will continue to encourage students to declare academic minors or concentrations that broaden their perspectives and portfolios, and to develop new minors where trends point to opportunities in the workforce (Focus areas: Student Success and Integrated Planning)

Goal 2: Provide a modern, integrated curriculum

Objectives: Two of three department-wide objectives have been accomplished; two of four program-specific objectives have been accomplished: objectives below remains a work in progress.

- We will develop a crosscutting minor in water resources, which would build on faculty expertise in hydrology, groundwater geology, coastal oceanography, climate-induced precipitation modification, droughts, floods, and erosion (Focus areas: Faculty accomplishments and Curriculum)
We will continue to monitor the recent implementation of the new OSCS curriculum, including course sequencing for greater enrollment per offering and greater student satisfaction (Focus area: Curriculum)

We will make improvements to the meteorology curriculum that target better course-to-course transitioning, and increased depth and rigor in certain areas (Focus area: Curriculum)

**Goal 3: Construct a new facility for integrated science**

Objectives: Two objectives remain ongoing with little to show in 2015-16. The new facility is our greatest need.

- DES will work with the University Administration and the School of Science and Mathematics to seek “bricks and mortar” funding by 2015, in full or as a challenge grant, in order to realize the construction of this facility within the period of this strategic plan (2013-2017) (Focus areas: Integrated Planning, Integration and Transformation)
- With this new facility we will create a center of national distinction designed to integrate high profile and highly productive campus entities, which will provide integrated undergraduate and graduate education and research in earth system science, geoinformatics, natural and environmental hazards, and emergency management, response, and preparedness (Focus areas: Integrated Planning, Integration and Transformation)

**Goal 4: Acquire two new faculty positions**

Objectives: Ongoing effort

- The DES will work with the Dean of the College of Science and Technology to acquire two new faculty positions, both with cross-disciplinary portfolios related to bridging the geosciences and supporting the M.S. in Integrated Scientific Applications (Focus areas: Faculty Accomplishments, Integrated Planning, and Integration and Transformation)

**Goal 5: Obtain PSM designation for the MSISA program**

Objectives: Ongoing effort

- The DES will work with the Office of Graduate and Professional Studies to apply for and obtain PSM designation for the MSISA program (Focus areas: Curriculum, Integrated Planning, Integration and Transformation)
- Create Student Learning Objectives for the Environmental Earth System Management specialization have been delineated in 2015-16 (Focus areas: Ensure Student Success, Curriculum, and Integrated Planning)

Provide a brief description of at least three initiatives in the University Strategic Plan that your department and faculty supported or contributed to during 2015-2016.

1. The Department continues to teach two sections of UNIV 103 for incoming freshmen Earth Sciences’ Students
2. One faculty member is offering service learning in one course (ESCI 442) and providing cumulatively 150 in service learning among 10 undergraduate students another is providing several service learning experiences at the Chincoteague Bay Field Station.

3. NSF-funded research (PECAN grant; $290K) resulted in 15 undergraduates and one graduate students taking part in a field research project in Kansas.

4. The department continues to offer capstone experiences for its students in all majors.

5. The department boasts 43 separate internships and/or research experiences with 25 coming from subject areas of space weather (10 students) and an NSF-funded field project (PECAN) (15 students).

6. The M.S. in Integrated Scientific Applications program continues to enhance departmental agility and brings greater programmatic diversity to the department.

7. New programs to strengthen sustainability and national recognition are considered; a B.S. in Environmental Engineering was considered by the department, and rejected. Progress toward this new degree program is still ongoing.

8. The department continues to offer capstone courses in each of its five majors.

9. The department continues to look to relevant and appropriate academic minors to build skill sets that will help to improve the career opportunities for our graduates, including a recent new minor in “Heliophysics and Space Weather.”

What have you done to help underrepresented minority student success?

The department takes every opportunity to seek out and expand the opportunities for success for our underrepresented student population. The Geosciences lags considerably most other science disciplines and non-science disciplines in actual numbers of matriculated underrepresented minority. So it is imperative that we retain these students and provide them with pathways to successful careers. The SOARS program offered by the University Corporation for Atmospheric Research is a highly successful mentored, longitudinal internship program that has accepted several MU students, including Amber Liggett, our current SOARS student. Internships at Hampton University, University of Maryland-Baltimore County, and Howard University with large underrepresented minority populations attract our students through their NSF-REU programs, and we target participation by underrepresented minority students in our own NSF/NASA/DOD project solicitations.

Selected Department Highlights

Enhancements to program curriculum, student achievement of learning outcomes, or other program improvements

- A B.S. in Environmental Engineering has been proposed.
- The fully on-line 15 credit Emergency and Disaster Management Graduate Certificate, led by Dr. Sepi Yalda (ESCI) received approval for the start in the 2016 fall semester.
- The curriculum for the Environmental Earth System Management specialization of the M.S. in Integrated Scientific Applications program has been developed.

Department of Earth Sciences
**Special Events or Programs**

- Several ESCI students participated in “Made in Millersville.”
- The Student Chapter of the American Meteorological Society hosted “Public Weather Awareness Day,” a free event run by students with activities and awareness of weather and climate for the greater Lancaster County public community – several hundred people attended.

**Special Faculty Achievements** (not listed in Part B, Annual Summary Outcomes Form)

Dr. Sepi Yalda is the recipient of the 2016 Millersville University Educator of the Year Award. Dr. Richard D. Clark was the recipient of a one year 2015-2016 sabbatical leave, and was elected to the UCAR Advocacy for the Science Community committee.

**Student Achievements**

**2015 – 2016 Graduates**

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<td>Liana Christmas</td>
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A case study analysis of WSR-88D's gust front detection algorithms

Reassessing the BATSE Catalogue of Terrestrial Gamma-ray Flashes

A Comparison of Cloud and Aerosol Measurements between OCO-2 and CALIPSO

Risk Assessment of Outdoor Airport Workers Exposed to Lightning

Gust Front Detection Using Neuro-Fuzzy Algorithm with Polarimetric WSR-88D

Earth Sciences Students' Awards:

- Jillian Weitkamp: Dr. William B. McIlwaine Scholarship
- Benjamin Woods: William Malcolm Jordan Earth Sciences Scholarship
- Christopher Barlow: Clark-Yalda Scholarship in Atmospheric Science
- Alexander Kaltenbaugh: Paul H. Nichols Scholarship
- Donald Little: Rettew Associates Scholarship in Geology
- Melinda Hatt: Earth Sciences Award for Academic Excellence/Liberal Arts

Noonan Grants Received:

- Cara Geiger
  Project: “Independent Study – OST Travel”; $300.00
- Angela Ditri
  Project: “Active participation at the 2016 Ocean Science Meeting”; $225.00

Student Research Grants Received:

- Jeremiah Stone
  Project: “The Effects of Environmental Factors on Marine Micro-phytoplankton Community Composition in the Summertime Western North Atlantic Ocean During the Western Atlantic Climate Study II”; $500.00
- Angela Ditri
  Project: “Validation and Analysis of MW_IR OI SST product over the Indian Ocean”; $325.00

Department of Earth Sciences
• Amanda Sleinkofer
  Project: “Reassessing the BATSE Catalogue of Terrestrial Gamma-ray Flashes”; $500

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• Ashley Orehek
  Project: “Comparison of the GOES X-ray data with EUVI brightness of the source regions of the CME”; $500.00

• Matthew Green
  Project: “Dependency of Magnetic Field of the CMEs on Other Physical Quantities on the Sun”; $500.00

• Curtis Silverwood
  Project: “Spaced Out – A Monthly Online Program that Communicates Space Weather Events to the Public”; $500.00

Notable Alumni Achievements

Dr. Mona Becker (B.S. Geology, ’94) was elected as a public official to the Westminster City Common Council in Westminster, MD in May 2015. She is serving a four year term on the city council and plan to run for re-election in May 2019. She is Assistant Professor and Department Chair, Environmental Studies, McDaniel College, Westminster, MD

Christine Malinowski (B.S. Geology, 2002): Research Data Librarian at MIT

Anna Salvaggio Hook (B.S. Meteorology, ‘10) has completed Western Pacific deployments onboard the USS MAKIN ISLAND (LHD 8), an amphibious assault ship. She was part of a group that embarked SEAL Team Six to rescue US citizens being held captive by Somali pirates (http://worldnews.nbcnews.com/_news/2012/01/25/10229917-american-hostage-in-somalia-rescued-by-us-navy-seals-in-overnight-raid?lite), gave humanitarian aid during a Thailand flooding event, and rescued NOAA researchers from Hurricane Iselle (http://www.navy.mil/submit/display.asp?story_id=82668) Anna has been promoted twice and is now a Lieutenant, got married to Michael Hook (maiden name was Salvaggio), and is moving to Monterey to attend Naval Postgraduate School for a M.S. in Meteorology and Oceanography. She also completed coursework at the University of Washington and is working toward an M.S. in Geographic Information Systems. Anna earned a Navy and Marine Corps Commendation Medal and 2 Navy and Marine Corps Achievement medals. She also ran the recycling and energy savings program called the "Green Team" on MAKIN ISLAND that won the Secretary of the Navy’s Energy Award and got to travel to Washington DC to accept that award.

