

Purdue School of Engineering and Technology, IUPUI

Dean's Industry Advisory Council

June 6, 2013

Today's Agenda

3:30 p.m. **Meeting Convened (Vince Newsom, Chair)**

- Introduction of New Members

3:35 p.m. **Graduate Certificates (Jie Chen, Brian King)**

3:55 p.m. **Master in Electronic Warfare (Brian King)**

4:10 p.m. **Committee Updates**

- General Administration
- Research
- Diversity, Recruitment & Retention
- Student Services

4:40 p.m. **Break & Networking**

4:55 p.m. **Transfer To Success (Marilyn Mangin)**

5:05 p.m. **School Update (Dean Russomanno)**

5:30 p.m. **Wrap-Up, Adjourn and Networking**

New DIAC Members

Sam Reed

Senior Director
BSA LifeStructures

Mike Bellis

Engineering Director
Stanley Security Solutions

Graduate Certificate Programs

6/6/2013

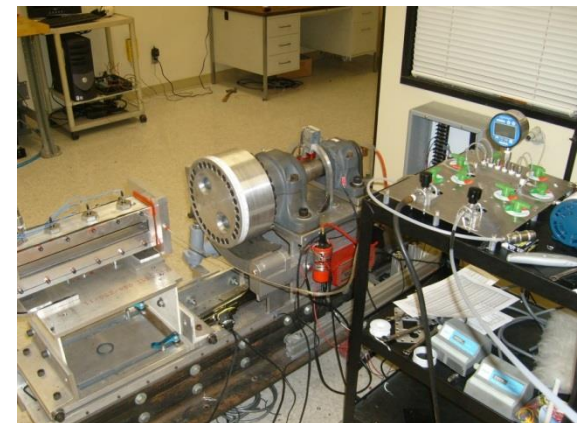
Jie Chen
Professor and Chair
Department of Mechanical Engineering
Indiana University-Purdue University Indianapolis

Program specific info:

<http://www.engr.iupui.edu/me>

Admission and application:

<http://www.engr.iupui.edu>



Department of Mechanical Engineering



- Purdue Degrees:
 - BSME and BSE degrees
 - BSEEN
 - Graduate certificates
 - MS, MSE, and MSME degrees
 - Five-year combined BSMS degrees
 - Ph.D. degree

Motivations

- Indiana industry needs a workforce with advanced knowledge on
 - HEV (Indiana Automotive Council)
 - Modeling and Simulation
 - Energy Management
 - Systems Engineering
- Many existing engineers need training, but do not wish to commit to an MS degree

Certificates

Programs

- Graduate Certificate in Computer-Aided Mechanical Engineering
- Graduate Certificate in Energy Management and Assessment
- Graduate Certificate in Hybrid Electric Vehicle Technology
- Graduate Certificate in Systems Engineering

Graduate Certificates

Qualification

Graduate School Admission

- ABET accredited Engineering BS degree
- GPA >3.0/4.0
- GRE (May be waived with working experience and supervisor recommendations)

Graduation

- 12 Credits (4 courses)
- GPA $>3.0/4.0$

Graduate Certificates

Special Features

- Certificate credits can be transferred into the MSME program
- Selected courses may be offered in two modes:
 - live lecture or
 - streaming video
- With special arrangement, can provide on-site assistance or classes for cohort programs

Computer-aided Engineering

- Special Areas
 - Computations of Mechanical Systems
 - Computations of Fluid and Thermal Systems
- Graduates will be able to
 - model mechanical components and assemblies
 - conduct system performance analysis
 - be familiar with commercial engineering analysis software packages, such as ANSYS, Fluent, Pro-E, ...

Energy Management and Assessment

- Special areas
 - Energy assessment
 - Energy management
- Graduates will be able to
 - create energy management plan
 - be prepared to be certified as an energy auditor
 - be manager for ISO 50001 certification

Graduate Certificates

Hybrid Electric Vehicle Technology

- Specific areas
 - Powertrain and components
 - Energy storage and energy conversion
 - Automotive control
- Graduates will be able to
 - do powertrain control
 - perform component modeling
 - develop energy management system

Graduate Certificates

Systems Engineering

- Specific areas
 - Life cycle management
 - System optimization and integration
 - Project management
 - System modeling and simulation
- Graduates will be able to
 - Coordinate engineers from different disciplines
 - Build systems with all issues in their life cycle considered

Graduate Certificates

Questions?

