

E&T Mentoring Academy
Supporting Teaching Excellence and Scholarship

School representatives:

Debra S. Burns ([Faculty Coordinator](#)), Professor, Music and Arts Technology

Karen Alfrey, Clinical Assoc. Professor, Biomedical Engineering

Charles Feldhaus, Professor, Technology, Leadership, Communication

Eugenia Fernandez, Assoc. Professor, Computer Information Graphics Technology

Paul Salama, Professor, Electrical and Computer Engineering

Contact: Debra S. Burns, desburns@iupui.edu, 317-278-2014

Abstract

One main focus of the School of Engineering and Technology's current strategic plan is to "excel in the delivery of instruction, the scholarship of teaching and learning . . . to support extraordinary student success." And while the School of Engineering and Technology has a long history of teaching excellence most mentorship activities focus on supporting faculty seeking excellence in research/discovery. According to the 2015 campus faculty professional development satisfaction survey over a third (34.5%) of tenured and tenure-track E & T faculty, a quarter (25%) of full-time non-tenure track faculty, and two-thirds (67%) of part-time and adjunct faculty rated their satisfaction with professional development opportunities related to teaching as either only "somewhat satisfied" or "not satisfied". Furthermore, approximately 40% of E & T non-tenure track and tenure track faculty are not satisfied or only somewhat satisfied with available mentoring opportunities. Thus, it is apparent there is a need to develop an intentional, sustainable program focused on developing faculty capacity for scholarship in teaching while providing mentoring and leadership opportunities for mid-career faculty. This proposal describes the structure and programming to provide a robust climate for the testing, integration, and dissemination of pedagogical practices in engineering and technology. The proposed programming leverages available campus resources and expertise, as well as a strengthening of current programming. Six Engineering and Technology faculty have agreed to be paired with faculty interested in focusing their scholarship in teaching and learning. Individual mentoring sessions, tailored to the mentees' needs, will occur throughout the academic year. Monthly workshops (currently called "Lunch & Learn") will cover discipline-specific topics related to pedagogy and learning. The program will be assessed on three different levels: participant satisfaction, assessment of teaching scholarship, and adoption of best practices. Our goal is to create a culture within the School that explicitly values innovative student-centered teaching and related dissemination.

Purpose and Goals

The School of Engineering and Technology has approximately 120 full time and over 200 part time faculty members with a strong record of teaching excellence, particularly in the Technology programs. In recent years, however, shifts in school and campus culture have led to an increased emphasis on research scholarship as the central pillar of faculty excellence. Although faculty agree that teaching is an important part of E & T's mission, there has been a decrease in the number of faculty members going up for tenure on Excellence in Teaching Scholarship, while the number going up on Excellence in Research has increased (particularly on the Technology side; historically, the vast majority of Engineering faculty have sought promotion and/or tenure based on their research excellence).

The experience of the E & T faculty is especially important when considering the ongoing forces requiring faculty to engage in research while also attending to student learning outcomes based on accreditation standards, addressing student retention and persistence to degree, and increasing economic, social, and cultural diversity within the student body (Felder, Brent, & Prince, 2011). Advances in instructional technology, cognitive science, and incentives in federal funding for educational research further emphasize the need to support faculty in developing a culture of teaching and learning scholarship (Felder, Brent, & Prince, 2011).

The proposed mentoring program will provide support to faculty wishing to improve their teaching effectiveness and scholarship, thereby helping to ensure that the School of Engineering and Technology remains mindful of, and effective in, its teaching mission even in the face of an increased emphasis on research excellence.

Project goal: Improve the quality, scholarship, and effective documentation of teaching in the School of Engineering and Technology through workshops and peer mentoring.