Tyra Brown (B.S. Meteorology, ’14) recently completed my M.S. degree in Atmospheric Sciences from the University of Illinois at Urbana-Champaign this May. During my time there, she worked as a graduate teaching (ATMS-100: Introduction to Meteorology) and research assistant (PECAN). This summer, I will be teaching at a summer program for Hillsborough Community College in Tampa, FL and working remotely to continue my M.S. project building a middle school atmospheric science curriculum that uses a flipped-classroom model, all while seeking full-time employment in the field of earth science education for the fall.
Sigourney Stelma (B.S. Meteorology, ‘12, B.S. Ocean Sciences/Physical Option, ‘12) finished her Master of Science in Marine Studies with a concentration in Physical Ocean Science and Engineering from the University of Delaware in Spring 2015.

Felicia Guarriello (B.S. Meteorology, ’14) will be graduating with my Masters in Atmospheric Science in August from Texas A&M and will start a job as a scientific programmer for Wily contracted to work at NOAA in Silver Spring, MD at the end of June! She successfully defended her thesis in June.

James Kurdzo (B.S. Meteorology, ’09)
• 2016 Became Employed as Technical Staff at MIT Lincoln Laboratory
• 2015 Completed Ph.D. in Meteorology from the University of Oklahoma
• 2015 Senior Personnel on awarded NSF MRI Grant: "Development of C-band Mobile Polarimetric Imaging Radar" ($3,163,677)
• 2015 University of Oklahoma Tommy C. Craighead Award for Best Paper in Radar Meteorology
• 2015-2016 Published 4 peer-reviewed papers (AMS Monthly Weather Review, AMS BAMS, 2 IEEE peer-reviewed conference papers)
• 2015-2016 Papers in 12 conferences and non-refereed sources, Interviewed for 3 News/Documentary stories
• 2015 4th International Symposium on Earth-Science Challenges, 1st Place Oral Presentation
• 2015 31st AMS Conference on Environmental Information Processing Technologies, 2nd Place Oral Presentation
• 2015 5th AMS Conference on Research to Operations, 2nd Place Oral Presentation
• 2015 University of Oklahoma Graduate College International Travel Fellowship (for travel to the European Radar Conference in Paris, France)

Amy Randolph (B. S. Geology, ‘86) retiring from employment with the Commonwealth of PA on June 24 after more than 30 years, most of which time I held geologist positions.

Travis Toth (B. S. Meteorology, ‘10) is a Ph.D. student at the University of North Dakota. He was recently notified that his research proposal was selected for the NASA Earth and Space Science Fellowship (NESSF). This award will provide funding for the remainder of my PhD program at UND.

Christopher Readinger (B. S. Meteorology, ’00) went to Antarctica this winter. He was a sea ice analyst on board the USCGC Polar Star, and was there to provide operational support to Operation Deep Freeze 2016. It's the first time that the National Ice Center has been able to send an analyst south to Antarctica so it was a great opportunity. Chris spent two months on board a 40-year old ice breaker traveling from Hobart, Australia to McMurdo to Valparaiso, Chile, and helped the Coast Guard complete their mission to resupply McMurdo by providing timely sea ice expertise and analyses. His videos are posted all my videos on a youtube channel Deep Freeze 2016

Dr. Jay Parrish (B.A. Earth Science/Geology, ’76) has recently been appointed as Special Assistant for Science and Technology at DEP.

Danielle Turner-Nagele (B.S. Meteorology, ‘08) received PhD in Disaster Science and Management from the University of Delaware in May 2015. Employed at the National Academies of Sciences, Engineering and Medicine as an Associate Program Office in January 2016 working under the Resilient America program.

Melissa Burt (2005, ESCI/Meteorology) successfully defended her PhD dissertation in Atmospheric Sciences at the Colorado State University. Melissa is also the Education, Outreach, and Diversity Manager for the Center for Multiscale Modeling of Atmospheric Processes at CSU.

Gina Mazzuca (’13, ESCI/Meteorology), currently a graduate student at the University of Maryland, won the AMS 18th Conference on Atmospheric Chemistry Outstanding Student Platform Presentation Award.
Mack Jones (‘10, ESCI/Meteorology) completed his Ph.D. in aerospace engineering with a concentration in upper atmospheric disturbances at the University of Colorado.

Matthew Eckhoff (‘11, ESCI/Meteorology) completed his M.S. in atmospheric science at the University of North Dakota and is working for TerraGraphics, a contractor for the U.S. Dept. of Energy, Richland, WA.

Jeff Jumper (‘15, MSEM), Hired as First PA State Meteorologist

**External Grants or Contracts Funded over $5000**

**Ontario Winter Lake-effects Systems (OWLeS)**; year 3 funding; NSF-AGS, $77,873; R. Clark and T. Sikora.

**Plains Elevated Convection At Night (PECAN)**; summer 2015 funding; NSF-AGS, $289,976; R. Clark and T. Sikora

**Winter Weather Forecasting**; Year 3 of three year contract with the Pennsylvania Department of Transportation (PaDOT), $38,500; E. Hörst.

**Doppler of Wheels Education Grant**; NSF-Center for Severe Weather Research Facilities Deployment, in-kind funding (NSF absorbs cost of bringing the facility and technician to MU; S. Yalda.
Department of Geography

Department Mission
The mission of the Geography program is to teach geographic concepts to undergraduate students at Millersville University. We, the faculty members of the Geography Department, see this mission as having six important aspects:

- The Geography Department recognizes the geography curriculum to be an important part of the University’s Liberal Arts General Education Curriculum. As such, the Geography Department aims to improve student awareness of the inter-relatedness of humans and their physical and human environments, and to help students become better-informed global citizens.
- The Geography Department will provide future teachers with conceptual, methodological and factual knowledge of geography, with which they can be certified and effective teachers in the public and private schools of Pennsylvania and other states.
- The Geography Department aims to provide geography majors and minors with a more thorough understanding of geographic concepts, knowledge, and skills, with which they are able to find employment and perform effectively in their chosen career.
- The Geography Department aims to prepare geography majors who are able to continue their education and perform effectively in graduate schools.
- The Geography Department aims to act as a center for geographical information and training in the local region through faculty and student service, and in the wider world through the actions of our graduates.
- The Geography Department must provide for the intellectual stimulation and growth of its faculty.

Current Department Goals and Objectives.
Millersville University provides diverse, dynamic, meaningful experiences to inspire learners to grow both intellectually and personally to enable them to contribute positively to local and global communities.

The department contributes to the mission of Millersville University by offering courses that prepare students to live and work in an increasingly interconnected world. Many of the courses offered meet general education requirements for the University’s students. While the department is focused on providing a high quality and coherent program for majors, the faculty is highly sensitive to the important service the department provides to non-majors meeting general education requirements. The department’s faculty continues to be committed to providing top-quality introductory and intermediate-level courses for those students who may only take one or two geography courses during their residency at Millersville University.