Digital Signal Processing Certificate

Brian King
Acting Chair of ECE
Dept. of Electrical & Computer
Engineering
Indiana University Purdue University
Indianapolis
briking@iupui.edu

DSP Certificate

- The objective of this graduate-certificate program in digital signal processing is to enable practicing engineers to acquire signal processing knowledge and advanced tools
- Digital signal processing (DSP) techniques and methodology have been widely employed in many application areas, ranging from consumer electronics to space exploration to medicine.
- This certificate program meets the needs of
 - mid-career and late-career engineers
 - engineers new to the digital signal processing area
 - engineering managers who need a background in digital signal processing.
- Once the student successfully completes the certificate, they can apply to the MSECE program; certificate courses with grades B or better can be transferred into the MSECE degree* (at most four courses can be transferred)

DSP Certificate Admissions Requirements/Procedures

In order to be admitted to the certificate program, students must have a **Bachelors degree from an accredited institution in Electrical and Computer Engineering with a recommended minimum GPA of 3.0 out of 4.0.** Applicants with non-engineering degrees, including Science, Mathematics, and Engineering Technology, may be required to take undergraduate electrical and computer engineering courses before admission to the program.

Students admitted directly to the Purdue University graduate program will not be considered for this certificate program, unless the student decides to leave the graduate program before completion. In that case, a petition must be submitted to the graduate committee to receive approval, provided that all the requirements of the certificate program are satisfied.

For **Information about admission** to the DSP certificate program, contact **Sherrie Tucker** stucker@iupui.edu

DSP Certificate Requirements

Four graduate courses (12 credit hours)

Two required courses and two electives

- **Two Required Courses**
 - ECE 538: Digital Signal Processing I
 - ECE 600: Random Variables and Signals
- **Two courses from the elective list**
- Students will be required to have a final cumulative grade point average of 3.0 or better to be awarded the certificate. The minimum grade that will be accepted in any single course is C.
- Applicants who have already earned credit for one or more of the equivalent courses from other institutions and other certificate programs may request to apply up to a maximum of three credits of these courses toward this certificate. Any waivers or substitutions have to be approved by the committee that oversees the program.

DSP Certificate Elective List

- EE 536: Introduction to Computational Intelligence
- EE 537: Multimedia Applications
- ECE 544: Digital Communications
- ECE 559: MOS VLSI Design
- ECE 580: Optimization Methods for Systems and Control
- ECE 595: Topics – Multimedia and Mobile Computing
- ECE 595: Topics – Advanced Digital Signal Processors
- ECE 602: Lumped System Theory
- ECE 608: Computational Models and Methods
- ECE 626: Adaptive Signal Processing
- ECE 629: Introduction to Neural Networks
- ECE 637: Digital Image Proc. I
- ECE 645: Estimation Theory
- ECE 648: Digital Signal Proc. II
- MATH 511: Linear Algebra with Applications

Note: Either ECE 602 or ECE 608 can be applied to the certificate, but not both

DSP Certificate More Details

Maximum time for completion is three years.

- Most students enrolled in this program will be part-time students, employed full-time. Thus three years may be needed for the completion of all courses if students take one course per semester, assuming no significant breaks (i.e. more than two semesters).

Number of credit hours taken prior to admission to the certificate program that may be counted to completion of the certificate program:

- Up to 6 equivalent credit hours including 3 hours from another institution will be counted towards the certificate. The rest of the courses must be completed at IUPUI within three-year period from the time of admission.

