Professional development opportunity

Distance Education Professional Development Travel Award — applications due March 30, 2016

The Kansas State University Global Campus and the College of Engineering have teamed up to provide professional development opportunities through a travel award for two engineering faculty members to attend a conference specializing in teaching distance education.

Purpose: To enhance and improve teaching of online engineering courses by providing the opportunity for learning about state-of-the-art tools, software and techniques, and for experiencing best practice networking.

Travel award: To cover conference expenses up to $2,000 per awardee for an approved distance education-related conference. Award includes registration, hotel, meals and travel costs such as airfare.

More information is available on the ERGP website at engg.ksu.edu/ergp/development/engg-dce_travel_award.html. For questions, contact Ellen Stauffer at 785-532-3722, Global Campus engineering program coordinator; or Noel Schulz at noels@ksu.edu or 785-732-5844, associate dean for Engineering Research and Graduate Programs.

Did you know?

Important statistics from the fall 2015 semester:

- 291 M.S. students were enrolled
- 175 Ph.D. students were enrolled
- 46 undergraduate students presented at the Undergraduate Research Poster Forum
- 27 M.S. students graduated in December
- 10 Ph.D. students graduated in December
- 84 graduates and guests attended the College of Engineering graduate graduation reception

Welcome back to the spring semester! I hope your first two weeks of classes and other activities have gone well. I wanted to bring some accomplishments to your attention — congrats to department heads, graduate coordinators, graduate staff and faculty for doubling the number of Ph.D. applications this year from 85 to 171. It’s great to see these efforts paying off. Our next step is to finish the application process for our accepted Ph.D. candidates and encourage them to join the K-State family. Our Engineering Graduate Student Advisory Council will be setting up virtual orientation/recruitment meetings for future students as well.

We are also excited to see engineering graduate students getting involved in university-wide programs. On Tuesday, Feb. 2, Syeda Rubaiyat Aziz, civil engineering Ph.D. candidate, was one of 10 K-State presenters at the Capitol Graduate Research Summit in Topeka at the State Capitol Building. For the spring K-State GRAD Forum, 44 of the 160 students participating are from engineering (k-state.edu/grad/students/studentcouncil/research-forums/). For the Three-Minute Thesis competition (k-state.edu/grad/students/three-minute-thesis/three-minute-thesis.html), six of the 40 registrants are from engineering. For the new university level leadership program (k-state.edu/grad/students/graduatestudentlife/leadershipdevelopmentprogram.html), which has a total of 30 slots, engineering had 18 of the 109 applications. All these activities help our graduate students develop their professional skills and also help the university learn more about engineering activities.

Congrats to Pavithra Prabhakar, CIS assistant professor, on receiving an NSF CAREER award. See more on this on page 3. Speaking of our untenured faculty — have you met all our new engineering faculty? If not, please see their one page bios available on the ERGP website (engg.ksu.edu/ergp/development/bios.html).

Working with Global Campus, ERGP has two Distance Education Professional Development Travel Awards for faculty interested in advancing their distance learning delivery and teaching techniques. The deadline to apply is March 30 so check out this opportunity (engg.ksu.edu/ergp/development/engg-dce_travel_award.html).

Best wishes for a great spring semester and 2016!
Prabhakar will dig deeper into the design of cyber-physical systems and take a holistic approach to ensuring high-level specifications. Most of the current analysis focuses on detecting low-level errors in cyber-physical systems software. Prabhakar wants to go a step further and develop a robust verification paradigm that addresses high-level functional properties, such as collision avoidance in air traffic control.

“We want to investigate new foundations, abstractions and verification by leveraging ideas from control theory, dynamical systems theory, optimization theory and satisfiability modulo theory.”

The National Science Foundation has issued a CAREER award to a Kansas State University computing and information sciences researcher for her work that can develop better transportation, health care and energy systems.

Pavithra Prabhakar, assistant professor of computing and information sciences, has received a five-year $446,000 CAREER award for her project “Robust Verification of Cyber-Physical Systems.”

“Cyber-physical systems are an important part of modern society and they have transformative applications in the transportation, health care and energy sectors,” Prabhakar said. “This research will bridge an important gap in the existing methodologies for the analysis of cyber-physical systems through the novel paradigm of robust verification, which will enable the development of high-confidence cyber-physical systems, particularly automotive and aerospace systems.”

The National Science Foundation’s Faculty Early Career Development Program is one of the foundation’s most prestigious awards for supporting early career faculty who effectively integrate research and education in the context of their institution’s mission.

“We are thrilled that Pavithra has received the CAREER award for her important research on systems that are becoming more prevalent in our lives,” said Darren Dawson, dean of the College of Engineering. “Prestigious faculty recognition at this level is a crucial part of Kansas State University’s plan to be a Top 50 public research university by 2025.”

