

2013-2014 Annual Report
College of Engineering, Technology, and Computer Science

Mission:

- Provide comprehensive undergraduate and graduate programs that prepare students for a variety of careers in engineering, engineering technology, computer sciences and related disciplines, and leadership;
- Serve the needs of the region and strive to achieve national recognition through excellence in teaching and learning, innovation and research, community engagement, economic development, and service.

Goals (2013-14):

- To establish a performance evaluation/assessment framework of productivity related to the core mission of ETCS/IPFW. Specifically, we are particularly interested in gaining an in-depth understanding of ETCS' profile on recruitment, retention, graduation, student career placement, workload distribution, bottleneck courses, and efficiency in program delivery.
- To develop Corporate Leadership Scholarships i.e. increasing annual scholarship giving by \$20,000.
- To continue re-organization of ETCS.

Part 1 - Student Learning and Success

Document program level accomplishments (not individuals)

378 ETCS degrees awarded in 2013-2014:

- 229 BS, 99 AS, 50 MS, 12 certificates

Fundamentals of Engineering Exam:

The exam is typically the first step in the process leading to the Professional Engineering (PE) license. It is designed for students who are close to finishing an undergraduate accredited engineering degree. The National Council of Examiners for Engineering and Surveying develops, administers, and scores the examinations used for engineering and surveying licensure in the U.S.

- Twenty-five civil, computer, electrical, and mechanical engineering students took the Fundamentals of Engineering (FE) Exam with a 96 percent passing rate. This national FE Exam passing rate for all engineering schools is 72%. This exemplifies the fact that IPFW engineering graduates are highly competitive and marketable compared to their national peers.

Student competitions:

- CS students (B. Wolfe, faculty advisor) competed at the International Collegiate Programming Contest of the Association for Computing Machinery November 3, 2012 at the University of Windsor, Ontario, Canada. The team ranked in the top 20%, beating

109 out of 130 teams from our highly competitive region and earned the regional "Solid Programmers Award" given to the team solving the highest number of problems with minimal penalties for incorrect programs.

- Over twenty civil engineering students (and faculty) participated in the 2014 American Society of Civil Engineers (ASCE) Great Lakes Conference at the University of Illinois at Urbana-Champaign. Overall, IPFW placed 6th out of the 19 participating schools, and 3rd place of the nine schools from the state of Indiana.
- An EE student team (A. Eroglu, faculty advisor) representing USA and IPFW came in third place with the project entitled "High Performance Hybrid Electric Vehicle Drive System with Solar Power" at the annual ICAMES (International Cultural and Academic Meeting of Engineering Students) held by the Engineering Society of Bogazici University in Istanbul, Turkey. The ICAMES participating teams were selected through a competitive peer review of research projects. There were 21 teams from universities around the globe competing.

Retention:

- The college received TAP money for two initiatives to recruit and retain students within the college. A pilot tutoring program was implemented in the spring. Initial assessment of student satisfaction with the program was high and 71% of the tutees earned a C or better in the classes in which they received tutoring.
- The CS Department has logged over 120 hours of student assistance tutoring each of the past 3 semesters in their center.
- Engineering's graduation rate has improved (72 graduates compared to 59 for the previous academic year). In 2013, the engineering (CE, CompE, EE, and ME) stop-out rate was only 7.8% and the freshman engineering rate was 31.8%. Other departments report high persistence rates (e.g., OLS reported an 84.67% rate).

Other indicators of success

- Computer Science reported a 100% career placement rate of its graduates in the fall of 2013/spring 2014.
- Civil, computer, electrical, and mechanical engineering seniors successfully completed industrial sponsored projects. For a complete list of 2013-2014 senior design projects and sponsors refer to <http://new.ipfw.edu/departments/etcs/depts/engr/capstone/>.

Part 2 - Curricular Improvement

Document curricular innovation or modification, purpose, intended outcomes

New programs

- CS department has launched an all on-line BS degree program in Information Systems which allows more flexibility for working adults, military personnel, etc.
- Minor in Military Science will provide our growing population of ROTC students an opportunity to receive a minor for their coursework.
- A new First-Year Engineering Curriculum was approved. This plan will consolidate the current four first-year engineering courses into two courses and directly addresses the application of analytical skills in engineering problems. The goal is to help students find

the right place for their work ethic, background and interests, to develop them to be successful in that place, and to encourage an environment of high expectations and success.