The department is committed to providing opportunities for students to engage in high-impact educational activities, including faculty-student research, community-based research, and cooperative education. All students majoring in geography are required to complete an internship or a thesis. As such, the Department of Geography is committed to carrying out the University’s mission of providing diverse, dynamic, meaningful experiences. Our students are inspired to learn and grow through these experiences. The faculty is confident that our students and graduates are contributing to their communities in positive ways.
Provide a brief description of at least three initiatives in the University Strategic Plan that your department and faculty supported or contributed to during 2015-2016.

The department is committed to the University Strategic Plan. In 2015-2016, the department went through its five year program review. The Geography Department provides a supportive learning environment for our students. Specifically, we have created learner-focused environments that contribute to student success by working to reduce DFW rates in some of our more difficult courses, experimenting with new pedagogies to help engage our students, and by preparing to expand our curricular offerings and improving our spaces to address the needs of students as they prepare to live and work in a rapidly changing, technology-focused society.

The department has participated in several programs with student success in mind, including over 39 scholarship of teaching and learning activities. In 2015-16, Dr. Schreiber offered the UNIV103 freshman seminar. Dr. Schreiber’s course is designed to attract students to the major and address the needs of the incoming geography freshmen. In order to reduce DFW rates in our courses, the department continues to support ongoing group tutoring sessions for nearly all geography courses in the department’s Geo-Graphics Lab. Instructors in individual courses have worked to reduce DFW rates by making curricular and pedagogical changes within our courses. Sixteen course sections benefitted from new or innovative pedagogy. Fifteen course sections included collaborative assignments and projects, and seven course sections required a capstone experience. Students in four different geography courses, across multiple sections, participated in service-learning through various partnerships with such organizations as the City of Lancaster, Elizabeth R. Martin Elementary School and the Lancaster Inter-Municipal Committee.

As the Department of Geography is now housed in the College of Science and Technology, we believe that it is more important now than ever before that students in our courses and our program be afforded opportunities to learn the skills and participate in research that will better prepare them for future careers that increasingly rely on data analysis, environmental assessment, and critical thinking. The department is currently assessing the viability of new program offerings to address the changing market demands and student interests.

Selected Department Highlights

Special Events or Programs

“Jobs in Geography “ Speaker Series welcomed two speakers in 2015-2016.

Student Achievements

Three students participated in presented research at Made in Millersville.
Department of Mathematics

Department Mission

The mission of the Department of Mathematics is to provide programs of the highest quality leading to bachelor’s degrees in mathematics and secondary mathematics education and master’s of education degree in mathematics. The department has a strong commitment to excellence in teaching and offers a wide range of courses in pure and applied mathematics, statistics and mathematics education. We focus on preparing our students for careers or graduate study in mathematical fields, including secondary mathematics teaching, pure and applied mathematics, statistics and actuarial science. We also serve the broader university community by providing a full range of introductory through advanced mathematics courses supporting students at all levels and with all majors.

Current Department Goals and Objectives.
2015-2016 Departmental Goals:

1) To strengthen our Mathematics Education program by...

   a. Working cooperatively with faculty in the School of Education to arrange supervision of mathematics student teachers by mathematics faculty members.

   **Ongoing.** For the past nine years, mathematics faculty members have been supervising most all mathematics student teachers, through an agreement with the Department of Educational Foundations. In particular, during the past year, all mathematics student teachers were supervised by a mathematics faculty member. Our Mathematics education faculty, Drs. Janet White, Cynthia Taylor, Tyrone Washington, Michael Wismer, and Erin Moss do the supervision. Dr. John Ward, of the Educational Foundations Department, as the only faculty member in EDFN with a background in mathematics, is the only person outside of MATH qualified to supervise mathematics student teachers, since the state regulations for the certification of secondary mathematics teachers specifically require that student teacher supervisors be “well-trained in mathematics”. However, for purely historical reasons, the complement for student teacher supervision continues to reside in the Department of Educational Foundations. Consequently, although MATH faculty make the recommendations for the student teaching assignments and conduct the vast majority of the supervision, we must wait for the EDFN Department to make the assignments official and to then move the complement from EDFN to MATH. This is an awkward process, at best, and it would streamline our planning and simplify the entire process if the Department of Mathematics were to hold the complement for the supervision of our own student teachers.

   b. Support the development and implementation of the Middle Level Mathematics Specialist program.

   **Ongoing.** The department worked closely with faculty in the School of Education to design the new curricula for the new middle level certification programs, including one for middle level mathematics specialists. Most notably, this involved the design of three new courses in mathematics. A section of each of the courses for middle level
education majors, MATH 205 (Geometry for the Middle level Teacher), MATH 204, Algebraic Foundations for the Middle Level Teacher, and MATH 230 Data Analysis and Probability for the Middle Level Teacher were taught this year. The department has requested information regarding demand for these courses from the early Childhood Education department to effectively adjust course offerings to allow for sufficient sections. We are monitoring the number of current and incoming freshmen middle level education majors to help gauge the demand.

2) To strengthen our program in Applied Mathematics by...

a. Increasing the opportunities for COOPS, internships, and applied mathematics projects. **Ongoing.**

b. Offering new and innovative courses in applied mathematics.

**Ongoing.** MATH 478: Actuarial Science was offered for the first time during the spring 2016 semester. This course is designed to prepare students for the FM actuarial exam.

c. The department hired Dr. Baoling Ma, an additional faculty member specializing in the area of applied mathematics. This is to replace the open position created when Dr. E. Sell resigned.

3) To strengthen our graduate program in mathematics education by…

a. Developing additional mathematics content courses of interest to returning teachers.

**Ongoing.** Beginning in summer of 2013, in addition to the standard introductory graduate mathematics courses, we continued to offer more advanced graduate classes in several areas of mathematics and mathematics education. In addition, during most semesters of the regular academic year we have offered a graduate mathematics education course and a graduate mathematics course in the evening, giving teachers an opportunity to take graduate coursework. The mathematics education course course drew an enrollment of 9 graduate students in the 2015 fall semester and 7 in the 2016 winter session and 4 during the spring 2016 semester, likely due to the topical nature of the courses, as well as the convenient time and location. In view of the continued success of these mathematics education course offerings for the past years, we plan to continue (in most semesters) to offer appropriate courses in the late afternoon/early evening time frame in the hope of better accommodating our graduate students without significantly inconveniencing our full-time undergraduate students.

b. Investigating the needs of mid-career mathematics teachers, who are required to take additional courses under Act 48.

**Ongoing.** The department continues to regularly offer a range of summer courses in mathematics and mathematics education, geared for the needs of current teachers. The department will investigate and evaluate the need and interest in EDW’s.

4) To continue the annual cycle of outcomes assessment by...

b. Continuing an exit survey for graduating seniors to get their perspective on the education they received at Millersville. **Ongoing.**

c. Survey alumni who have graduated 4 – 6 years ago to assess their perspective on the education they received at Millersville. **Ongoing.**

d. Reviewing the coordination among different sections of each course in the calculus sequence, now that the department has discontinued common testing in the calculus sequence. **Ongoing.**

5) To support the Chapter 354 requirements for teacher preparation programs by...

a. Clearly communicating to mathematics majors the 3.00 GPA requirement for admission to APS (Advanced Professional Studies) and also communicating the option of a 2.80 GPA combined with a higher score on the Praxis II exam. Additionally, faculty will find ways of helping students to achieve this level of performance without giving in to the pressure to inflate grades. **Ongoing.** Some of our students in our BSEd program struggle with the 3.00 QPA requirement. However, with appropriate advising students take corrective steps or even leave the major before they have progressed too far, when this is warranted. We routinely communicate our high expectations to our majors and are hoping that earlier intervention will lead to improved student performance. Finally, we continue to see some certification students, whose initial mathematical training was obtained elsewhere, who encounter difficulties with the mathematics content of their program. We expect that the 2.80 GPA with a higher Praxis II score option will increase the number of BSE Mathematics majors that meet requirements for APS.

b. Preparing for the impact of the PDE Chapter 49-2 changes to teacher certification programs.