For her CAREER project, Prabhakar will address the challenge of reliably developing cyber physical systems, which are software networks that interact with the physical world. Prabhakar will focus on several types of cyber-physical systems, including aerospace, automotive and robotic systems.

Prabhakar’s main research interests include the formal analysis of cyber-physical systems, with emphasis on both theoretical and practical methods for verification and synthesis of hybrid control systems.

Prabhakar will focus on several types of cyber-physical systems, including aerospace, automotive and robotic systems.

First place, $500 award, Eric Schlakier and Graham Schlakier, both juniors, mechanical and nuclear engineering; and Harwen Liu, senior, civil engineering; research adviser Hitesh Bindra, assistant professor of mechanical and nuclear engineering. The team presented the poster “Integrating Energy Storage with Nuclear Power.”


Brandon Hulet, sophomore, mechanical and nuclear engineering; research adviser, Amy Betz, assistant professor of mechanical and nuclear engineering. Hulet presented the poster “Effects of Open Micro-Channels on Condensation Heat Transfer.”

Third place, $100 award, Kelsey Harlow, senior, mechanical and nuclear engineering; research adviser, Gurpreet Singh, associate professor of mechanical and nuclear engineering. Harlow presented the poster “3D Printing with Nanomaterials.”

First place, $500 award, Ryan Strasser, Tyler Montgomery and Lars Peterson, all seniors, biological and agricultural engineering; research adviser, Edwin Brookes, instructor, biological and agricultural engineering. The team presented the poster “Tractive Performance Research.”

Second place, $300 award, Erica Schmitt, Margaret Spangler and Laura Wilson, all seniors, biological and agricultural engineering; research adviser, Edwin Brookes, instructor, biological and agricultural engineering. The team presented the poster “Best Management Analysis for Shallow Water Depths at Lake Odonata.”

Third place, $100 award, Tanzila Ahmed, senior, Lawryn Edmonds, junior, Connor Krause, senior, and Mark Ronning, junior, electrical and computer engineering; research advisers Ruth Miller, associate professor of electrical and computer engineering, and Warren White, professor of mechanical and nuclear engineering.

New recording classrooms in Engineering Hall

With the completion of Engineering Hall, we have four new state-of-the-art spaces: three classrooms (DUE 0093, 0096 and 0097 which seat 64, 28 and 36, respectively) and one auditorium/lecture hall (DUE 1109) which seats 250. Important things to remember with the opening of this new space include the following:

- Scheduling of the previously mentioned spaces is coordinated by ERGP. Please contact 3-5444 to reserve a space.
- If you have technical difficulties while using the equipment and are not utilizing engineering video recording services for a distance class, please contact CEC at 2-4643.
- We are no longer “bumping” classes from their scheduled rooms for special lectures, enrollment or other events. These events will be scheduled at a time the room is available.
- If you have any additional questions, please contact 2-5844.
Prabhakar will dig deeper into the design of cyber-physical systems and take a holistic approach to ensuring high-level specifications. Most of the current analysis focuses on detecting low-level errors in cyber-physical systems software. Prabhakar wants to go a step further and develop a robust verification paradigm that addresses high-level functional properties, such as collision avoidance in air traffic control. "We want to investigate new foundations, abstractions and verification techniques by leveraging ideas from control theory, dynamical systems theory, optimization theory and satisfiability modulo theory."

Prabhakar and her research team also will develop prototype tools. She said: "This CAREER award will be critical in jump-starting my research, particularly building a strong hybrid systems group in the computing and information sciences department by supporting some initial students." The National Science Foundation has issued a CAREER award to a Kansas State University computing and information sciences researcher for her work that can develop better transportation, health care and energy systems.

Pavithra Prabhakar, assistant professor of computing and information sciences, has received a five-year $446,000 CAREER award for her project "Robust Verification of Cyber-Physical Systems." "Cyber-physical systems are an important part of modern society and they have transformative applications in the transportation, health care and energy sectors," Prabhakar said. "This research will bridge an important gap in the existing methodologies for the analysis of cyber-physical systems through the novel paradigm of robust verification, which will enable the development of high-confidence cyber-physical systems, particularly automotive and aerospace systems." The National Science Foundation's Faculty Early Career Development Program is one of the foundation's most prestigious awards for supporting early career faculty who effectively integrate research and education in the context of their institution's mission.

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Fall 2015 Engineering Undergraduate Research Poster Forum

The Fall 2015 Engineering Undergraduate Research Poster Forum on Dec. 3 in the engineering complex atrium included 30 poster presentations from eight different engineering departments. Research topics included advanced materials and processes, energy and water, among other topics. Thirty faculty and graduate students were involved in judging the posters and many others stopped by to view the research presentations. Starting with the fall 2015 poster forum event, students had the opportunity to select whether to participate in a category for traditional undergraduate research or a new category for design/build/team/class-projects that fall within the research spectrum. This first semester included five posters in the design/build/team/class-project category.