- A five year program combining engineering technology (2 years) and engineering (3 years) has been developed. This program is intended for students wanting to major in Engineering who have placed in MA 153 (Math 40 placements), but would be open to others. This program allows students to make immediate progress in a degree program and still have a clear path to an engineering degree.

Curricular modifications

- All programs modified their requirement to meet the IPFW General Education requirements and to be in compliance with ICHE's 120/60 credit hours policy.
- Throughout the college 9 new courses were created. Some of these were created due to new programs (e.g., ITC) and due to changes in our general education requirements.
- Several courses were modified (e.g., CS modified courses to be more project based) and technical electives added in Engineering.
- OLS added two more concentrations (physical therapy and medical school preparation) to assist students taking pre-requisites to enhance their ability to gain entrance into graduate school.
- MCET department has eliminated the two AS degrees in Architectural and Civil Engineering Technology and has developed a single 4-year Construction Engineering Technology. This will reduce costs associated with running these two AS programs (e.g., ABET costs) and meets ICHE's goal of eliminating AS programs on campuses like IPFW.
- The System Engineering MSE core course requirements was changed to allow students more flexibility in constructing their plans of study while maintaining systems engineering as an area of focus.

Curricular innovation

- An interdisciplinary honors course on leadership has been approved and will receive funding for development. This course will also meet a general education (GenEd) requirement and will involve faculty from OLS, A&S, and the Doermer School of Business.
- CS department developed and implemented a capstone senior design project.

Part 3 - Outstanding Individual Accomplishments

Highlight achievements of individual students, faculty, and staff

Achievements related to teaching:

- Dina Mansour-Cole, OLS, served as a FACET MACK Research Fellow 2013-14. There were only two selected in the state for this honor.
- Don Mueller, ENGR, IPFW Chapter Sigma Xi Teacher of the Year.

Achievement related to research

- Abdullah Eroglu, ENGR, IPFW Outstanding Research Award.

- Jin Soung Yoo, CS, has been selected as a Faculty Fellow for the 2014 Air Force Summer Faculty Fellowship Program (one of only six SFFP fellows at AFRL/Rome Research Site).
- Zhuming Bi, ENGR, & Jin Soung Yoo, CS, IPFW Chapter Sigma Xi Researcher of the Year.
- 14 TAP/TAA projects
- Awarded approximately \$670,000 in external funding.
- Dong Chen, Paul Lin, and Max Yen have filed a U.S. patent for an “Innovative Corrosion Sensor” through Purdue Research Foundation.

Achievement related to service

- Four Editors-in-Chief of national/international journals (H. Abu-Mulaweh, ENGR; K. McDonald, OLS; P. Ng, CS; M. Yen, Dean); three associate/section editors of journals (G. Petruska, CS, D. Liu, CS; L. Hite, OLS).
- E. Thompson, ENGR, received "The Outstanding Faculty Advisor Award" from the Society of Women Engineers (SWE) in 2013. This national award is bestowed upon a SWE collegiate leader who has made an outstanding contribution to an SWE collegiate section as an advisor.

Student Success

- Myat Kyaw, CEIT, received a summer internship with NASA. He was selected to participate in the NASA Ames Research Center opportunity, "Developing Biologically Inspired Machine Intelligence for Sustainability Base."
- James Schwartz, CEIT, was just announced as a Benjamin Gilman International Scholarship recipient. James is studying in the spring 2014 semester at Queensland University of Technology in Australia.
- 2LT Dillon Kelley and 2LT Lei Wang, both ME majors, graduated as Distinguished Military Graduates which means they were ranked nationally in the top 20% of the approximately 5,000 2014 ROTC commissioning officers.
- A provisional patent has been filed by A. Eroglu and three undergraduate electrical engineering students who graduated last year: Tom Wolf, Brenton Weaver, and Evan Steinmetz.
- Michael Kretschmer (BSME) published a paper in the Journal of Purdue Undergraduate Research (D. Mueller was the advisor of research project).

Part 4 - Community Connections and Engagement

Document significant examples

K-12 Outreach

- CS now offers several courses as dual credit (CS 11200, CS 11400/IST 14000, CS 16000).
- ETCS Outreach managed the following STEM activities for K-12 students: three state/regional programs, a regional competition, two career days, and two summer camps.