**Ongoing.** At this time, the number of students who are entering the various middle level certification programs appears to be low and not growing as was anticipated when the degree was first offered. Along with the elimination of a stand-alone Special Education program and re-configuration of the former elementary education program into an early childhood program, flexibility is necessary in deciding the number of sections to offer of courses appropriate for these various programs. We have been offering all three required middle level math courses (204, 205 and 230) each year. Based on enrollments and the number of incoming freshmen middle level majors we have adjusted the scheduling beginning fall 2016 to offer one of these courses each semester. We have offered these courses during summer sessions, however the demand has not been sufficient to run the course. An area of concern is that we have been and will need to continue to teach some MDLV students via individualized instruction so that their graduation is not delayed. These students delayed taking the required mathematics courses and would not have completed their to enter APS without individualized instruction for at least one of the three middle level math courses. It appears that they may not be getting advisement or may be getting incorrect advisement regarding when to take their mathematics requirements.
6) To increase recruitment efforts by…

a. Using our endowed (Meyers, Rutter, Meier and Cohen) scholarship funds and the Noyce scholarship awards and other scholarship funds to attract promising new students to the mathematics major, particularly targeting minority and financially disadvantaged students. We adjusted our recruiting approach this year. We no longer require a student to apply for a scholarship, but instead we select students from the list of accepted mathematics majors and review their SAT scores, class rank and transcript. This allows us to send scholarship offers earlier and consider other students if the initial offers are declined.

**Accomplished and ongoing.** From 2002 to 2011 the number of mathematics majors had increased (by roughly ten percent each year), and numbered in excess of 270. The number of incoming mathematics majors had leveled off to approximately 70 each year. However, that trend has reversed and the number of incoming majors to fell to approximately 50 and then this past year to 30. We have used our endowed scholarships to help recruit academically talented students. For the coming 2016-2017 academic year, we offered eighteen students Edna Myers scholarships. Four accepted our offer. The amounts of the offers ranged from $1000 to $4000 per year. The ongoing challenge is to best use our available scholarship funds to help attract top students.

b. More aggressively recruiting majors from our region.

**Ongoing.** The Admissions Office returned to hosting University Open House programs during the 2013-2014 academic year. We (the chair and assistant chair) have met with prospective students and families at each of these events and, where appropriate we have been involving additional faculty and students. As part of our ongoing efforts, we have revised and frequently update the department’s web pages, providing more targeted information for prospective students. The current pages include more information for current and prospective undergraduate and graduate students and are updated regularly. In addition, information is more easily accessible from the department’s home page. The number of incoming mathematics majors who have paid deposits (34) for fall 2016 is about the same as last year but has decreased from 54 at the same time in 2014. We believe this decrease may be contributed to by a combination of two separate issues. One issue is that the attendance at this year’s open house events was low. We expect that the low attendance at open house may be a result of campus tours and admissions presentations being given to small groups of potential students and their families on weekdays. A second issue is the negative attention in the media over the past few years regarding jobs in secondary education. We expect that the positive outlook for available secondary mathematics teaching positions is not realized by current high school seniors or their families. We intend to work with the admissions office so that when any potential mathematics major
comes for a tour they will be given an invitation to meet with the chair or assistant chair at the time they schedule an appointment for a tour with the admissions office.

We appreciate that open houses are again being offered to prospective students. We are looking forward to this continuing. We also look forward to meeting with families when they come on campus for a tour on weekdays.

7) To improve the level of student achievement and retention of knowledge by...

a. Maintaining high academic standards. It may benefit us to begin a departmental discussion of common standards of performance in courses commonly taught by multiple faculty members.

Ongoing. We continue to review the results of course imbedded assessments in critical courses, such as MATH 211 (Calculus II).

b. Encouraging (and supporting) students to do mathematics beyond their course work by attending conferences and participating in projects that extend or apply their knowledge.

Ongoing. The department continues to encourage mathematics majors completing independent research projects to attend regional or national mathematics conferences to present the results of their projects. Faculty invite students to attend the fall and spring EPADEL conferences to give them an understanding of undergraduate research projects. A group of five Noyce scholars gave presentations at the annual PCTM conference and an additional four BSE mathematics majors also attended. Two of our undergraduate majors (Justin Eastman and Cassie Werth) gave talks at the MU/F&M colloquium. Additionally, four of our BSE majors attended the NCTM Regional Conference Attendance in Atlantic City, NJ.

c. Recognizing and rewarding outstanding student performance.

Ongoing. As part of the department’s Honors and Awards Convocation held annually in April, we publicly recognize the accomplishments of our students. In order to increase student participation, we moved the convocation to a mid-week evening (from a Friday evening). The attendance at the convocation has maintained a higher level of attendance since this adjustment was implemented. Another factor is continuing the practice of having an outside speaker who addresses a more general audience.

d. Maintaining active two-way communications with students.

Ongoing. Through the use of the majors’ e-mail list-serve and the department’s website, we keep our majors aware of important issues, particularly those involving graduate school opportunities and summer research experiences. We have also used this to remind majors of important policies, such as the requirements for admission to Advanced Professional Studies courses and key deadlines. We have tried to use such communication proactively, to inform all majors of an issue before we have a larger problem. The Math Club had not been very active for the past two years. This year with new officers the club began meeting again became active and hosted a number of
meetings and activities. While this is student led, faculty input and guidance is important to the health of the club. In the coming year, math faculty need to give input and guidance without stifling the students’ leadership.

10) To prepare for future directions for the department, by…

a. Planning for anticipated retirements.

Ongoing. During 2007-08, the department received authorization to increase our permanent complement from 20.5 FTE to 21.5 FTE. Dr. R. Kit Kittappa retired in June 2009. Our search during the Fall 2010 semester to fill his position was successful. Dr. Cynthia Taylor was hired and joined the department in August 2011. During the Spring 2011 semester Dr. Travis Miller submitted his resignation to accept a position at his undergraduate institution. We were given permission to search and successfully completed the search to fill his position during the fall 2012 semester. Dr. H. Tyrone Washington joined us in August 2012. Dr. Elizabeth Sell resigned her position effective the first day of the spring 2014 semester. She had been on family leave during the fall 2013 semester. We has a successful search and Dr. Baoling Ma was hired to fill her position.

In addition, with Dr. Robert T. Smith’s appointment as Dean of the School of Science and Mathematics, effective July 1, 2009, the department has one additional position to fill.

b. Opening a discussion of our department's mission and how this impacts staffing.

Ongoing. As we have considered each open position, we have begun with a careful assessment of our most critical curricular needs, to determine how to target our searches to fill these needs. This analysis resulted in us increasing the number of mathematics educators to four two years ago and recently to five with the hiring of Dr. H. Tyrone Washington. Most recently, we hired Dr. Baoling Ma, an applied mathematician, to replace Dr. Sell’s position to bring additional strength in this area.

Provide a brief description of at least three initiatives in the University Strategic Plan that your department and faculty supported or contributed to during 2015-2016.

- We have increased our courses that are offered in a technology enhanced format to include MATH 535 a graduate level course required by some programs within and outside the Department of Mathematics.

- We have begun offering two courses (MATH 130 and MATH 235) in a totally online format with online test proctoring by Examity Inc.

- We have in the curricular approval process a new course, Statistics for the Health Sciences, to be offered totally online to support the online RN to BSN program.

Department of Mathematics
What have you done to help underrepresented minority student success?

We continue to support Millersville Pre-Scholars program (formerly the Aim for Success) and other remedial programs. For the ninth year in a row, with support from the dean and the provost, we provided supplemental instruction for students in two extended sections of MATH 090. We continue to work closely with the MU Scholars program staff to coordinate this. This year out of the 42 MU Scholars program students who began the extended MATH 090 course in the fall of 2015, 33 (78.6%) successfully completed the fall semester with a C- or better. However only 31 of these students returned to campus for spring semester. At the end of spring semester 28 (66.7%) had successfully completed MATH 090 with a grade of at least C-. This is in line with recent years’ success rates of 74%, 89%, 81%, 64% and 70%. This result supports our belief that offering MATH 090 spread over two semesters, together with weekly supplemental instruction is efficacious for this group of students. As in past years, we used scores from more extensive placement tests to target students for this placement. In addition, during the summer of 2015, for the seventh year in a row, mathematics faculty provided non-credit mathematics workshops to all MU Scholars program students who placed in MATH 090. The workshops were given at different levels, depending on placement results. The content of the workshops was drawn from the first several chapters of the MATH 090 textbook, with the aim of easing MU Scholars program students’ transition to college and improving the performance of these students during the academic year. One notable point was that the instructor for the two summer workshop sessions for those students expected to enroll in the extended sections of MATH 090 was the same as the instructor for the extended sections during the academic year. We believe that this consistency maintained the improved performance of this group that we observed compared to earlier years. Additionally, for the fourth year we had the department’s GA involved providing some office hours exclusively for these students.