MSECE Degree with an Electronic Warfare Emphasis

Electrical and Computer Engineering
Department

Purdue School of Engineering & Technology
Indiana University Purdue University
Indianapolis

Contact person: Brian King
briking@iupui.edu

Background

- Members IUPUI, Naval Postgraduate School (NPS), Purdue University (PUWL)
- The degree will be granted by IUPUI.
- The program will be constructed using set of courses from all three institutions.
- IUPUI (ECE) will deliver courses using hybrid approach delivering courses near Crane, such as on the Indiana University Bloomington campus.
- Naval Postgraduate School will use their distance learning courses
- Purdue (West Lafayette) will use their distance learning EPE program

Framework

The degree will be granted by IUPUI. The MSECE degree 30 graduate (semester) credits

We will utilize a cohort system. Eleven courses have been identified for the program. Upon successful completion, students will receive the MSECE degree from IUPUI and a graduate certificate from Naval Postgraduate School in Electronic Warfare.

Six courses will be taught by IUPUI. We will deliver their courses using hybrid. Most courses will be delivered to a site near Crane, possibly the Bloomington area. We will explore the use of taping the instruction to handle situations when students are unable to make the class time due to other commitments. **One course will be delivered by Purdue University West Lafayette** via their EPE distance learning program. **Four (quarter) courses will be delivered by Naval Postgraduate School.** *The courses selected will allow the student to earn a certificate from NPS in the EW emphasis.*

Program Requirements

- IUPUI will apply the same rules of the MSECE degree to this program. A Handbook discussing the requirements of this program will be completed and sent to all students in summer
- The degree requirements are 30 graduate credits. At this time, there will be only one option - **Non-thesis option**. The ten courses will be required but students will be provided a procedure for appealing to request to take an alternate course.
- **Primary area:** the primary area for the MSECE degree with EW emphasis will be *Communication/Signal Processing area*.
- **Breadth Requirement (core courses):** Students will be required to take the core course ECE60000 (IUPUI). A second core course ECE 60200 will be offered by IUPUI to meet the Breadth Requirement.
- **Depth Requirement in Primary:** Students completing the ten outlined courses will satisfy the Depth Requirement.
- **Math Content Requirement:** The required course ECE 59500 Fundamentals of Linear Systems will satisfy the Math Content Requirement

Curriculum

IUPUI

- ECE 53800 - Digital Signal Processing I (3)
- ECE 54400: Introduction to Digital Communications (3)
- ECE 59500 Fundamentals of Linear Systems (3) *math content course*
- ECE 60000 Random Variables and Signals (3) *primary core class*
- ECE 60200 Lumped System Theory (3) *second core class*
- ECE 64500 - Estimation Theory (3)

PUWL

- ECE 67800 - Radar Engineering (3)

NPS

- EC3600- Antennas and Propagation 4 quarter credits
- EC3630 Radiowave Propagation 4 quarter credits
- EC3700 Joint Network-Enabled Electronic Warfare 4 quarter credits
- EC4680: Joint Network-enabled Electronic Warfare II 4 quarter credits

All courses listed here are semester credit hours, except where quarter credit hours are noted. 4.5 quarter credits is equivalent to 3 semester credits

Course Offerings

- We will offer a course once per semester (or quarter)
 - That means there will be one course offered in Fall, one course offered in Spring and one course offered in Summer
- IUPUI intends to offer courses that will be offered at IUB. We will videotape courses to allow students to view lectures at later times.
- NPS and PUWL will use their distance learning course delivery systems.

Curriculum Offerings

- **Fall 2012** (IUPUI) ECE 59500
Fundamentals of Linear Systems
in Engineering (3) math content
course
- **Spring 2013** (IUPUI) ECE 53800
- Digital Signal Processing I (3)
- **Summer 2013** (NPS) Ec3600
Antennas and Propagation
- **Fall 2013** (IUPUI) ECE 60000
Random Variables and Signals
(3) Primary core class
- **Spring 2014** (IUPUI) ECE
54400: Introduction to Digital
Communications (3)
- **Summer 2014** Break - No
Courses offered
- **Fall 2014** (IUPUI) ECE 60200
Lumped System Theory (3)
second core class
- **Spring 2015** (Purdue West
Lafayette) ECE 67800 - Radar
Engineering (3)
- **Summer 2015** (NPS) EC3700
Joint Network-Enabled Electronic
Warfare
- **Fall 2015** (IUPUI) ECE 64500 -
Estimation Theory (3)
- **Winter 2016** (NPS) EC3630
Radiowave Propagation
- **Spring 2016** (NPS) EC4680 Joint
Network-enabled Electronic
Warfare II