Benefits: The following E&T faculty will particularly benefit from this project:

- Those going up for promotion and/or tenure looking for advice on documenting effective teaching
- Those interested in developing or improving their scholarship of teaching
- Those open to experimenting in the classroom with new pedagogical methods and best practices
- Adjunct faculty seeking community support from other faculty with a strong teaching interest

Desired Outcomes: We hope to achieve the following outcomes through this mentoring initiative:

- Increase faculty satisfaction with professional development opportunities in the school related to teaching and learning
- Provide guidance in how to prepare a dossier that clearly articulates a teaching philosophy and documents teaching effectiveness
- Increase the adoption of teaching best practices within the STEM context
- Increase scholarship of teaching among faculty mentees
- Connect E&T faculty to campus resources and assess practices that support effective teaching (SERI, FACET, CTL)

Methodology/Intervention

The proposed mentoring program adopts best practices and recommendations based on a review of engineering instructional development programs (Felder et al., 2011). The program includes a combination of workshops and individual mentoring while leveraging available resources within the school and campus. The result is a program of tailored mentoring/faculty development activities that considers the faculty members' career stage and developmental interests.

Mentors. Six current faculty members have agreed to be trained and serve as mentors during the first academic year of the program:

- Joey Wallace, Associate Professor, Department of Biomedical Engineering
- Rob Wolter, Senior Lecturer, Department of Technology Leadership and Communication,
- Maher Rizkalla, Professor, Department of Electrical and Computer Engineering
- Barb Christie, Associate Professor, Department of Engineering Technology
- Rob Elliott, Lecturer, Department of Computer, Information, and Graphic Technology
- Alan Jones, Associate Professor, Department of Mechanical Engineering

These faculty members have a long history of engaging in the Scholarship of Teaching and Learning and have earned multiple teaching awards, both internal school and campus as well as external teaching awards.

The planning committee and mentors will meet in July 2017 to develop the application process for potential mentees.

Mentee Selection:

Mentees can be any full-time faculty on the tenure or non-tenure track. Mentees will be identified by department chairs in each of the 6 departments within the Purdue School of Engineering and Technology that align with the six mentors previously listed in this document. Departments will be provided with application forms that will be developed with input from ET faculty who have been promoted based on teaching and scholarship. The application forms will include:

1. Project goals, benefits, and desired outcomes of the ET Mentoring Academy taken from this document;
2. A brief biography and CV
3. A statement from applicants describing why they wish to participate in the ET Mentoring Academy and how their participation will help the academy and school reach the stated project goals, benefits, and desired outcomes;
4. A statement from applicants detailing how they will data for the assessment plan contained in this document;
5. A statement from applicants describing how they will contribute to sustain the ET Mentoring Academy after they have completed the program.

Mentor training:

Mentor training will be provided by Dr. Charles Feldhaus who was recently promoted to professor on excellence in the scholarship of teaching and learning. Dr. Feldhaus has developed OLS 58200: Coaching and Mentoring in Organizations as a core graduate course in the MS in Technology degree program for students pursuing the Human Resource Development track. *The Mentor's Guide* by Lois Zachary (2012) is one of the course textbooks for this course and Dr. Feldhaus will be using concepts from that text and various assessments and exercises from a variety of sources to train ET Mentoring Academy mentors. Dr. Feldhaus recently published an article in the International Journal of Mentoring and Coaching Education on the Principles of Adult Mentoring Inventory instrument which will also be introduced during mentor training (Feldhaus & Bentrem, 2015).

Mentor/Mentee Matching:

Dyads will be created based on mentee identified gaps and mentor relevant expertise. Specifically, mentors will complete the Mentor Readiness Inventory (Zachary, 2012). Responses to the inventory will be compared to mentee applications. Mentors and Mentees will be consulted regarding possible pairings within the first 2 weeks of the program.

Mentor/Mentee Dyad Meetings:

Mentor/mentee dyads will meet at least once per month throughout the academic year. Initial meetings will include assessment of needs, goal setting, the creation of a development plan (Zachary Mentoring Agreement, 2012). Subsequent meetings may include teaching observations, discussion of the integration of workshop topics into teaching, teaching supervision/reflection, and a review of scholarship activities including potential funding opportunities.

School wide workshop programming

The Associate Dean for Faculty Affairs and Undergraduate Studies currently sponsors monthly workshops (Lunch n' Learn) throughout the year. The topics for the academic year will now focus on discipline-specific trends and best practices with regards to teaching and learning. We have consulted with the Associate Dean and integrated topics recommended by Felder, Brent, & Prince (2011).

