Department of Technology

Introduction

The following report highlights the significant events and the accomplishments by the Department of Technology and its faculty during 2006-2007 academic year. This includes the new programs, processes and procedural initiatives as well as recognitions, awards, publications, and the community outreach that were undertaken during 2006-2007 academic year.

This academic year turned out to be a very challenging and a very rewarding year for the department. During this period, the department continued its success in the area of new program development, enrollment, student internships, curriculum enhancement, and faculty scholarly contribution. There were a few administrative changes that had direct impact on the department. The year started with the selection of new dean for the School of Math, Science and Technology (MST) and this was followed by a change of the department’s chair. Dr. Mehran Elahi, faculty member of the Department of Technology was selected by the Office of the Academic Affairs to serve as the new department chair. He accepted the recommendation by agreeing to serve as an interim chair.

A large part of this academic year was spent on addressing the changes related to the Aviation Science Program. During this period the department received an $850,000 grant from the Golden LEAF Foundation to assist the Aviation Science Program with purchasing the equipment needed for training and preparing workforce for the aviation industry in northeastern North Carolina. The granting of this award coincided with the renovation of Lane Hall where the Aviation Science Program will be housed. Furniture, audio visual equipment and security systems for this building were researched, selected and designated for requisition either directly or through submission of grant proposal. This was followed by establishing a new well-balanced advisory board to provide the necessary guidance for the program. These activities are both essential and complementary in support of the newly-found status of this program as one of the two signature programs in the university.
Another major accomplishment was the approval of the department’s request to establish an Engineering Technology Program by the UNC Board of Governors. This program will provide the students the opportunity to specialize in any of the following two areas of concentrations: i) Computer & Information Technology and ii) Mechanical & Automation Technology.

The department was also involved in recruiting a new faculty for an available position at the rank of assistant professor with background in electromechanical. Following the establishment of the search committee, the position was advertised, candidates’ applications were reviewed, and phone interviews were conducted. This was followed by an on-campus interview of the top candidate. The process was completed at the end of April and the selected candidate was recommended to the Office of Academic Affairs.

To fulfill a new university-wide initiative in offering web-enhanced curriculum, most of the faculty members attended the required workshops for the necessary training. This was followed by the implementation of new registration method using the Banner system. A number of laboratory experiments were redesigned for some of the courses in the department. One of these courses included Microprocessor II which was modified to have laboratory experiment related to microcontroller program.

Initiatives were also introduced in order to assess the possibility of technical collaboration or workforce training with a number of governmental and non governmental agencies such as Bureau of Land Management, DRS technologies at Elizabeth City, US Coast Guard, Texas Tech University Wind Science and Engineering program, North Carolina Solar Center, Scotland County Schools, Nucor Steel Co., and Langley Research Center. Such collaborations will create more internships and employment opportunities for students and will provide the necessary exposure for the department to increase its enrollment by recruiting top students for its programs. To this effect, new brochures were designed and developed for the three programs in the department.

During this academic period many contributions were made by the faculty in publishing and presenting their research findings in technical and professional journals and conferences. The faculty members were also appointed to serve in various capacities in technical conferences and professional organizations.
Accomplishments

The following listings are the Enhancement of Curriculum, Classroom Infrastructure, Publications, Presentations, Funded and Submitted Proposal, New Initiatives and Changes of Programs, Processes, Procedures, Professional Development, Recognitions and Awards, and Community Outreach, Recruitment Activities and other Synergistic Activities This covers both faculty and student significant activities.

**Enhance of Curriculum, Classroom Infrastructure, and Teaching Methods**
Aviation Weather Lab was taught web-enhanced with online certificates issued by the AOPA Safety Foundation Spring-07 (Paul Lange)

A set of twelve lab modules for the Electrical Circuits course (TCEL 205) were developed Spring-07 (Kuldeep Rawat).

A set of eight lab modules were developed for Microprocessors II course (TCEL 438) to provide students with developing applications using PIC microcontrollers Spring-07 (Kuldeep Rawat).

Developed the laboratory module for AVI 410 that consists of a 10 independent topics that supports the lecture of aerodynamics and aircraft performance Spring-07 (Orestes Gooden)

Increased the inventory for the Video Library for flight training and aviation safety education library in the Aviation Science Program Spring-07 (Paul Lange)

A new computer server was purchased and installed for the department use, Spring-07 (Room 219).

Two new Dell projectors (Dell Power Edge 2950) were purchased and installed for classroom teaching, Spring-07.