Electronic Warfare (EW) Engineer Graduate Certificate Program

***A Certificate program from Naval Postgraduate
School see***

***<http://www.nps.edu/Academics/Schools/GSEAS/Departments/ECE/Academics/Certificates.html#Certificates>
Description***

Required courses are

- EC3600- Antennas and Propagation
- EC3630 Radiowave Propagation
- EC3700 Joint Network-Enabled Electronic Warfare

QUESTIONS??

Committee Updates

- General Administration
- Research
- Diversity, Recruitment & Retention
- Student Services

General & Administration Committee Update

- Committee:
 - Frank St. John - Chairman
 - Joe Abella
 - Joe Bentley
 - Stephen Hundley
 - Cary Marston
 - Malcolm Thomas
 - Vince Newsom-Past Chairman
- Conduct monthly teleconference meetings
 - 5 held this year so far
 - Next meeting is Wednesday, June 19th at 8:00am

- Priorities

1. DIAC Member Composition
2. Develop Regional DIAC Members
3. Revise DIAC Membership Guidelines
4. Promote DIAC Link to Department Advisory Boards and Alumni Board as Deemed Appropriate
5. Select Next DIAC Chairman
6. Encourage Preparation of an “Elevator Speech” from All of Us

- DIAC Member Composition

- Organizations

- Diversity (firm size, type, region, technology, cluster/technology intensity)
 - Organizations that hire IUPUI graduates & interns (now and future)
 - Organizations who employ the central Indiana workforce (now and future)
 - Firms whose research and development interest blend with IUPUI
 - Organizations considered leaders in their industries
 - Individuals and organizations that bring strategic interests to the school
 - Organizations that support state initiatives (Life Science, Transportation, & Logistics and Advanced Manufacturing)

- Members

- Leaders in their companies and community
 - Influential within their organization
 - A diverse membership that brings insight and different points of view to the School
 - Members who are engaged and who demonstrate a personal commitment to the School
 - Members that may be affiliated with the school already (alumni, etc.)
 - Willing to advocate for the School within their companies and communities

- Develop Regional DIAC Members
 - 13,000 Initial Names
 - Foundation & Alumni Office Assisting
 - 10 Candidates Desired
- Revised DIAC Membership Guidelines
 - Retired Former Members
 - Members no Longer Associated With a Company
 - Voluntary Financial Contributions

- Promote DIAC Link to Department Advisory Boards and Alumni Board as Deemed Appropriate
 - 16 Advisory Boards
 - Meet at Various Intervals
 - Leadership Structure Varies
 - Update Handout for Joint Meeting in the Fall

- Select Next DIAC Chairman
 - Candidates and Term Limits Being Evaluated
- Encourage Preparation of an “Elevator Speech” from All of Us
 - Why Your Company Employs and/or Works With IUPUI Students and Faculty

- Wayne Eckerle
- Bernie Sepaniak
- Jorge Schreiber
- Joe Kitterman
- Bill Wylam
- Jim Wheeler
- Steve Wellborn
- Razi Nalim

*Primarily Supports Associate Dean for Graduate
School and Research*

- June Meeting Planned (June 25 at 4:00?)
- Topics for Discussion
 - Dean Russomanno requests a process to increase faculty/industry interaction
 - white paper with guidelines and working principles
 - Establish a forum for faculty to interface with industrial representatives
 - Develop a list of faculty interested in working with industry in one form or another
 - Summer Industry Internships for Faculty

