



High Plains Section

Engineer in Residence Program-

Forward-

Preparing new engineering graduates to be quickly productive at their first job has always been a challenge. Employers want to minimize on-job training and schools struggle to provide enough study time to graduate competent engineers. Internships are one way to prepare for full time employment, but this is not something every student can do. Senior projects provide a chance for students to experience working as a team, meeting design goals and doing so in a limited amount of time. From observation of senior projects, it is apparent that contact and influence from an experienced engineer has a huge effect on a student project's success. Students that have experienced this contact have a much better understanding of a real product development environment and of the many facets of project completion that are not taught in school. An experienced engineer will provide technical advice and knowledge of everyday operational requirements that exist in a corporate environment. The experience of working with students has proven to be a refreshing and stimulating experience for engineers that have long been away from a campus. They go back to work with new ideas and increased enthusiasm.

Executive Summary-

Providing knowledgeable, practicing engineers on campus is proposed as a positive experience for students, the volunteer engineers, and the sponsoring companies. Students gain insight into real world concepts that help them be better employees. The volunteers get the satisfaction of helping students and also being immersed in a stimulating campus environment. The sponsoring companies get refreshed employees and firsthand knowledge the outstanding graduating engineers.

Objectives-

1. Better prepare students to be productive in their initial employment.
2. Increase student learning about engineering project management and processes.
3. Increase student understanding of expectations of professional employment.
4. To provide an experience for practicing engineers that is refreshing and stimulating.
5. Improve success and learning of student senior projects.
6. Form closer ties between local businesses and the technical staff at CSU.

Tactics-

1. Hire a practicing engineer, either employed or retired, in the Electrical and Computer Engineering (ECE) Department on a part time basis as an advisor to student's projects.
 - a. EIR participants will be able to do their own work when not directly interacting with a student.
 - b. Technical expertise in electrical and computer engineering is preferred but other technical disciplines are also welcome.
 - c. EIR participants are people that easily interact and teach others and have a fundamental desire to help students.
 - d. EIR's do not necessarily have to be electrical engineers as student projects often face problems that entail other engineering expertise.
2. Fall 2015 is trial period for the program: 14 weeks (69 days), August 24th-Dec 4th excluding Nov23-27, and Sept 7th.
 - a. We intend to have engineers on campus Tuesday and Thursday; days may change depending on demand and student availability.
 - b. EIR Participants are asked to commit to a minimum of 3 hours every third week. (15 hours maximum per semester)
 - c. EIR participants are requested to make every effort to fulfill their time.
 - d. To fill all available time at minimum commitment will take 12 people.
3. IEEE will sponsor the program covering incidental expenses such that the Engineering in Residence (EIR) has minimal cost of participation.
 - a. If a participant agrees to be in office for an entire day, IEEE will reimburse them for lunch.
 - b. A day parking pass will be made available for each participant.
 - c. Participants must bring a computer for their use while in the EIR Office.
4. ECE will furnish an office and incidental office supplies, internet access and other minor amenities.
 - a. Office hours, technical expertise will be posted.
 - b. A general email address for the EIR program will be provided.
 - c. Office hours will be scheduled in 3 hour blocks, 9-12 and 1-4pm.
 - d. A Web page may be developed with the program outline, schedule and participants.

- e. EIR participants are encouraged to participate in school events which make them more accessible to students.
5. During the trial semester participants are encouraged to attend a feedback session each month.
6. Participants must obey and comply with all policies and standards of conduct as established by the University.
7. EIR would also be available to host, “A Day with an Engineer” at their respective companies. This has been a frequent request of students. Students spend a day with a practicing engineer to understand better what a practicing engineer does during a typical day.

FAQ-

Q. How do I sign up for consideration to be an Engineer in Residence?

A. Email Richard Toftness at rtoftness@gmail.com with a short copy of your resume and your contacts details. He will get back to you in about mid July.

\Q. Do I have to be a member of IEEE to participate?

A. No.

Q. As the program is homed in the ECE department, do you want only electrical engineers?

A. From some years experience with student’s projects, many have questions about electrical design, but just as many, if not more, struggle with mechanical design issues. Last year several of the projects had optical design issues, while several others had problems that could be helped with a physics background.

Q. Is anyone being compensated for their participation in this program?

A. No. This is entirely a volunteer effort originated by members of the local High Plains Section of the IEEE.

Q. What is the IEEE role in this program?

A. It is the sponsoring organization. Some members wanted to give back to the community and this was one of the proposals. The enthusiastic support of the ECE Staff indicated that it had value.

Q. There have got to be some costs, who is paying them?

A. The local IEEE High Plains Section is providing funds for some of the expenses, which are very modest. Recently the Section held a dinner to raise funds for this program.

Q. Who from the IEE is involved?

A. Locally it is Peter O'Neill, High Plains Section Chairman; Richard Toftness, Section Secretary; Kris Waage, Section Treasurer, and Bradley Evans, recent CSu graduate. The proposal has been shared with IEEE executive committee members in Region 5 and the President of IEEE-USA. Their review and comments have helped shape the proposal. All are volunteers.

Q. What does IEEE get out of this program?

A. One of the roles of the IEEE organization is to promote the engineering profession and to improve the understanding of the profession. Bringing industry and education together is also a goal.

Q. What about including ASME and WIE organizations?

A. That is a possibility in the future. For now, this will be an experiment for at least one semester before expanding to include other organizations participation.

Q. Is EIR part of the recently announced NSF grant to the CSU ECE department to explore changing dramatically the way engineering is taught?

A. No. Actually EIR has been discussed since last fall but as a *volunteer* program it takes time to get it organized. We are proud that the EIR program fits very nicely with the objectives of the NSF grant. Much of the grant program is focused on helping students discover what an engineering career is like early in their studies rather than in their 3rd or 4th year.

Q. Doesn't CSU have seminars to introduce freshman engineering students to what an engineering career is like?

A. Yes they do. We feel a one-on-one informal approach has real possibility of adding to the knowledge of students.

Q. Can't students go to their professors to get help?

A. Yes they can, but two things get in the way. First professors are really busy so taking their time can be difficult. Second, since the professors are in a position of judgment with students there is a huge hesitation to use that avenue too frequently or for what could be considered "dumb" questions. The EIR program is not a substitute for interaction with the professorial staff, but rather an additional avenue of support.

Q. Are EIR volunteers expected to be up on current technology?

A. Not necessarily as many of the problems and questions students struggle with are very basic and common knowledge to someone who has been a practicing engineer for some time.

Q. So students get a better idea of what it is like to be a practicing engineer, is that a big deal?

A. The most frequent request of engineering students is to better understand what a real engineering job is like. Spending a day “shadowing” an engineer is a much sought after experience. Talking with some from industry is also a good learning experience.

Q. Parking at CSU is a pain, what is being done for the EIR volunteers?

A. Each volunteer will receive a day pass which makes them able to park for free, but does not guarantee a spot.

Q. How much planning has gone into this project?

A. The thinking behind this project started in March of this year and has progressed after discussion with IEEE people, thoughtful friends and colleagues and CSU staff. Please remember that this is an experiment and the people who are part of the program are going to shape its function and priorities. If you are looking to be part of something ground breaking, this is a good program. If you really need to be part of a well oiled and developed program, this is not what you are looking for.

Q. You put out a special call for female participation, is there still a need for volunteers of either gender?

A. Yes. Diversity adds value to any creative environment and females are unrepresented in engineering fields. Making certain our program is well represented by all people is a good thing. You can never have enough good people.