5,094 Indiana youth were served by these endeavors. A total of 1,438 youth were present at IPFW events. To accomplish this:

- 36 sponsors committed \$45,230 in cash & awards.
- A total of \$7,815 in program/event registration fees was collected.
- \$13,600 in grant money was obtained in 2013-2014.
- 18 partners, including 6 universities were involved.
- 170 community members volunteered.
- 169 IPFW staff/student/faculty volunteered (approximately half of these were students, faculty & staff from ETCS).

Community Involvement

- A group of 23 students & faculty of the CEIT department volunteered during the Big Event at the Fort Wayne Children's Zoo.
- Student organizations:
 - Computer Science Department Mobile Developer Club & Student Chapter of the Society of Human Resource Management (SHRM/OLS) held blood drives on campus.
 - The IPFW student chapter of the Society of Women Engineers organized the 10th annual Opportunity Banquet. The event creates an opportunity for corporations to meet IPFW engineering, technology, and computer science students as well as job seekers from the general public, allowing them to mingle with potential employers.
- Max Montesino, OLS, serves as President of the Hispanic Leadership Coalition of Northeast Indiana, Inc.
- City of Fort Wayne Diversity Advisory Council, Cedars HOPE Board of Directors, Co-facilitator of the Fort Wayne Multicultural Council, Community Coordinator and Trainer for Girl Scouts of Northern Indiana Michiana Council (OLS faculty).
- Information Analytics and Visualization (IAV) Center faculty and staff did over 30 presentations to outside groups (e.g., students, businesses, governmental representatives) to promote collaborative ties and to promote IPFW and the IAV Center.

Professional Development for the Region

- S. Ashur, ENGR sponsored and hosted with the ASCE Student Chapter at IPFW a workshop on Complete Streets in 2013.
- D. Mueller and C. Pomalaza-Ráez, ENGR, organized the Energy Systems Un-Conference, October 2013.
- Applied Leadership Series offered by Continuing Studies (OLS faculty).
- Training for Visit Fort Wayne! Employees (OLS faculty).
- Center of Excellence in Systems Engineering organized and hosted the Honda Lean Supplier Network conference to Fort Wayne, IN, in May 2014 with over 500 attendees.
- D. Cochran, CESE Director, various presentations on the lean enterprise for various organizations in the region.

Part 4 – Other Accomplishments

Scholarships

- Awarded \$133,716 in scholarships
 - First time award of the “Hal and Hope Broberg Endowed Leadership.”
 - First time award of the “Vicki and Dan Churchward Endowed Scholarship.”
- From the 2013 Profiles of Engineering & Engineering Technology Colleges by the ASEE:
 - IPFW Engineering Technology ranks 17th nationally, out of 102 colleges, for number enrolled. (18th in 2012)
 - IPFW Engineering Technology ranks 17th nationally, out of 103 colleges, for degrees awarded to women. (30th in 2012)
 - IPFW Engineering Technology ranks 14th nationally, out of 99 colleges, for bachelor degrees awarded. (17th in 2012)
- **The Department of Engineering** was once again recognized by *U.S. News and World Report* in its annual ranking of college programs (four years in a row). This year the department was ranked no. 64 among Best Undergraduate Engineering Programs.

Part 5 - AY 14-15 Goals

Specific goals/targets for parts 1, 2, & 4 for next year

Faculty positions

- Fill open positions within the college (e.g., OLS).
- Hire additional faculty (e.g., First Year Engineering program, CS, IT, MET).
- Convert visiting positions to full-time CL positions.

Enrollment and retention

- Increase graduate enrollment by 20% by 2016
- Increase retention by 10% of current rate
- Increase the number of women and minorities enrolled in the college by 10% of current enrollment of these groups.
- Increase enrollment by developing strategic partnerships for dual degree program.

Programs

- Gain ABET accreditation for BS in Information Systems.
- Gain ABET accreditation for BA in Information Systems.
- Gain ABET accreditation for BA in Computer Science.

Financial and Research

- Increase external funding from \$670,000 to \$1,000,000 by increasing the proposal submission to external funding agencies.
- Develop R&D initiatives by aligning ETCS’ strengths with the regional industry interests
- Increase scholarship dollars awarded to \$150,000 in 2015. Within 5 years, increase this amount to \$200,000.

- Develop an ETCS capital campaign plan.

Management

- Ensure the successful transition of the re-organization of Engineering into two departments. Ensure the functional autonomy of the freshmen engineering program.
- Continue working on budget realignment process within ETCS.

Conferences

- Host IL/IN Regional ASEE Conference in conjunction with the SWE opportunity banquet and Engineering Career Day for regional schools