Annual Report
Department of Technology
(Aviation Science) (Industrial Technology) (Engineering Technology)
AY 2013-14

Academic Year (AY) 2013-14 was a very rewarding year for the Department of Technology. Department took strides in areas of teaching, research/scholarly activities, professional service, and outreach. There were three major tasks that department undertook and completed during AY 2013 – 2014 that will enhance Elizabeth City State University’s role as an institution of higher learning.

First major initiative involved Aviation Science program going through a comprehensive evaluation, both internal and external. A two-member team of external reviewers (experts) evaluated the program and submitted a report off their findings including recommendations to enhance and sustain the Aviation Science program. In this regard, aviation science program went through curriculum restructuring leading to elimination of few minors and consolidating a few. Going forward, aviation science program will offer 4 concentrations i.e. effective fall 2014, the Aviation Science degree program curriculum will offer four concentrations (Flight Education, Aviation Management, Air Traffic Control, Avionics/Electronics), with a strategic plan to add two more concentrations (Maintenance Science and UAS Operations) and become a PART 141 flight training facility within next 3 years. The program also designated the existing flight courses as flight labs and developed a flight fee structure that will be applied towards these labs. The flight lab fee policy will be presented to the ECSU Board of Trustees in June 2014 meeting.

Second major initiative that department took during 2013-2014 was to complete campus approval process for a Professional Science Masters (PSM) program in Cybersecurity Technology. The new degree plan proposal and APPENDIX A – Intent to Plan a New Degree Program document went through all the required curriculum and administrative planning committees and was submitted to the UNC General Administration for further action. The internal and external advisory committee for this proposed program has been established. In addition, listing and descriptions for courses and curriculum structure that will be offered as the part of the new proposed program were also completed.
Third, Engineering Technology completed the preliminary self-study report (Readiness Review Report) for Accreditation Board for Engineering & Technology (ABET) accreditation in the month of October 2013. Based on the preliminary report, the department received recommendation to apply for full evaluation leading to an onsite accreditation visit. A Request for Evaluation (RFE) was submitted in January 2014. The department is working on completing the final self-study report that will be submitted in June 2014.

Other highlights from department for AY 2013-2014 are summarized as below.

During AY 2013 – 2014, department made strides in all areas of academic endeavors. Faculty members were engaged in scholarly activities, student mentoring, publications/presentations, and serving on campus and professional committees. Departmental accomplishments in terms of student achievements, faculty achievements, programs, processes, procedural initiatives/changes, recognitions and awards, and outreach are as follows.

**Student achievements:** Following students engagement/activities took place during the academic year:

1. Five students were selected for US Coast Guard’s College Student Pre-Commissioning Initiative (CSPI) Program,
2. Five students received commissioned as officers in the Army,
3. One student received CISCO Certified Network Associate Certification with a perfect score (1000/1000),
4. Students submitted an application to the Women in Aviation International for establishing a provisional chapter at ECSU,
5. Over fifteen (15) students went on field trips to governmental and private agencies,
6. Students presented their research at the 2014 Emerging Researchers National (ERN) Conference in STEM, February 20-22, Washington, D.C.,
7. Robotics team participated in Advancing Robotics Technology for Societal Impact (ARTSI) alliance robotics competition held in February 2014 held during TAPIA’14 conference in Seattle, WA.
8. One student selected as HBCU all-star student as a part of White House Initiative
9. One student completed and successfully defended undergraduate honor thesis

**Faculty achievements:**

*Grant Writing:* During AY 2013-2014, the Department of Technology submitted twelve (12) proposals of which ten (10) were funded and two (2) are pending. Of these 12 proposals three (3) were in collaboration with other departments/divisions within the campus and other constituents of UNC system.
1. 2014 Summer Transportation Institute at ECSU, submitted to Federal Highway Administration (FHWA), Funded Award: $55,000 (Lawrence/Rawat)
2. 2014 National Institute of Standards & Technology, Summer Undergraduate Research Fellowship (NIST-SURF) program (Boulder), Funded Award: $8,700 (Rawat). 
3. 2014 National Institute of Standards & Technology, Summer Undergraduate Research Fellowship (NIST-SURF) program (Gaithersburg), Funded Award: $8,700 (Rawat).
4. Sensor-based Learning Modules, NC Space Grant Consortium, Funded Award: $5,000 (Rawat).
5. Eastern North Carolina Collaborative Renewable Energy Assessment, Collaborative grant proposal with NCSU/USDA, Funded Award: $56,500, (Elahi)
6. Partnership in Capacity Building Program, East Carolina University, Funded Award: $31,000 (Eslami)
7. 2014 UAS-Themed Aviation Career Education Camp, NC Division of Aviation, Funded Award: $10,000 (Rawat/Orestes)
8. Advanced Aviation Training Device (ATD) Acquisition, Department of Education – SAFRA, Funded Award: $161,380 (Rawat w/Rice)
9. North Carolina Department of Transportation HBCU/Minority Institution of Higher Education Summer Internship Program, submitted to NCDOT, $14,000 (Lawrence) – Pending
10. AYUR Research Project, Winston-Salem State University, Funded Award: $16,000 (Daneshyari w/Hasan)
11. All-Girls Aviation Career Education (ACE) Academy at ECSU, submitted to NCDOT, $10,000 (Rawat/Orestes) – Pending