Mechanism equipment for new lab modules in Mechanical Systems course were purchased Spring-07 (Mehran Elahi).

Most of the faculty finished the training requirement for offering web-enhanced courses, Spring-07.

Most of the faculty finished the training requirement for Banner-based registration, Spring-07.
Furniture, Security System, and Audio Visual equipment were selected for the Lane Hall Spring-07. (Mehran Elahi, Orestes Gooden, William Barker).

A Flight Simulator, from Frasca International, Inc., was purchased for the Aviation Science Program, Spring-07. (Orestes Gooden, Mehran Elahi).

Eleven PCs were purchased and installed in the CAM Lab (Ellis Lawrence).

**Conference Presentations**


“Hardware Implementation of FIR Neural Net for Time Series Data Prediction,” (Accepted), Convention of NAIT, Panama City Beach, Fl, October, 2007, (Kuldeep Rawat)

“A Novel Design for Tri-State Nano Molecular Memory,” (Presentation) in Convention of National Association of Industrial Technology (NAIT), Cleveland, Ohio, (Nov 2006), (Kuldeep Rawat)

“Effects of Fluids on the Deformation, Strength, and Durability of Polymeric Composites”, Research Week, School of Math, Science, and Technology: Feb. 12, 06. (Mehran Elahi)

“Full Adder Circuit Design for Low Power, High Speed, and Reduced Area,” Research Week, School of Math, Science, and Technology, Feb. 12, 06. (Kuldeep Rawat)

**Journal or Conference Publications**

“A Study of Magneto-Resistive Read-Write Head Reliability Using Low-Frequency Noise Measurement Technique,” Published in Journal of Industrial Technology (JIT), Volume 22, Number 4, Dec 2006, (Kuldeep Rawat)

“Residential Energy Saving Methods,” TechDirections, April, 2007 (Kuldeep Rawat)


“Electrical 1/f Noise Characterization of Magneto-Resistive Read/Write Head,” (Full Paper) in Convention of National Association of Industrial Technology (NAIT), Cleveland, Ohio, (Nov 2006). (Kuldeep Rawat)
**Textbook Publications or Contributions**


**Submitted Research Abstracts**
“Enhancing properties and recycling process of scrap polymer-based materials by addition of new additives,” Accepted for presentation at the 2007 NAIT Convention, October 23-27, 2007, Panama City Beach, Florida (Mehran Elahi and Akbar Eslami).


“Hardware Implementation of FIR Neural Net for Time Series Data Prediction,” (Accepted), Convention of NAIT, Panama City Beach, Fl, October, 2007 (Kuldeep Rawat)

**Journal or Conference Reviewer**
Reviewer for the 9th Annual IJME/INTERTECH Joint International Conference on Engineering and Technology: Research-Education-Entrepreneurship (Mehran Elahi, Kuldeep Rawat)

Reviewer for Journal of Industrial Technology peer-review process (Kuldeep Rawat)

Reviewer for Electronics, Electrical & Computer Technology (EECT) division of NAIT (Kuldeep Rawat)

Reviewer for Robot Technology Fundamentals (book), by James G. Keramas, Thomson-Delmar publications (Kuldeep Rawat)

**Submitted Proposal**

“Integrating HP Mobile Tablet PC Technology Based Instruction Delivery System into Undergraduate Engineering Technology Courses (submitted) to HP Technology for Teaching Grant program.” HP Technology for Teaching Grant Initiative, Hewlett-Packard Development Company, $68,000., Funded, May 2, 2007 (Kuldeep Rawat and Mehran Elahi)
2006 Summer Transportation Institute Program, North Carolina Department of Transportation (NCDOT), **Funded $40,000** (Ellis Lawrence).

2007 Summer Transportation Institute Program, North Carolina Department of Transportation (NCDOT), **Funded $65,000** (Ellis Lawrence).

The 2007 Summer Transportation Institute Program, NCDOT/College Interns, June- Aug , **Funded $17,000** (Ellis Lawrence, Orestes Gooden).


**Title III Funding, submitted, April 2007**

1. “Acquisition of a Material Testing System and Strain Measuring Equipment,” (Mehran Elahi)
2. “Acquisition of a Security System for Lane Hall,” Title III, submitted, April 2007 (Mehran Elahi)
3. “Pilot Training Scholarship award for five first-year freshmen in the aviation science program,” (Ellis Lawrence)

“Fuzzy Logic Controller-Based Building Energy Management System,” (Submitted) to National Institute of Standards and Technology under U.S. Department of Commerce (Kuldeep Rawat).