Selected Department Highlights

Enhancements to program curriculum, student achievement of learning outcomes, or other program improvements

Curricular Changes

- Changes to the requirements for the BSE major were approved. History of Mathematics, MATH 301, and Discrete Structures, CSCI 140 are now required courses in the BSE Mathematics curriculum. MATH 301 is a general education perspectives course and with the changes in General Education guidelines the course may now fulfill the general education perspectives requirement as well as be required for the major. CSCI 140 (Discrete Structures) although housed in the computer science department satisfies the requirement of a discrete mathematics course. These changes are in response to the NCATE review of our program. CSCI 161 and CSCI 140 are now the only required related courses for the BSE Mathematics major. This reduces the number of required related courses by one but restricts the possible courses that may be taken to fulfill this requirement. A new course, Math 237, Statistics for the Health Sciences, has been proposed and is moving through the approval process. This course is a four credit course and will be co-taught with a faculty member from the nursing department (4 credits: 3 credits mathematics, 1 credit nursing). Two graduate courses were also approved. Math 602, Equity Issues in Mathematics Education and Math 606, Transitioning to First-Year Teaching in a High-Needs District.

- The “review option” for some students who place into MATH 101 was continued. If at least one of the student’s scores on the math placement test is close to the next level and the student had previously taken courses which covered material in Precalculus or higher they were offered the option to review material in MATH 101 on their own and complete approximately fifty-five software based assignments. Upon successful
completion of the assignments they may take another assessment and, if successful, place into the next course (Math 151 or MATH 160). While many students indicated an initial interest a much smaller number completed the assignments.

- To add accountability to students to complete assigned homework problems the department continued to adopt textbooks with software based homework systems for MATH 090, MATH 101, MATH 151 and MATH 160 for the 2015-2016 academic year. This year Enhanced Web Assign, was used as the online homework system, for MATH 90, MATH 101, MATH 110, MATH 151, and MATH 160. Using one system for all these courses only requires a student to learn a single homework system and eases the transition while taking a sequence of these MATH courses. MyStatLab was used in MATH 130 and MATH 235 as the online homework system. There is immediate feedback and the opportunity for input as students are working on homework problems.

- During summer sessions, winter session and the fall semester some sections of Math 130, Elements of Statistics I, and/or Math 235, Survey of Statistics, were offered in a distance learning format. This spring semester MATH 130 was offered for the first time as a totally online course. This included online proctoring of tests to insure the academic integrity of the course. Math 130 and MATH 235 are currently scheduled to be offered in an online format with online proctored exams during Summer Session II.

- Additionally, MATH 070 has been proposed and is in the curricular approval process. This course is designed to service students in the Life Studies Certificate program. This course focuses on computational and problem-solving skills that students need to prepare them for the mathematical prerequisites in their chosen fields of study. The course is also designed to build financial skills required for life success (e.g. financial management, budgeting, and so forth). The individual mathematical topics will be covered as needed by individual students in the class based on his/her current abilities. Potential topics of study will include addition, subtraction, multiplication, and division of whole numbers, rational numbers; study and application of ratio, proportion, and percent; applied topics dealing with measurement, areas and perimeters of geometric figures, and basic descriptive statistics. This course is taught in a hybrid learning environment including (but not limited to) face-to-face instruction/lecture, online video instruction, individual one-on-one coaching/tutoring, and adaptive learning computer technology.

Special Events or Programs

- Mathematics faculty continued their long support of the local high school mathematics community by hosting the annual MU High School Mathematics Contest. This year’s contest attracted 86 students from 21 schools throughout the region.

- Our faculty also facilitated the annual IU-13 AP Calculus and AP Statistics simulations, where students from IU-13 schools were invited to take a practice AP exam, which was then graded by their teachers and MU mathematics faculty, under the supervision of MU mathematics faculty who have graded the AP exams. Again, this year the AP Calculus simulation included a BC simulation in addition to the AB simulation. The AP Calculus simulation brought 24 teachers and 336 students’ responses were evaluated. The AP Statistics simulation brought 19 teachers and 341 students’ responses were evaluated.

Special Faculty Achievements (not listed in Part B, the Annual Summary Outcomes Form)

Dr. Robert Buchanan was awarded a two semester sabbatical leave and co-author Dr. Zhoude Shao was awarded a one semester sabbatical to write a textbook on the topic of partial differential equations appropriate for advanced undergraduate or first year graduate students.
Student Achievements

Edna Meyers scholarships will be renewed for five upperclassmen as long as they remain in good standing. The Edna Butler Cohen Scholarship will be renewed to a sophomore mathematics major and the Rutter/Seiverling Scholarship will be renewed to a senior mathematics major and the Joseph and Anita Meier Mathematics Scholarship will be renewed to a junior. Four incoming freshmen have accepted our offer of an Edna Meyers scholarship. Additionally, we will be considering offering some outstanding seniors mathematics majors awards of at least $1000 (Edna H. Meyers Scholarships). Additionally, there are four students who will receive tuition and living expenses as Noyce Scholars.

Putnam Exam Results: Six students took the exam, two had a positive score. The scores are:

- Michael DeCaria 1
- Joshua Larson 0
- Quinn Minnich 9

4275 students from 544 institutions took the exam.

Virginia Tech Regional Mathematics Contest (median 2 points)

- Jessica Butts 5
- Joshua Larson 0

Actuarial Exam Successes:

Sean Walsh passed Exam FM

Mathematics graduates who will be attending graduate school in the fall are:

- Mervin Fansler, Cornell (mathematical biology)
- Justin Eastman, Colorado State University
- Talyor Lagler, University of North Carolina (biostatistics)
- Christopher Grubb, Virginia Tech University (statistics)
- Scott Singleton, Virginia Tech University (statistics)

Students completing an honors thesis and receiving departmental honors:

Student: Mervin Fansler
Advisor: Ron Umbel
Thesis: Detecting the linkage in a 4-component Brunnian Link.

Student: Talyor Lagler
Advisor: James Fenwick
Thesis: The Effect of Covariance Matrices on Classification Procedures in Discriminant Analysis
Student Presentations at Conferences:

Lindsay Eisenhut, Alanna Clark, Abbi Byers, Lauren Keller, Jennifer Tran, Spend Awhile with algebra Tiles, Presentation at the annual meeting of the Pennsylvania Council of Teachers of Mathematics (PCTM). Lancaster, PA, August 2015.

Lindsey Eisenhut, In-class practices of flipped mathematics educators. Presentation at the annual meeting of the Pennsylvania Council of Teachers of Mathematics (PCTM). Lancaster, PA, August 2015.

Courtney Ingold and Kimberly Mowen—co-presented Supporting Elementary Students’ Computation with Mixed Numbers through a Focus on Regrouping in Different Contexts. Pennsylvania Council of Teachers of Mathematics Annual Conference. Lancaster, PA. August 2015.

Megan Rehm, Maya calendars. Presentation at the annual summer meeting of the Mathematical Association of America (MAA). Washington, DC, August 2015.