Committee Goals

- Increase the number of opportunities for student interaction with discipline professionals (Career Forums, Coop & Intern Opportunities, Resume Reviews & Mock Job Interviews)
- Increase the number of opportunities for internships or recruitment with DIAC member firms
- Make proposals on how to improve “marketability” and employment opportunities for students with 2.6 – 2.9 GPAs
- Make proposals and implement a more robust process for bringing together students and potential employers in the areas outside of Engineering & Engineering Technology.
- Coordinate efforts with DIAC Diversity, Recruitment & retention Committees

- Membership
 - Jill Mendoza – i.d.o. Inc.
 - Bruce Wylam – Hunt Construction
 - Bill Klenk – Allison Transmission
 - Mike Martin - Lilly
 - Dale Jacobs – BSA LifeStructures
 - Souhel Stanbouly – Carrier
 - Terri Talbert–Hatch – Asst. Dean Student Services
 - Jennifer Williams – E&T Director of Career Services

- Membership Database Tool
 - Requirements defined
 - Initial meeting with Computer Network Services
 - MS SharePoint initially chosen as platform
 - Prototype Development started March 8th
 - SharePoint prototype exposed some limitations in ability to access
 - Simpler Solution Based on Common Process is now underway
 - Target for Definition is End of June
 - Implementation Target is End of August

- Multiple Points of Contact for Industry Companies
 - Have received input from DIAC companies (15 companies solicited; 52 individuals)
 - Except Roche, Allison Transmission, AIT Labs & Cummins
 - Joe needs to follow-up
 - Have updated rosters with new information obtained so far
 - Received four HR contacts and three additional contacts
 - Provided four HR contacts to Career Services
 - Add additional contact names into new SharePoint Tool when available
 - Next steps
 - Update e-mail to make instructions more clear
 - Identify additional candidate companies from Complete List of IAB members and solicit additional contacts from them