“Bringing Theory and Reality Together: An Interdisciplinary Hands-on Undergraduate Laboratory Course in Mechatronics and Measurement Systems,” (Submitted) to Course, Curriculum, and Laboratory Improvement program under National Science Foundation. (Kuldeep Rawat, Mehran Elahi, Akbar Eslami)

**Professional Development (workshops, industrial training, organizations affiliation):**
In pursuit of establishing CISCO Networking Academy in the Department, two faculty members underwent CISCO Networking Courses at the Craven Community College (Ellis Lawrence, Kuldeep Rawat).


Rapid Prototyping/Tooling Faculty Training (Sinclair Community College, Dayton, OH, August 7-11, 2006, (Mehran Elahi, Kuldeep Rawat).
Distance Learning and Remote Sensing Controlled Laboratories (Queensborough Community College, City University of New York, Bayside, NY July 24-28, 2006, (Mehran Elahi, Kuldeep Rawat).

Completed a three-week course on Introducing Science Faculty to Materials and Engineering, University of Alabama, Tuscaloosa, AL June 4-23, 2006, (Mehran Elahi).

Attended the National Association of Industrial Technology (NAIT) Annual Conference, Cleveland, OH, Nov 15-18, 2006 (Mehran Elahi, Kuldeep Rawat, Ellis Lawrence, Akbar Eslami)

Attended the NAIT Accreditation Visiting Team Training & Accreditation Self-Study Development Workshop, NAIT Annual Conference, Cleveland, OH, Nov 15-18, 2006 (Mehran Elahi, Kuldeep Rawat, Akbar Eslami)


Appalachian Forum on Undergraduate Education, May 17-18, 2007, Appalachian State University, Boone, NC (Mehran Elahi).


**Programs Established**

The Board of Governors approved the request to establish a B.S. degree program with two concentrations within the Department of Technology, Spring-07.

Developed articulation agreement between Department of Technology and College of the Albemarle, Spring-07 (Akbar Eslami)

Established ECSU as a Local CISCO Academy effective April 20, 2007, (Ellis Lawrence and Kuldeep Rawat)

Registered and Developed the Constitution and By-Laws for the ECSU Technology Club (Mehran Elahi, Advisor to the ECSU Tech Club)
**Program and Process Initiatives**

Established relationship with the Wind Engineering Summer Internship program for Undergraduate Students at Texas Tech University. At least three students from the department are participating in this two month long program Spring-07 (Mehran Elahi)

Initiated and met with the representatives of the DRS Technology at Elizabeth City, to collaborate with the ongoing and future projects, DRS’ R23G and R2 team, in capacity of Technical subcontractor (April 12th, 2006, Mehran Elahi and Akbar Eslami).

Initiated collaboration with Scotland County Schools of Laurinburg, North Carolina on a proposal to the National Science Foundation for a five year grant to get middle and high school students more interested and involved in science, QUESTT (Quality Education Services Through Technology) Spring-07 (Mehran Elahi).

Initiated collaboration with North Carolina Solar Center to secure funding for development of curriculum programs for Middle School and High School Students. The main focus would be on two fronts: i) Application of solar energy to build solar vehicles, ii) Application of STEM principles to build an electric vehicle Spring-07 (Mehran Elahi)

Paul Lange was hired as an adjunct faculty to teach a number of courses for the Aviation Science Program, Spring-07

A faculty search committee was formed to review and interview selected applicants for an Assistant Professor Faculty position (# 1125). Spring-07

Dr. Hong Zhang was selected as the top candidate and was interviewed by the faculty search committee for the Assistant Professor Faculty position (# 1125). Spring-07

Brochures were developed for the following three programs in the department: Engineering Technology, Industrial Technology, and Aviation Science. Spring-07

**Recognitions and Awards**

Mehran Elahi was appointed as the Chair of the Department of Technology. Fall-07

Mehran Elahi was selected to the Advisory Board of the Computer Systems and Electronics Technology Department at the College of Albemarle. Spring-07

Mehran Elahi will be among the honorees featured in the upcoming 11th edition of *Who’s Who Among America’s Teachers & Educators* (bound volume will be available this summer), May 2007.

**Community Outreach and Recruitment Activities**

Travel to Oak Ridge National Laboratory in Oak Ridge, Tennessee, to represent ECSU at the “Day of Science Program”, Oct. 15-16, 2006 (Ellis Lawrence).
Traveled to Washington, DC, on Dec. 7, 2006, for a recruitment effort at McKenny High School, Fourteen students showed interest and their names were submitted to Admissions Office (Ellis Lawrence).