Lunch n' Learn Workshop Schedule

August – New faculty orientation

September – Course design

October – Assessment

November – Motivating Students/Classroom management/academic misconduct

January - Promotion and tenure

February – Cognitive science and modern theories of learning and teaching

March – Student Diversity/Cultural Competence

April - Problem-based learning

Campus Programming and Resources

Mentors will also work with mentees to take advantage of the various campus-level programming and support provided by the following:

Center for Teaching and Learning (CTL)

“The vision of the IUPUI Center for Teaching and Learning is to create an internationally renowned model of collaboration with schools and departments to promote a culture of excellence in teaching and learning. The CTL advances IUPUI’s commitment to teaching excellence by collaborating with faculty, schools, and departments to enhance student learning and to support faculty development at our diverse urban research institution.”

STEM Education Innovation and Research Institute (SEIRI)

The IUPUI STEM Education Innovation and Research Institute strives “to be a...recognized institute of excellence for STEM education research and innovation, contributing to the advancement of STEM education...”

Faculty Academy on Excellence in Teaching (FACET)

“FACET is a...community of distinguished Indiana University faculty who are dedicated to and recognized for excellence in teaching and learning. FACET advocates pedagogical innovation, inspires growth and reflection, cultivates the Scholarship of Teaching and Learning, and fosters personal renewal in the commitment to student learning.”

Usage and satisfaction of campus resources will be assessed at the end of the program. (See Assessment).

Budget

The budget requested will be utilized to fund:

- 6 Mentees who will allocate 6 hours per semester X 2 = 12 hours per academic year to
 - develop plans for improvement/success
 - participate in group based mentoring meetings
 - meet with mentors individually
 - Cost $\$500 \times 6 \times 2 = \6000

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 - participate in group based mentoring meetings
 - meet with mentees individually
 - Cost \$500x6x2= \$6000
- Faculty coordinator for the mentoring program - \$4000 (summer funding). 15% time. The faculty coordinator is responsible for the organization and implementation of the mentoring program. Organization and implementation includes providing initial scheduling for mentor training, facilitating mentor/mentee pairing, and overseeing the graduate assistant, writing mid-year and final reports, data analysis and lead on any manuscripts.
- Graduate Assistant: Will be responsible for data collection (distribution and collection of data collection instruments) entering data into database, and preliminary data analysis.
- External speaker (Expert in Faculty Professional Development) - \$2000
- Total - \$20,000 (\$10,000 from campus, \$12,000 match/cost share from School).

		<u>Request</u>	<u>Cost Share</u>	<u>TOTAL</u>
<u>PERSONNEL</u>				
<u>Salaries</u>				
Faculty Coordinator			\$3,151	\$3,151
Graduate Student (1)			\$2,000	\$2,000
Mentees (6)	500	\$2,000	\$4,000	\$6,000
Mentees (6)	500	\$6,000	\$-	\$6,000
<u>Sub-total Salaries</u>		<u>\$8,000</u>	<u>\$9,151</u>	<u>\$17,151</u>
<u>Benefits</u>				
			Cost Share	
Summer	0.2695		\$849	\$849
<u>Sub-total Benefits</u>			<u>\$849</u>	<u>\$849</u>
<u>Total Salary and Benefits</u>		<u>\$8,000</u>	<u>\$10,000</u>	<u>\$18,000</u>
<u>SUPPLIES/OTHER DIRECT COSTS</u>				
External Speaker		\$2,000		\$2,000
Lunch and Learn			\$2,000	\$2,000
<u>Total Supplies/Other Direct</u>		<u>\$2,000</u>	<u>\$2,000</u>	<u>\$4,000</u>
<u>TOTAL Project COSTS</u>		<u>\$10,000</u>	<u>\$12,000</u>	<u>\$22,000</u>

Sustainability

- General goal of our efforts is to encourage scholarship of teaching within the School even among research faculty
- This will take a few years, and thus our efforts must be sustainable over the long term.
- Strategy:
 - Grant mentees credit/acknowledgement in their tenure and/or promotion dossier for participating in this program
 - Increase faculty attendance and participation in school and campus workshops on scholarship of teaching
 - Provide credit/acknowledgement to mentors for participation