DIAC Student Support Committee

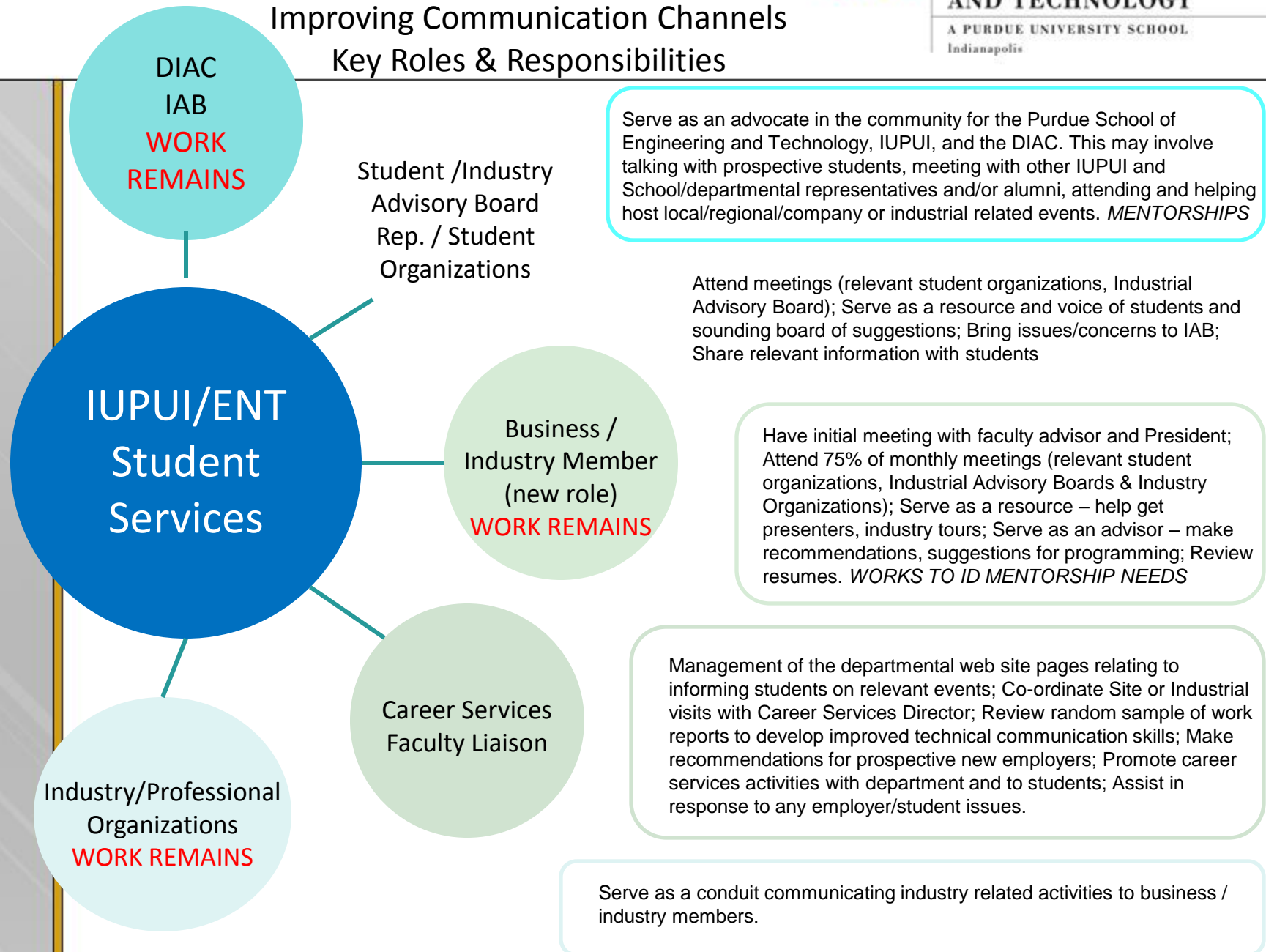
Improving Communication Channels

Key Roles & Responsibilities



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A PURDUE UNIVERSITY SCHOOL
Indianapolis



Committee's Unfinished Business Action Items

- Make Recommendations on how to improve “marketability” and employment opportunities for students with 2.6-2.9 GPA's.
- Explore areas of opportunity where DIAC Members can get involved through mentorships and other student events.
- Recommend a set of expectations for DIAC Member involvement in student activities.
- Coordinate efforts with DIAC Diversity, Recruitment & Retention Committees.

2013 Goals & Activities

Kevin Zaletel

- Membership
 - Kevin Zaletel, *Chairman* – UPS
 - Clayton Nicholas – IUPUI
 - Chris O’Keefe – Ernie Greene Industries
 - Terri Talbert–Hatch – Asst. Dean Student Services
- Frank St. John, *Past Chairman* – Applied Engineering Services

- DRR Meeting 2/26/13 with Student Organizations
- 2013 Goals
 - Continue to work with Student Organizations
 - What are their needs?
 - How can we better support them?
 - What is their mission and are they meeting their goals?
 - Continuity of student organizations
 - Business Contacts for NSBE, SHPE (need contact for SWE)
- Spring Student Organization recognition event

- NSBE National Conference - Indianapolis
- SHPE National Conference
- Support Schools Diversity Initiatives
 - Coop / Internship opportunities
 - Capstone Project
- Develop Strategies for Recruiting Diverse Students
 - Power Camp
 - MEAP
 - Provide feedback and recommendations

Break & Networking

Transfer 2 Success

Marilyn Mangin
Director of Student Recruitment

Dean's Report to the DIAC

Purdue School of Engineering and
Technology, IUPUI

June 6, 2013

IEDC Grant

- The Indiana Economic Development Corporation (IEDC) announced plans to invest \$1.15 million in the motorsports engineering program at IUPUI to develop a partnership with Dallara to conduct basic and applied research involving dynamic vehicle simulation.