An academic liaison for ECSU and Pasquotank County HS was selected, Spring-07 (Orestes Gooden)

Participated in recruitment events at the College of the Albemarle’s students (Akbar Eslami).

Participated in recruitment events at Hermitage High School-Richmond, VA; Pasquotank County High School-Elizabeth City, NC; Northeastern High School-Elizabeth City, NC; Hillside High School-Durham, NC; Meadowbrook High School-Chesterfield, VA Fall-06, Spring-07, (Orestes Gooden)

Faculty members participated in the Fall, winter, and Spring open houses (Mehran Elahi, Kuldeep Rawat, Akbar Eslami, Paul Lange, Orestes Gooden), Fall-06, Spring-07.

Sixteen Summer Transportation Participants were taken for a 3-day field trip (July 4-6, 2006) to Tuskegee Airman National Site in Tuskegee, AL; BMW manufacturing Plant in Greenville, SC; and Transportation Museum in Spencer, NC (Ellis Lawrence, Orestes Gooden).

Participated in recruitment event at Youth Aviation Day held in Manteo, NC, May 12, 2007 (Mehran Elahi, Kuldeep Rawat)

Represented department in Office of Admissions’ recruitment effort at Greenville, NC. , (Kuldeep Rawat)

**Students’ Activities and Accomplishments**

Following lists the students’ activities and accomplishments such as field trips, internships, honor achievements, publications, presentations, and awards.

**Students’ Field Trips**

To expose students to real-life job opportunities number of field trips were provided. These experiences will help the students to understand some of the opportunities and challenges they will face following graduation. The sites visited are the followings:

TAMSCO, Elizabeth City, ECSU Tech Club, Nov. 1, 2006 (Mehran Elahi).

USCG operations, Elizabeth City, NC, Spring-07 (Paul Lange)
Elizabeth City Airport, FBO, Elizabeth City, NC, Spring-07 (Paul Lange)

2006 NAS Oceana Air Station Air Show, VA Beach, VA, Spring-07 (Orestes Gooden)

Airport Management Seminar Elizabeth City Regional Airport, Elizabeth City, NC (Orestes Gooden). Spring-07

Aviation Service Business Seminars, Chesapeake Regional Airport, Chesapeake, VA, and Flight Line Elizabeth City Regional Airport, Elizabeth City, NC (Orestes Gooden). Spring-07

Aviation Service Business Seminars by: Piedmont Hawthorne Aviation Norfolk, VA and Coast Guard Air Station Elizabeth City, NC, Management Team and Service Personnel, (Orestes Gooden). Spring-07

National Airspace Study Seminar Federal Aviation Administration Norfolk VA, Management Team (Orestes Gooden). Spring-07

Introductory and Familiarization Flight Horizon Aviation Chesapeake VA, Total of fifteen students participated in actual flight experience (Orestes Gooden). Spring-07

**Students’ Internships**

A number of students have received internships during the 2006-2007, academic year. Students’ names and their worksites are listed as follows:

Christopher Hill, Junior, Industrial Technology, Wind Engineering Summer Internship program for Undergraduate Students, Texas Tech University, Lubbock, Texas, June 1-July 31, 2007.

George Riddick, Junior, Industrial Technology, Wind Engineering Summer Internship program for Undergraduate Students, Texas Tech University, Lubbock, Texas, June 1-July 31, 2007.

Tramaine Blount, Junior, Industrial Technology, Wind Engineering Summer Internship program for Undergraduate Students, Texas Tech University, Lubbock, Texas, June 1-July 31, 2007.

Chelsey Daniels, senior in Industrial Technology, Seamas Center for the Engineering Arts and Sciences, GROK Laboratory, the University of Iowa, From June 3rd to July 30th, Iowa City, IA 52242

Demetrius White, senior, Industrial Technology, Nucor Steel Student Summer Internship program, May-August, 2007.