Faculty Publications/Presentations:

“A mini-UAV VTOL Platform for Surveying Applications in Transportation,” (Accepted), IAES International Journal of Robotics & Automation. (Rawat w/Lawrence)


Cultural swarms for optimization: Constrained, multiobjective and dynamic optimization – (Book),” LAP Lambert Co., Germany, 2014. (Daneshyari)

“Student Investigation of Personal Computers Disposal Practices,” presented at Annual ATMAE Conference

“Using Simulations and Computational Analyses to Study a Frequency-Modulated Continuous-Wave Radar,” (accepted) for for presentation and publication in 11th international conference on excellence in education, July 7-10, Paris, France. (Eslami)

**Professional Services:**

Journal Review board member for Journal of Association of Technology, Management & Applied Engineering (JATMAE) (Rawat)
Journal Review board member for International Journal of Modern Engineering (Elahi)
Served on ATMAE accreditation team to visit Farmingdale State College for accreditation of programs (Eslami)
Appointed on the NC Space Grant Executive Board (Rawat)

**Programs, processes, procedural initiatives/changes:**

*Program Accreditation:* The department currently has ATMAE accreditation for its Industrial Technology program, is up for ABET accreditation visit this year for Engineering Technology program, and has developed plan to receive AABI accreditation for its Aviation Science program. The brief information on each of these accreditations is as follows.

**ABET:** Preliminary Self-Study (Readiness Review) report on Engineering Technology program was submitted to ABET in November of 2013. The program receive recommendation from ABET to go for full evaluation. Final self-study report will be submitted by July 1, 2014 leading to an on-site visit in November of this year.

**ATMAE:** ATMAE accreditation for Industrial Technology program is valid until November of 2015. The program held it’s once a year meeting on May 02, 2014 with Industrial Advisory Committee. The advisory committee was informed of the new name and relevant curriculum changes. A letter will also be send out to ATMAE regarding the changes.

**AABI:** Aviation Science program has developed a timeline to apply for accreditation from Aviation Accreditation Board International (AABI). Program was represented at the annual AABI meeting held in Auburn, AL. The program has also established an Aviation Advisory Board, which held its initial meeting in May 2014. Curriculum restructuring has been completed to be in compliance with AABI. We plan to seek AABI accreditation after 3 academic years.

*Curriculum Changes/New Courses:* All the three programs went through extensive curriculum changes keeping in mind the areas in demand and industry needs. Engineering Technology program added 3 courses in Renewable Energy Area and 4 courses in Mobile Robotics. Industrial Technology program went through a new name, Computer Networking &
Cybersecurity Technology. Accordingly the curriculum has been modified to include more computer networking courses and new cybersecurity courses. Aviation Science curriculum also went through changes in terms of core requirements and the concentration areas. 2 new courses were approved for core and 3 new courses to go in for Aviation Management concentration. Eight minors in Aviation Science have now been consolidated to four concentrations - Flight Education, Aviation Management, Air Traffic Control (ATC), and Aviation Electronics (Avionics). Appropriate changes to individual concentrations have been made.

*CISCO Academy Reinstatement:* Department was able to reinstate authorized CISCO networking academy status. Students can also receive CISCO certification, thus making them more marketable for opportunities in computer networking and technology field. Department will in turn benefit by receiving access course material, program improvement consultancy, and laboratory hardware and software at a low price.

*Classroom/Lab Upgrades:* Following equipment/lab resources were added/purchased during the AY 2013-2014 to enhance/upgrade classrooms/laboratories.

1. An Unmanned Vehicle Systems (UVS) lab, consisting of experimental Quadcopter and ground robotic vehicle, established in the department
2. Software upgrade to Air Traffic Control Simulator lab to allow for integration and testing of UAS systems in national airspace.
3. Data acquisition devices acquired for the new Measurement and Instrumentation laboratory
4. Redbird full motion flight simulator (MCX) ordered
5. Upgraded microcontroller and embedded systems laboratory with acquisition of hardware boards
6. Three (3) racks of network security equipment were added to computer networking laboratory.

**Recognitions and awards:**

- Excellence in Teaching award from the National Society of Leadership & Success (Robin Mangham)
- Certificate of Appreciation for completing 10 years at ECSU (Kuldeep Rawat and Mehran Elahi)
- Earned accreditation as a NAFI Master Flight Instructor (Dwayne Morrison)

**Outreach:**

During summer 2014, department will be hosting Summer Transportation Institute, funded through Federal Highway Administration (FHWA) grant that will bring 16 high school students for a 4-week STEM program. Department will also organize two (one co-ed and one all girls) one-week Aviation Career Education (ACE) camps for middle school students. In addition, STEM related outreach activities will be conducted during summer funded through NC Space Grant.