U.S. News Top 100



Best Engineering Schools

Ranked in 2013 | [Best Engineering Schools Rankings Methodology](#)

Rank	School name	Tuition	Total graduate engineering enrollment
#97	Indiana University-Purdue University-Indianapolis Indianapolis, IN	\$352 per credit (in-state, full-time); \$1,007 per credit (out-of-state, full-time)	229
#97	Louisiana State University-Baton Rouge Baton Rouge, LA	\$5,875 per year (in-state, full-time); \$21,263 per year (out-of-state, full-time)	636
#97	Texas Tech University (Whitacre) Lubbock, TX	\$253 per credit (in-state, full-time); \$604 per credit (out-of-state, full-time)	725
#97	University of Kansas Lawrence, KS	\$330 per credit (in-state, full-time); \$772 per credit (out-of-state, full-time)	593

Initiative

3.4. Increase graduate program rankings

Action

1. Improve communication and marketing of research and creative activity accomplishments of our faculty and students to peer and aspirational institutions and employers.
2. Increase mean GRE scores.
3. Increase the number of applicants thereby decreasing the acceptance rate.
4. Increase annual total research expenditures.
5. Increase average research expenditures per faculty member.
6. Increase number of Ph.D. students advised per faculty member.
7. Increase publications in peer-reviewed journals and top-tier conferences dedicated to research.
8. Enhance assessment and evaluation processes for all graduate programs



**SCIENCE AND ENGINEERING
LABORATORY BUILDING**
Indiana University Purdue University Indianapolis
10000

Architect: HGA	Architect/Engineer: HGA	General Contractor: J.C. Rappaport Construction
MEP Engineering: TBC Engineering	Structural Design: HGA	Interior Design: HGA
Construction Management: HGA	Interior Design: HGA	Interior Design: HGA
Lab Design: HGA	Lab Design: HGA	Lab Design: HGA

**SIDEWALK
CLOSED**

Science Building

Celebrating an action-packed year

We grew, we innovated, we achieved great things. Check out the 2012-2013 year in review. [Read more...](#)

INFO FOR...

[FUTURE STUDENTS](#)[CURRENT STUDENTS](#)[ALUMNI & FRIENDS](#)[INDUSTRY](#)[COMMUNITY](#)[FACULTY & STAFF](#)[MEDIA](#)

NEWS



[\\$1.15 Million Grant Fuels Racing Simulator, Accelerating State's Motorsports Economic Development Initiatives](#)
5/24/2013

The Indiana Economic Development Corporation (IEDC) announced to invest \$1.15 million in the motorsports engineering program at the Purdue School of Engineering and Technology to develop a partnership with Dallara to conduct basic and applied research involving dynamic vehicle simulation. The project will advance motorsports engineering techniques and motorsports related economic development opportunities for the state of Indiana.

EVENTS

Jul
10

E&T Diploma Pickup Party
4:30 pm

Oct
9

Career Connection Career Fair
10:00 am

[More Events »](#)

Request

Leadership Changes

- Wanda Worley, Associate Professor of Technology Leadership and Communication, will be appointed Associate Dean for Academic Affairs and Undergraduate Programs effective July 1, 2013 (she served as interim during the 2012-2013 academic year)
- Razi Nalim, Associate Dean for Research and Graduate Programs, will be on sabbatical for the 2013-2014 academic year
- Deb Burns, Associate Professor of Music and Arts Technology, will serve as the Interim Dean for Research as of July 1
- John Schild, Associate Professor of Biomedical Engineering, will serve as the Interim Dean for Graduate Programs as of July 1
- Rule of Thumb: John will handle “all things Purdue” while Deb will handle other matters (e.g., research grants and contracts fall under IU and will be Deb’s responsibility)

**Purdue School of Engineering &
Technology, IUPUI, USA**

University of Pune, Maharashtra, India

Industry Partner:

Cummins, Inc., Columbus, IN & Pune, India

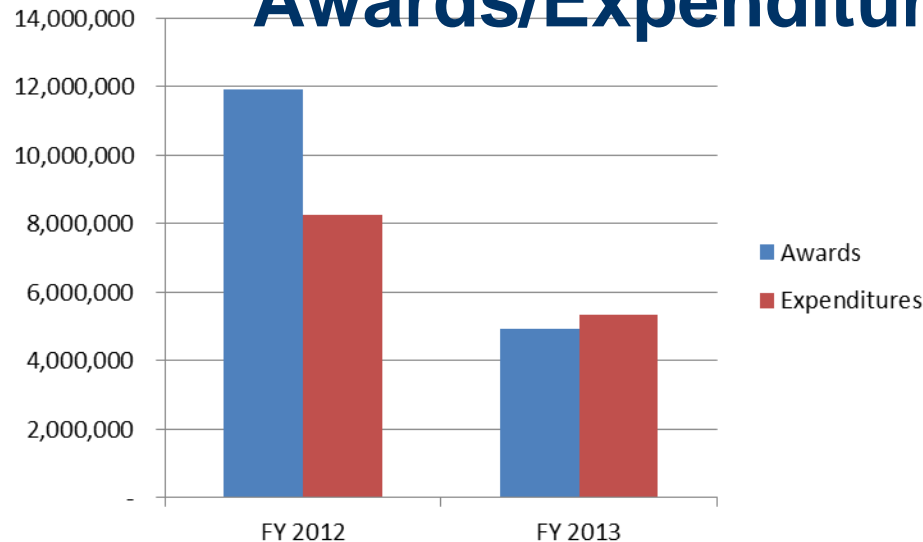
- ***Dr. Wayne Eckerle, VP Research & Technology***
- ***Mr. Paul Sowerby, Chief Technical Officer, Cummins India***

Expect decision by the end of June!

Engineering Professionalism Certificate

- 120 hour legislative mandate
- 30 hour common core
- Start curriculum analysis with Biomedical Engineering
- DIAC ad hoc subcommittee?

Awards/Expenditures



- FY 2013

- Data through May

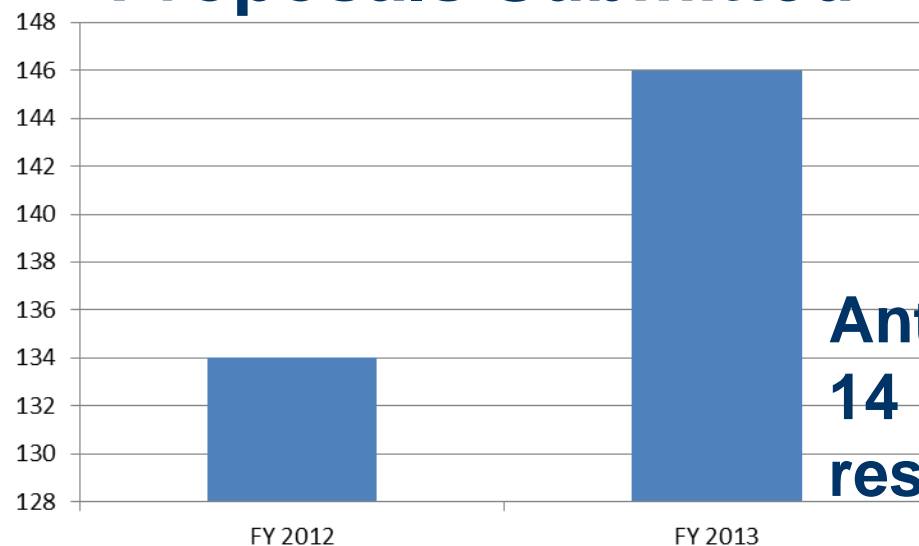
- NIH recently announced that its funding levels during the sequester period will be at the 10% level

- E&T has 3 NIH proposals scored at 3%, 3%, and 7%

- Excludes \$1.15M IEDC grant

- Excludes some notifications of selection for award

Proposals Submitted



Anticipate great start to FY 14 or great end to FY 13 in research awards!

IUPUI

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Indianapolis



Important Dates 2013

- March 7, Thursday: DIAC Meeting, 3:30 – 5:30 p.m.
- *April 26, Friday: School of Engineering and Technology Honors Convocation & Dinner, at The Conrad*
- June 6, Thursday: DIAC Meeting, 3:30 – 5:30 p.m.
- *September 16, Monday Afternoon: Alumni Golf Outing*
- October 18, Friday: Joint Board of Advisors Retreat, 12:00 p.m. – 4:00 p.m.
- December 5, Thursday: DIAC Meeting, 3:30 – 5:30 p.m.

***Thank You For Your Contributions
To Our School!***