Lakeshia Moore, senior, Industrial Technology, NCDOT Summer Transportation Institute, ECSU, June-Aug, 2007

Omar Best, Junior, Aviation Science, NCDOT Summer Transportation Institute, ECSU, June-Aug, 2007

Tony Dawson, Aviation Science, NCDOT Summer Transportation Institute, ECSU, June-Aug, 2007

Jameson Gibbs, Senior, Aviation Science, US Coast Guard (Command Safety Programs Evaluator), Elizabeth City, NC

Cristian Alva, Senior, Aviation Science, US Coast Guard (Educational Services), Elizabeth City, NC

Willie Brown, Senior, Aviation Science, Elizabeth City/Pasquotank County Regional Airport (Assistant Airport Manager Training), Elizabeth City, NC

Chris Meads, Senior, Aviation Science, US Coast Guard (Logistics IT Systems Support), Elizabeth City, NC

Brandon Jones, Senior, Aviation Science, US Coast Guard (Logistics IT Systems Support), Elizabeth City, NC

Keith Johnson, Senior, Aviation Science, ECSU (Summer Transportation Institute), Elizabeth City, NC

Jared Cook, Senior, Aviation Science, Central Intelligence Agency (Security and IT Systems), Washington, DC

Kenneth McCoy, Senior, Aviation Science, Federal Aviation Administration (Aviation Technical Support), Washington, DC

**Students’ Honor Achievement**

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<th>Name</th>
<th>Achievement</th>
<th>Class</th>
<th>Major</th>
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<tr>
<td>Lakeisha Moore</td>
<td>Chancellor’s List</td>
<td>Senior</td>
<td>Industrial technology</td>
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<tr>
<td>Jason Philip</td>
<td>Chancellor’s List</td>
<td>Freshman</td>
<td>Industrial technology</td>
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<td>Jerimiah G. Hodges</td>
<td>Chancellor’s List</td>
<td>Freshman</td>
<td>Industrial technology</td>
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<td>Tiwana L. Walton</td>
<td>Chancellor’s List</td>
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<td>Aviation Science</td>
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<td>Tramaine Blount</td>
<td>Dean’s List</td>
<td>Junior</td>
<td>Industrial Technology</td>
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<tr>
<td>Christopher Hill</td>
<td>Dean’s List</td>
<td>Junior</td>
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<tr>
<td>George Diddick</td>
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<tr>
<td>Jesse E. DeAnda</td>
<td>Dean’s List</td>
<td>Junior</td>
<td>Aviation Science</td>
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<tr>
<td>Jason Alexander Spruill</td>
<td>Honor Roll</td>
<td>Senior</td>
<td>Industrial technology</td>
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Ronald E. McNair Postgraduate Achievement Program
Chelsey Daniels, Senior Industrial Technology
Andrew Oxendine Junior Industrial Technology

Mid-Eastern Alliance for Minority Participation Program
Chelsey Daniels Senior Industrial Technology
Jason Spruill Senior Industrial Technology

Students’ Publications, Presentations, and Awards

Chelsey Daniels, senior student in Industrial Technology, presented a poster of her research titled “The design of an Automated Bar Coding System,” at the Research Week, School of MST, Feb. 15, 06.

Jason Spruill, senior student in Industrial Technology, presented a poster of his research titled “Infrared (IR) Wireless Communication for Application in Mobile Robots,” at the Research Week, School of MST, Feb. 15, 06.

Jason Spruill and Morris Beasley, senior students in industrial Technology, presented their senior project research “Infrared (IR) Wireless Communication for Application in Mobile Robots,” IEEE SouthEastCon 2007, Richmond, VA, Proceeding publication.

Chelsey Daniels, senior student in Industrial Technology, received a third place award (Eagle Award) at the Ronald E. McNair Postgraduate Achievement Program research poster presentation competition, June, 2006.

Four students participated in Science Bowl Competition, School of MST research week, ECSU, Spring-07 (Tramaine Blount, George Riddick, Chelsey Daniels, Jason Spruill, and Morris Beasley).
**Summary**

The Department of Technology made great strides during the 2006-2007 academic year. The approval of the department’s request to establish an engineering technology program by the UNC Board of Governors, designation of the aviation science program by the UNC university system as one of the two signature programs at ECSU, a multi-million dollar renovation of Lane Hall, obtaining a $850,000 grant to purchase equipment for aviation science laboratories, electing a new chairperson for the department, completion of the process to hire a new faculty, successful placement of upper class students in internship programs, and development of new initiatives to promote the department and its academic programs, are few of the highlights of the past year.

The department of technology is looking forward to the 2007-2008 academic year to continue its growth, increase in student enrollment and retention, increase faculty publications and grant proposals, and enhance its academic programs specially the engineering technology and the aviation science programs.

To fulfill these activities the department requires a substantial increase in its annual budget. The current budget barely provides for the department’s basic needs, its obligation to the accreditation agencies, and the educational and developmental needs of faculty members and the department as whole.