Megan Rehm, Maya calendars in the classroom. Presentation at the annual meeting of the Pennsylvania Council of Teachers of Mathematics (PCTM). Lancaster, PA, August 2015

Made in Millersville student presentations:

Poster Presentation: A Sample of the Number Systems of the Indigenous Groups of Patagonia Undergraduate student: Amanda C. Long

Poster Presentation: A lesson in the geometric constructions of the Maya Graduate student: Megan A. Rehm

Presentation: Teaching in Tanzania as a Volunteer Undergraduate student: Cassandra Werth

Student Publications


Student Papers Submitted

Nicholas Heil, Maya Arithmetic: A Vigesimal and Chronological Approach, MAA Convergence Journal (jointly with Nicholas Heil (jointly with X. Catepillan and C. Taylor) August 2015

Megan Rehm, *NCTM’s Integrating Math Project, K-6 online anthology’s collaborator* (jointly with X. Catepillan and C. Taylor) 2016

**Internships/ Co-Op:**

Scott Singleton: Internship MU Office of Planning and Assessment

Taylor Lagler: Actuarial Internship Summer 2015, Contribution Health

**Graduates Employment:**

Sarah Bradley, John Handley High School; Winchester, VA

Rachel Chioda, Dauphin County Technical School, PA

Emily Copenhaver, Francis Scott Key High, MD

Alexander DiMarzio, Edgewood High, HPCS, MD

Nicole Hartman, Winters Mill High, MD

Nick Heil, Pine Grove High School, PA

Elliot Iula, York Tech, York PA

Meredith Keller, Dundalk High, Baltimore Co Public Schools, MD

Robert Lehman, North Carroll High School, MD

Devin McMullen, West York Area Middle School, PA

Jacob Miller, John Handley High; Winchester, VA

Anthony Nicoletta, Gillingham Charter School, Pottsville PA

Cody Pryor, Spring Grove Area High School, PA

Matthew Small, Waynesboro High School, Virginia

Stephanie Smith, Helen Thackson Charter School

Amanda Valent, Reynolds Middle School, Lancaster, PA

Randon Weaver, ELCO High School

Allison Zellner, Edgewood High, HPCS, MD

**Summer Research Experience for Undergraduates/Internships:**

Justin Eastman, REU at Rochester Institute of Technology, 6/8 – 7/31, 2015

Jessica Butts, REU at Penn State University, 2016
Master's Thesis:

Maria Cristina Bucur,
Advisors: Janet White & Tyrone Washington
Thesis: Algebraic Expressions: A Cross-Cultural Textbook Comparison between the United States, Singapore, Quebec, and Ontario

Lindsey Eisenhut
Advisor: Cynthia Taylor
Thesis: In-class practices of flipped mathematics educators

External Grants or Contracts Funded over $5000

We have requested a year's extension for the $1.2 million Noyce NSF grant.
Department of Nursing

Department Mission
The Department of Nursing, situated within the School of Science and Mathematics, is an integral part of Millersville University of Pennsylvania. As such, it is in concert with mission statement of the University in the provision of undergraduate and graduate programs in nursing that achieve the highest standards of liberal arts education.

The MU Department of Nursing faculty embrace nursing as a professional discipline with both academic and practice dimensions. The unique body of nursing knowledge is derived from the humanities, physical, biological, psychological, social sciences, and nursing science.

As a practice profession, nursing is considered integral to healthcare delivery, providing both direct and indirect care to individuals, families, and community at local, state, national and global settings. Nursing practice is guided by theory and continually improved based on evidence. The practice of nursing focuses on holistic, relationship-centered care that facilitates health and healing. Nursing is committed to ensuring quality health care. Professional nurses engage in advocacy and political leadership to improve health and healthcare of the society.

As an academic discipline responsible for knowledge generation, nursing is committed to the following:

- Examining and analyzing knowledge of human experiences of health, illness, healing; human /technology interface; environmental contexts of health care; and quality cost effective outcomes
- Exerting positive influence on organizational contexts of health and health care
- Promoting quality and cost effective outcomes of nursing care
- Facilitating collaborative interdisciplinary communication among health care groups, as well, as among nursing practice, education and research
- Utilizing research findings and evidence to promote quality and improved care
- Developing a questioning mind and spirit of inquiry receptive to new ideas and approaches that contribute to advance nursing knowledge

As an academic profession, the MU Department Nursing faculty believe that higher education in nursing is responsible for preparing nurses through a competency-based curriculum emphasizing practice that is relational, reflective, responsive, respectful, and caring.

The faculty believe in education’s responsibility to prepare nurses who advocate for social justice and are responsive to changing health care environments. The Nursing faculty are committed to promoting reflective practice and leadership for social change all educational programs.

Nursing begins with a foundation in arts and sciences and continues with nursing discipline knowledge relating to care in the human health experience across lifespan. The Nursing faculty believes nursing is a continual learning process, in both formal and informal learning venues. In conclusion, the MU Department of Nursing faculty believes the nursing profession is firmly rooted in both practice and academia, with a commitment to lifelong education and quality improvement.
Current Department Goals and Objectives.

- Maintain standards of accreditation through spring 2018
- Evaluate change to CCNE accreditation in 2017
- Continue to develop outcome measures at BSN and MSN level
- Review alumni data collected via new format (Zarca survey)
- Expand the continuing education program to achieve 6-8 programs/year
- Explore additional methods to engage students in professional scholarly activities
- Explore alternative MSN options to integrate within the existing MSN program

Provide a brief description of at least three initiatives in the University Strategic Plan that your department and faculty supported or contributed to during 2015-2016.

1. In the Fall 2015 semester, the Department of Nursing launched the first fully online undergraduate program at Millersville University. Enrollments in the online RN to BSN program have been strong through the first six cohorts; student and faculty feedback regarding the program has been overwhelmingly positive.
2. In the Spring 2016 semester, the Department of Nursing launched an off-campus cohort for the MSN program, both family nurse practitioner and nursing educator, at the Dixon University Center. This expansion allowed the Department to expand capacity within the MSN program.
3. In the Summer 2016 session, the Department of Nursing launched the Doctor of Nursing Practice program. The initial cohort of students is expected to complete the program in May 2018.

What have you done to help underrepresented minority student success?
The Department continues to offer individualized advisement to all students, both on-site and at local healthcare organizations. Program attrition, at both the undergraduate and graduate levels, remains low.

Selected Department Highlights
Enhancements to program curriculum, student achievement of learning outcomes, or other program improvements

- NURS 698 Scholarly Project was converted from an independent study process to a more traditional class format. This change allowed for more consistent expectations among students, as well as higher quality project outcomes. Projects presented this spring demonstrated the positive nature of this change.
- Courses for the DNP program were fully developed during the 2015 – 2016 academic year. Faculty have sought experts from the healthcare industry to assist with program and curricular development.
- The Nursing Department assumed responsibility for the University Breast Health Awareness Initiative. With this change, the Diana and Marsh Breast Resource Room was relocated to Caputo 126. This change allows for great integration of health promotion and breast cancer awareness programs in the nursing curricula, as well as the general student population.

Special Events or Programs

- 4th Annual Breast-A-Ville, October 1, 2015
- Xi Chi Distinguished Lecture, October 22, 2015; featuring Dr. Ruth McDermott-Levy who presented “Living with PA’s Natural Gas Boom: Voices from the Community”
- Doctoral Faculty Professional Development Day, January 13, 2016

Department of Nursing
Nursing Advisory Committee, April 26, 2016
Scholarship Symposium, May 5, 2016, showcase the Scholarly Projects of the graduating MSN class

Special Faculty Achievements (not listed in Part B, the Annual Summary Outcomes Form)

- Dr. Mary Lou Mortimer was the Keynote Speaker for the PinnacleHealth Annual Nursing Research Symposium
- The PA Association of School Nurses & Practitioners (PASNAP) awarded the 2016 Friend of School Nursing Award in recognition of Dr. Barbara Zimmerman’s dedication and significant contributions to the school nursing profession.
- Dr. Kelly Kuhns presented her research on compassion fatigue at the national conferences for the Oncology Nursing Society and the Society for Gynecological Nurses Association
- Dr. Kelly Kuhns was elected to as Vice-President of the Pennsylvania State Nurses Association
- Dr. Jenny Monn elected to the board of the PA Coalition of Nurse Practitioners and the Lancaster Nurse Practitioners
- Dr. Jenny Monn coordinated the 4th Annual Breast-A-Ville
- Dr. Kelly Kuhns and Professor Wendy Mortimer participated in a Climate Change and Health fellowship offered by the Alliance of Nursing for Healthier Environments
- Dr. Jenny Monn’s poster “Evidence-Based Strategies to Improve Influenza Immunizations in College Students” won second place at the PA Coalition of Nurse Practitioners Annual Conference - November 2015
- Dr. Jenny Monn’s article, “An Evidence-Based Project to Improve Influenza Immunizations” was published in the Journal for Nurse Practitioners - April 2016
- Dr. Barbara Zimmerman continues to engage students in health promotion teaching at two Peter’s Porch locations

