

Announcement
EnTISE Graduate Fellowships (Deadline: December 1, 2008)

EnTISE (Enhancing Teaching in Interdisciplinary Science and Engineering) is a pilot program organized by the University of Minnesota Materials Research Science and Engineering Center (MRSEC) in collaboration with the College of Education and Human Development. The EnTISE program is designed to provide opportunities for graduate students to develop their teaching skills, while working with local area middle and high school teachers to create and implement innovative methods for K-12 science education.

Towards this end, the MRSEC announces the availability of two graduate fellowships (EnTISE fellowships) for students who are interested in working with local area school teachers to generate educational materials related to their MRSEC-sponsored research, and to use these materials to engage and educate middle and high school students about science and engineering.

An EnTISE fellowship will provide the graduate student with a \$30,000 stipend and an additional \$10,500 cost-of-education allowance for tuition, health insurance and fees for one year. The EnTISE fellows will be expected to spend about ten hours per week with faculty from the College of Education and Human Development, and in an middle/upper school classroom with partner teachers co-planning and co-teaching science lessons, serving as role models for students, and learning science-specific teaching strategies.

The MRSEC intends to expand this pilot program up to 10 students/year through a grant proposal that will be submitted to the National Science Foundation (see below). The expanded program will aim for 2-year fellowships for each student. If the NSF proposal is funded, the students chosen for the pilot program will also be eligible for a second year of funding through the expanded program.

Eligibility: Applicants must be Citizens or Permanent Residents of the United States, and must have graduate student standing in a MRSEC or an Institute of Technology (IT) department. They must have passed their preliminary examination with a proposed plan of research already in progress. Both the graduate student applicant and their advisor must be committed to the goals of the EnTISE project. Teaching or mentoring experience, particularly with populations underrepresented in science, and fluency in a second language are desirable but not necessary.

Application Process: The applications for the EnTISE fellowship are due by email at the MRSEC office (engen010@umn.edu) by **5:00 pm Monday December 1, 2008**. An application form is attached to this announcement. The program is expected to begin in January 2009, the beginning of the spring term in the participating school districts.

Additional Information on the EnTISE Program Goals: EnTISE is a pilot program of the MRSEC in collaboration with the College of Education and Human Development and is a precursor to a grant proposal that will be submitted to the National Science Foundation (NSF) GK-12 program in 2009. Accordingly, EnTISE goals and structure are aligned with the NSF GK-12 program goals. The following excerpts from the NSF GK-12 program are provided to aid in understanding the EnTISE program, its goals and objectives.

The National Science Foundation (NSF) recognizes that graduate students in science, technology, engineering and mathematics (STEM) must be prepared with the necessary skills to face the career challenges of the 21st century. In addition to research competencies, STEM graduate students must be able to communicate science and their research findings not only to other scientists but also to the general public. NSF also recognizes that STEM graduate students can contribute to the national effort to advance scientific knowledge in K-12 schools through partnerships with K-12 teachers. These partnerships offer graduate students an opportunity to bring leading-edge research practices and findings to K-12 classrooms and to integrate those practices and findings with the teaching of STEM in K-12 schools. These interactions also stimulate interest in STEM disciplines among K-12 students.

The objectives of the NSF GK-12 program are: 1) to support highly qualified graduate students in NSF-supported STEM disciplines through fellowships to provide them with an opportunity to acquire additional skills that will broadly prepare them for professional and scientific careers in the 21st century; 2) to improve STEM instruction in K-12 schools; and 3) to provide institutions of higher education with an opportunity to make a permanent change in their graduate programs by incorporating GK-12 like activities in the training of their STEM graduate students. Expected project outcomes include:

- improved communication, teaching, collaboration, and team building skills for fellows;
- integration of fellows' STEM research in K-12 schools;
- content gain and professional development opportunities for K-12 teachers;
- enriched learning by K-12 students; increased interest in STEM disciplines and careers by K-12 students;
- incorporation of GK-12 like activities as an integral part of the institution's graduate programs in STEM;
- strengthened and sustained partnerships in STEM between higher education institutions and local school districts; and
- reporting of project activities and outcomes to promote best practices in STEM graduate education.

GK-12 fellows from STEM disciplines, selected by awardee institutions, will work directly with K-12 teachers in and out of the classroom to, for example: integrate scientific methods in the teaching and learning of STEM disciplines; provide role models for future STEM professionals; enhance K-12 teachers' STEM content knowledge and understanding of principles of mathematics and the sciences; and jointly design and deliver K-12 STEM instruction. In essence, fellows will bring their scientific research experience to the schools, so that teachers and K-12 students are more broadly exposed to what science is all about, how science is done, how discoveries happen and what scientists do. The GK-12 program is an opportunity to bring the excitement and the results of STEM research to schools and to create changes both in K-12 schools and in institutions of higher education. It is also an opportunity for fellows to acquire skills that normally are not emphasized in a more traditional STEM graduate program and to broaden their career options as professional scientists and engineers. Full information can be found at (<http://www.nsf.gov/pubs/2008/nsf08556/nsf08556.htm>).

EnTISE Fellowship Application

Please email this application form and the attachments as a single pdf file to Phil Engen at engen010@umn.edu by December 1, 2008, 5:00 pm. Questions can also be addressed to Phil Engen at the same email address. The recommendation letters should be sent separately by the recommender. Selections will be made by the EnTISE Committee in consultation with participating school districts.

Name:

E-mail address:

Daytime phone:

MRSEC (or IT) Department:

Research Advisor Name and email:

List of materials that must be attached to this application.

- 1) Curriculum vitae (two pages maximum).
- 2) A copy of the applicant's University of Minnesota transcript.
- 3) Two letters of recommendation, one of which must be from the applicant's research advisor. (The letters should be emailed separately from the application package directly to Phil Engen at engen010@umn.edu.)
- 4) A personal statement that addresses the following questions (up to two pages single –spaced, 12 point font).
 - Why are you interested in the EnTise program and working with students and teachers in middle and high schools? What do you hope to accomplish by participating in EnTISE? What do you hope to gain from this program?
 - What are your long term career goals and how does EnTISE fit into your long term vision for your career?
 - Please describe your research project and its significance to your field, in language accessible to a non-scientist audience.
 - Describe any experience you have had working with K – 12 students/teachers, or any other relevant information that may be helpful to the EnTISE fellowship selection committee.