The spring poster forum will be April 15 in the atrium of the new Engineering Hall. Details are available at engr.ksu.edu/erpg/undergrad_research/PosterForum.html.

Fall 2015 poster winners — undergraduate research category

First place, $500 award, Eric Schlakjer and Graham Schlakjer, both juniors, mechanical and nuclear engineering; and Hanwen Liu, senior, civil engineering; research advisor: Hitosh Bindra, assistant professor of mechanical and nuclear engineering. The team presented the poster "Integrating Energy Storage with Nuclear Power."

Second place TIE, $300 award each: Lucas Gorenz, senior, mechanical and nuclear engineering; research advisor: Warren White, professor of mechanical and nuclear engineering. Gorenz presented the poster "Design and Construction of a One-Wheeled, Self-Balancing Robot."

Brandon Hulet, sophomore, mechanical and nuclear engineering; research advisor: Amy Betz, assistant professor of mechanical and nuclear engineering. Hulet presented the poster "Effects of Open Micro-Channels on Condensation Heat Transfer."

Third place, $100 award, Kelsey Harlow, senior, mechanical and nuclear engineering; research advisor: Gurpreet Singh, associate professor of mechanical and nuclear engineering. Harlow presented the poster "3D Printing with Nanomaterials."

Fall 2015 poster winners — design/build/teacher/class-project category

First place, $500 award, Ryan Strauss, Tyler Montgomery and Lars Peterson, all seniors, biological and agricultural engineering; research advisor: Edwin Brookes, instructor, biological and agricultural engineering. The team presented the poster "Tractive Performance Research."

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Research highlight

NSF CAREER award supports researcher's cyber-physical systems work

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Graduate commencement reception

The College of Engineering Office of Research and Graduate Programs hosted the third annual fall graduate student graduation reception Dec. 12, 2015, 10:30 -11:45 a.m., prior to the school commencement ceremony for the fall class in Bramlage Coliseum. Twenty-four graduate students and more than 15 faculty members attended the reception, as well as a number of friends and family. All engineering graduate students who graduated in summer 2015 or had applied for fall 2015 graduation were invited and allowed up to five guests plus their adviser. The event was held at the International Grains Program Institute and featured a short ceremony at 11:00 a.m. during which a representative from each department called the names of attending graduating students as they crossed the stage, shook hands with Associate Dean Noel Schulz and received an engraved business card holder from the college.

The spring 2016 graduate student graduation reception will be held on May 13.
February 1, 2016

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**ERGP Newsletter**

February 1, 2016

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Best wishes for a great spring semester and 2016!

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**Upcoming events**

- 2/4 — ENGG untenured faculty network — tenure and promotion 2064 Rathbone Hall 11:30 - 12:30 p.m.
- 2/8 — The Library and Your Research: Using Networks 407 Hale Library, 1:30 - 2:30 p.m.
- 2/9 — Engineering Career Fair, day one
- 2/10 — Engineering Career Fair, day two
- 2/10 — USRG/FDA informational session 201 Leadership Studies, 3:30 p.m.
- 2/15 — Office of Undergraduate Research and Creative Inquiry deadline for summer research and travel awards
- 2/15 — The Library and Your Research: Know Your Author Rights 407 Hale Library, 1:30 - 2:30 p.m.
- 2/16 — Three-Minute Thesis competition
- 2/18 — ENGG untenured faculty network — managing/evaluating grad students 2064 Rathbone Hall 11:30 a.m. - 12:30 p.m.
- 2/22 — Engineering E-Week
- 2/23 — GTA professional development series Hemisphere Room, Hele Library 2:30 - 3:30 p.m.
- 2/23 — Engineering e-seminar
- 2/29 — The Library and Your Research: Maintaining Academic Integrity 407 Hale Library, 1:30 - 2:30 p.m.
- 3/3 — Eyestone lecture, 1109 Engineering Hall, 300 - 400 p.m.

For more information about these events, please visit engg.k-state.edu/ergp/events

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**Meet our staff**

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K-State notice of nondiscrimination

Kansas State University is committed to nondiscrimination on the basis of race, color, ethnic or national origin, sex, sexual orientation, gender identity, gender expression, age, ancestry, disability, genetic information, military status, veteran status, other non-relevant reasons, or disabilities, educational programs or activities and employment, including employment of disabled veterans and veterans of the Vietnam Era, as required by applicable laws and regulations.

Responsibility for coordination of compliance efforts and review of inquiries concerning Title IX of the Civil Rights Act of 1964, Title II of the Americans with Disabilities Act of 1990, Title VI of the Civil Rights Act of 1964, Title VII of the Civil Rights Act of 1978, the Age Discrimination Act of 1975, and the Americans With Disabilities Act Amendments Act of 2008, has been delegated to the Director of Institutional Equity, Kansas State University, 103 Edwards Hall, Manhattan, KS 66506-4801, (Phone) 785-532-7810; (TTY) 785-532-4807.