Student Achievements

- Mariannette Calon-Munoz and Mallory Hull, MSN FNP students, presented Helping the Hidden: Transforming Healthcare for Migrant Workers at the National Nursing Centers Consortium Conference
- Lori Bush and Christine LaPierre, BSN graduates, presented their poster, Effectiveness of Constant Special Observation on Inpatient Psychiatric Unit, at the PinnacleHealth Research Conference
- Jill Buchle, BSN & MSN graduate, presented her poster, Development of a Telehealth Program within a Home Health Agency to Decrease Readmission Rate of Congestive Heart Failure Patients at the PinnacleHealth Research Conference
- 20 BSN students attended the PSNA Culture of Safety Workshop
- 25 BSN students attend the PSNA Day on Capitol Hill

Notable Alumni Achievements

- Adam Updegraff, BSN alumnus, is a member of the first MU DNP cohort
- Lisa Senft, MSN alumnus, is a member of the first MU DNP cohort
- Allana Scaramasutra, MSN alumnus, is a member of the first MU DNP cohort
- Emily Gehron, BSN and MSN alumnus, is a member of the first MU DNP cohort

Department of Nursing
Department of Physics

Department Philosophy
As physics teachers, embracing the opportunity presented by the talented students of Millersville University: We beckon to those who want to study physics itself, as a complement to a baccalaureate program in any field.
We inspire students to realize physics, with our facilities, our curriculum, and our passion for the discipline. We challenge thoughtful students, providing the opportunity and incentive for all to achieve their fullest.

Provide a brief description of at least three initiatives in the University Strategic Plan that your department and faculty supported or contributed to during 2015-2016.

- The Physics Department capstone experience is our senior research project that is required for all degrees, PHYS 492 and PHYS 498. Fifteen students have done research projects in the last year: three graduated in December 2015, seven graduated in May 2016, and five more will compete their work in December 2016.
- Students have presented their research at regional, national, and international conferences (See Student Achievements below). At the April Meeting of the American Physical Society in Salt Lake City, Utah, student Kevin Piaskowski, in collaboration with Dr. Michael Nolan, earned an "Undergraduate Research Presentation Award" for his research poster on “One and Two-Dimensional Random Walks with One-Step Memory”.
- Departmental faculty participated in Open Houses, Carnival of Majors, Science Olympiad, the Brossman Lecture, and other activities related to recruitment of new students.

What have you done to help underrepresented minority student success?

- Building a community of majors is our best method to help all of our students succeed. Starting with our UNIV 103 course for majors we introduce all students to the department and our chapter of the Society of Physics Students (SPS). Activities such as the SPS Welcome Barbecue in September and post-colloquia dinners with students, faculty, and our guest speakers give us a chance to interact beyond the classroom. We are a small department, and we work to hold on to all the people that choose physics as a major.

Selected Department Highlights
Enhancements to program curriculum, student achievement of learning outcomes, or other program improvements

- PHYS 101 continues to be offered at the Ware Center in downtown Lancaster, taught by Dr. Natalia Dushkina. It is required by some concentrations of middle-level education majors and enrollment has been expanded to 18 students.
- Dr. Tariq Gilani continues to adapt our UNIV 103 class for our majors. The freshmen this term were required to attend our physics colloquia to hear about new physics from our outside speakers and get a preview of their future when the seniors give talks on their research projects.
A few students are in the pipeline for the new Co-operative program in Materials Science with the University of Delaware (3/2 program). The department hopes to send our first students there soon.

The Co-operative Engineering program with Penn State University (3/2 program) has been revived after a brief hiatus.

Dr. Dushkina introduced new pedagogy "problem-based learning" in her classes.

Dr. Gilani introduced new experiments in PHYS 451 – Advanced Laboratory.

**Special Events or Programs**

- Dr. Sean Hendrick and the SPS held the Annual Welcome Barbecue on Wednesday, September 23rd which was attended by over 40 students and faculty.
- Dr. Hendrick and the SPS held a Lunar Eclipse Observing Event on Sunday, September 27th. The department's 10.5" telescopes were set-up on campus near the West & East Side Villages. Despite cloudy conditions, over 100 students came out to view the event.
- Drs. Dushkina and Hendrick hosted fifteen 9-graders from Pequea Valley High School who were touring the College of Science and Technology on March 30th.
- Dr. Hendrick gave a talk to gifted students at Elizabethtown Area High School on March 8th on "Galaxies and Cosmology".
- Dr. Hendrick was a guest lecturer in ENGL 292 – Science Fiction discussing the science in science fiction. He also gave a talk entitled “Being an Astronomer” in Dr. Gilani’s UNIV 103 class for physics majors and Dr. Caterpillar’s UNIV 103 class for undeclared students.
- Dr. Hendrick supervised two events at the Science Olympiad on March 21st.
- Dr. Hendrick held the Sigma Pi Sigma Induction Ceremony on Wednesday, April 27th.
- Dr. Dushkina hosted a student interested in the department’s 3/2 Material Science Program with Delaware University and his family on March 30, 2016.
- N. Dushkina was job shadowed by a student from Manheim Central High School on February 15, 2016.
- Prepared interesting educational physics demonstrations for a group of young women and teachers participating in the Women in Math and Science Conference.
- Dr. Mehmet Goksu performed several educational physics demonstrations to high school students and their families during the Brossman Science Lectureship.
- Dr. Goksu volunteered his time helping students in their science curriculum activities at Ann Letort Elementary School. He have helped students with their activities such as making pumpkin globe, explaining how cloud forms and moves, mixing liquid with different densities, and explaining buoyancy force.
- Dr. Goksu was shadowed by a student from Manheim central High school on Monday, February 15.
- Dr. Goksu served as a judge at the 2016 North Museum Science & Engineering Fair on March 16.
- Dr. Goksu hosted 18 students from McCaskey High School to do physics demonstrations in the introductory physics lab on Monday, April 18. He also answered student questions in physics and provided information about physics department programs.
- Dr. Goksu worked with Spring Grove Area High School’s rocket team, Team Tesla, to develop a rocket in order to compete at the 2016 NASA’s Student Launch Initiative in April at NASA Flight Headquarters, Huntsville, AL.
- Dr. Goksu served as Site Director for the Central PA Regional Science Olympiad on March 21st for the fourth year in a row.

Department of Physics
• Dr. Xin Li was the supervisor for one event at the Science Olympiad on March 21st.