- Bring external speakers to explain the importance of scholarship of teaching and its positive effect on research
- Create a school-wide culture that promotes scholarship of teaching that emphasizes:
 - mentoring is a collaboration
 - knowledge is shared in a two-way process between mentor and mentee
 - mentee and mentor are equally active partners in achieving common goals

Assessment Plan

Short-Term Quantitative Evaluations

Mentor/Mentee goal-setting:

At the initial meeting, each Mentor/Mentee pair will complete the Mentoring Agreement (Zachary) to set goals and expectations.

Progress reviews:

Four times over the course of the year (mid-fall semester, end of fall semester, mid-spring semester, end of spring semester), the Mentor will fill out the “Mentee Progress” review and discuss with the Mentee. (Note: Item 11 on this form can be tailored to any specific goals agreed upon by mentor and mentee that are not otherwise addressed on the progress report.)

We have set the following quantitative goals for mentee progress:

- By the end of the first semester, at least 60% of mentees will be rated at least “Good” in their progress on items 6, 7, 8, and 10.
- By the end of the second semester, all mentees will be rated at least “Very Good” on at least three of those items.

Mentor/Mentee end-of-project evaluations:

At the end of the year, Mentors and Mentees will fill out the “Mentor Evaluation of Program” and “Mentee Evaluation of Program” forms. In addition, we will follow up with mentors and mentees one year later about any subsequent teaching innovations and/or scholarship that have developed from this project. We have set the following quantitative goals for the *evaluation of the program* (i.e. mentor/mentee satisfaction) and the *outcomes of the program* (i.e. improvements in teaching and scholarship of teaching resulting from this program):

- Each mentor and mentee will rate at least 85% of the evaluation items as “agree” or “strongly agree”.
- At the end of the first year, 100% of mentees will have implemented at least one new innovative teaching strategy or best practice into at least one of their classes.
- One year post program, at least 60% of mentees will have submitted a publication or conference abstract related to scholarship of teaching and learning.

Qualitative assessment: We will also interview mentors and mentees (separately) to obtain qualitative perspectives about the meaningfulness of the experience and satisfaction of available campus and school resources. Note: According to 2015-2016 CTL data, 117 School of Engineering and Technology faculty consulted with CTL staff 411 times. 110 E & T faculty attended a total of 143 CTL events. While the E & T faculty have some of the highest rates of CTL usage, satisfaction data from events or programs are anonymous thus the perspectives regarding the usefulness and applicability to E & T faculty specifically is unclear.

References

- Felder, R. M., Brent, R., & Prince, M. J. (2011). Engineering instructional development: Programs, best practices, and recommendations. *Journal of Engineering Education*, 100(1), 89-122. doi:10.1002/j.2168-9830.2011.tb00005.x
- Feldhaus, C. R., & Bentrem, K. (2015). STEM mentoring and the use of the principles of adult mentoring inventory. *Journal of Mentoring and Coaching*, 4(3), 1-23.
- Zachary, L. J. (2012). *The Mentor's Guide: Facilitating Effective Learning Relationships* (2nd ed.). San Francisco, CA: Jossey-Bass.



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**SCHOOL OF ENGINEERING
AND TECHNOLOGY**

INDIANA UNIVERSITY–PURDUE UNIVERSITY

Indianapolis

February 13, 2017

IUPUI Mentoring Academy Review Committee,

I fully support the proposed mentoring program focused on the Scholarship of Teaching and Learning for the School of Engineering and Technology faculty. Dr. Burns and her colleagues describe a program derived from best practices in faculty and instructional development that considers individual faculty needs in the context of a rapidly expanding student diversity with evolving educational needs. They have also leveraged existing School and campus resources to provide an enriching experience for all participants.

The School of Engineering and Technology will provide the necessary administrative support and resources to assure its success. We will also provide \$10,000 in matching funds to support program participants and activities.

Thank you for your consideration.

Sincerely,

Sincerely,

David J. Russomanno, Ph.D.

Dean, Purdue School of Engineering and Technology, IUPUI