Special Faculty Achievements (not listed in Part B, the Annual Summary Outcomes Form)

• Dr. Hendrick was promoted to Associate Professor.
• Dr. Hendrick served as a reviewer for the upcoming 3rd edition of the Understanding Our Universe textbook that he uses in PHYS 117 – General Astronomy. He gave a detailed review of chapters 10-13 on stars and stellar evolutions, and a basic review of the rest of the text.
• Dr. Hendrick continues to serve a faculty advisor to the Society of Physics Students (SPS).
• Dr. Nolan reviewed a paper submitted to the refereed journal, American Journal of Physics.
• Dr. Dushkina presented two workshops “Color Formation” and “Optical Illusions” at the MU SSTP 2015 program in July 2015.
• Dr. Dushkina presented a seminar talk “Structural Colors, Cosmetics and Fabrics” at the Natural Sciences Seminar Series at the New College of Florida, Sarasota, FL on April 15, 2016.
• Presented a poster “Structural colors of peacock feathers” by C.K. Hall and N. Dushkina at the Annual Conference of the American Association of Physics Teachers – Central Pennsylvania Section (AAPT-CPS) on April 8, 2016 at Moravian College in Bethlehem, PA.
• Conference: X. Catepillan and N. Dushkina, Women in Mathematics and Science Undergraduate Courses at Millersville, 41st AMATYC Annual Conference, November 19-22, 2015 New Orleans, LA.
• Dr. Dushkina got a Travel-to-Present MU Faculty Grant ($250) to present at the 41st AMATYC Annual Conference, November 19-22, 2015 New Orleans, LA.
• Dr. Goksu attended two workshops: CAMP IDEA workshop on January 4-8, 2016 at Millersville and the Data-Collection Workshop organized by Vernier Software & Technology on Saturday April 16, in Wilmington, DE.
• Dr. Goksu gave the following Oral Presentations:
  o “Affordable Laboratory Exercises in Wind Energy” 2015 Association of Technology, Management, and Applied Engineering (ATMAE) Meeting, November 11-14, Pittsburgh, PA
  o “The Optimization of Wind Turbines”, The American Association of Physics – Central Pennsylvania Section (AAPT –CPS) Spring-2016, Moravian College, Bethlehem, PA
• Dr. Goksu gave the following Poster Presentations
  o “A Study on The Electrical Characteristics of Photovoltaic Cells” 2016 The American Association of Physics Teachers (AAPT) Winter Meeting, January 9-12, New Orleans, LA
  o “Simulations for More Efficient Wind Turbines” 2016 The American Association of Physics Teachers (AAPT) Winter Meeting, January 9-12, New Orleans, LA
  o “Partially Screened Edgemagnetoplasmons”, 2016 March Meeting of American Physical Society (APS) on March 14-18, 2016, Baltimore, MD.
• Dr. Goksu reviewed proposals for Association of Technology, Management, and Applied Engineering (ATMAE).
• Dr. Goksu served as the President of the American Association of Physics Teachers – Central Pennsylvania Section (AAPT –CPS), 2013-2016. His third year serving as the President of AAPT CPS is the longest tenure they have ever had.
• Dr. Goksu received the “Distinguished Service Award” at the Annual Conference of the American Association of Physics Teachers – Central Pennsylvania Section (AAPT-CPS) on April 9, 2016 at Moravian College, Bethlehem, PA.
• Dr. Goksu served on Executive Board of PA Science Olympiad Committee.
• Dr. Goksu served as the Faculty advisor for the following Millersville student clubs: Men’s Rugby Club and the MU Robotics Team. Dr. Goksu is also the advisor to the Physics Demonstration Team within the SPS.
• Dr. Li gave a seminar titled “the dipole vortex” at the Physics Department of Franklin and Marshall College, and donated the $150 honorarium to the department on Oct. 2015.
• Dr. Li gave a seminar titled “Interference Patterns” at the Physics Department of Indiana University of Pennsylvania on April. 2016.
• Dr. Li reviewed several manuscripts in Chinese Optics Letters and Optics Communications.
• Dr. Li served on Women in Science and Math conference committee, invited two speakers for the conference and was one of the speakers of the conference held at Millersville on April 5th, 2016.
• Dr. Li served on Academic Standards committee and will attend the June Appeals.
• Dr. Li served on the Dean’s Search committee. The committee reviewed more than 60 applicants, skype interviewed 10 candidates, and brought 4 candidates on campus. And, the committee conducted a successful search in 2 months, which has set a standard that will be difficult for other search committees to meet.
• Dr. Li served on Made in Millersville committee.
• Dr. Li wrote the following papers:
  o Henk F. Arnoldus, Xin Li and Zhangjin Xu, Journal of Modern Optics 63 (2016) 1068-1072, The giant dipole vortex
  o Xin Li, Henk Arnoldus and Xhangjin Xu, Vortex Dynamics, Chapter proposal, Submitted (2016), Vortices and singularities in electric dipole radiation near an interface.

Student Achievements
• Physics majors were recipients of the following scholarships and awards:
  o Harry & Carolyn Lohss Physics Scholarship – Elizabeth Dulac
  o Chip and Kathy Brabson Physics Scholarship – Abigaile Killingworth
  o Faraday Physics Scholarship – Jaxson Burns and Kevin Goring
  o Daniel Engle Scholarship – Andrew Zimmerman
  o Van Horn Award – Cecilia Hall
• Students Andrew Zimmerman and Keith Coasey were inducted Sigma Pi Sigma, the Physics Honor Society on Wednesday, April 27th.
• Kevin Piaskowski, in collaboration with Dr. Nolan, earned an "Undergraduate Research Presentation Award" for his research poster on “One and Two-Dimensional Random Walks with One-Step Memory” at the April Meeting of the APS in Salt Lake City, Utah.
• Cecilia K. Hall, in collaboration with Dr. Dushkina, received a $275 in Neimeyer-Hudgson Research Grant and a $225 grant from The Noonan Endowment Fund for her work on “Structural colors of peacock feathers”. That research was presented at the April Meeting of the APS in Salt Lake City, Utah, as well as Made in Millersville.

• Kevin Piaskowski, Cecilia Hall, Jon Gojda, Julius O, Chris Reuling, Brianna Beasley, Michael DeCaria, and Keith Coasey attended the April Meeting of the APS in Salt Lake City, Utah.

• Chris Reuling, in collaboration with Dr. Goksu, received $670 in Neimeyer-Hodgson Research grants for his work on “Harnessing Columnar Vortices for Power Generation”.

• Jon Gojda, in collaboration with Dr. Goksu, received $225 in Neimeyer-Hodgson Research grants for his work on “The Optimization of Wind Turbines”. This work was presented at The American Association of Physics – Central Pennsylvania Section (AAPT –CPS) Spring-2016, Moravian College, Bethlehem, PA and at Made in Millersville.

• Cody Petsch, in collaboration with Dr. Gilani, received $200 from the Noonan Endowment Fund for his work on “Electrical Properties of Gold Thin Films”.

• Christopher Gojda, in collaboration with Dr. Hendrick, presented a poster at Made in Millersville: "X-ray Observations of LMC SNRs N49 and N49B".

Department of Physics
## Fall Undergraduate and Graduate Enrollment by Major

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| CSCI | BS | CSCI | Computer Science | 193 | 189 | 207 | 223 | 242 |

**Department Total**: 193 189 207 223 242

| ESCI | BA | ESCI | Earth Sciences | 4  | 7  | 5  | 8  | 1  |
| ESCI | BA | ESCI | ENV | Earth Sciences - Environmental Geology | 14 | 9  | 9  | 8  | 4  |
| ESCI | BS | GEOL | Geology | 20 | 24 | 24 | 25 | 24 |
| ESCI | BS | MET | Meteorology | 133 | 138 | 140 | 142 | 130 |
| ESCI | BS | OSCS | Ocean Sciences & Coastal Studies | 4  | 9  | 8  | 4  | 9  |
| ESCI | BS | OSCS | OPHY | Ocean Sciences & Coastal Studies-Physical Oceanography | 2  | 2  | 2  | 2  | 3  |
| ESCI | BSE | ESCI | Earth Sciences | 21 | 14 | 9  | 7  | 7  |
| ESCI | CERTIF | ESCI | Teacher Certification in Earth Sciences | 1  | 1  | 1  | 1  | 1  |
| ESCI | MS | ISCA | CSCA | ISCA, Climate Science Applications | 2  | 1  | 2  | 1  | 2  |
| ESCI | MS | ISCA | ESMT | ISCA, Environmental Systems Management | 4  | 5  | 4  | 5  | 4  |
| ESCI | MS | ISCA | GIST | ISCA, Geoinformatics | 1  | 1  | 1  | 2  | 2  |
| ESCI | MS | ISCA | WIRM | ISCA, Weather Intelligence & Risk Management | 2  | 6  | 7  | 7  | 7  |

**Department Total**: 200 208 206 210 200

| GEOG | BA | GEOG | Geography | 3  | 5  | 2  | 3  | 3  |
| GEOG | BA | GEOG | ENV | Geography - Environmental Studies Option | 42 | 33 | 30 | 30 | 34 |

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* December, January, May, June, July, and August Graduates