



Milwaukee Regional Energy Education Initiative (MREEI): Research Experience for Teachers Site

Program Background

The University of Wisconsin Milwaukee College of Engineering & Applied Science is partnering with regional industry to offer a Research Experience for Teachers Site focusing on the theme of energy. The **Milwaukee Regional Energy Education Initiative (MREEI)** will annually engage 8 to 10 local high school teachers of mathematics and science (preferably recruited in pairs) in hands-on, cutting-edge engineering research projects in energy-related fields.

Energy was specifically chosen for the theme because it is a current topic of direct interest to students and teachers, it can be easily embedded into the high school science curriculum, and it is a core area of research for engineering faculty members and regional industry. Educators of our next generation of technical leaders, particularly those at the pre-college level, are the critical links for engaging students in science, technology, engineering and mathematics courses (STEM) and becoming attracted to potential careers in these areas.

Mission

To train 9th – 12th grade teachers through fundamental energy-related research and translational activities that are tied to industry, and then leverage curricular approaches that allow them to directly transition this knowledge into highly inspirational STEM experiences for their students.

Objectives

- To **provide** rewarding research experiences for high school teachers that inspire them to create classroom environments that promote innovative scientific discovery and learning
- To **develop** formal instruments that allow teachers to implement innovative energy-related learning practices into the high school mathematics and science curriculum
- To **promote** a better understanding of STEM concepts and an enhanced ability to apply these concepts to real world situations and uses, particularly for those students where the need and challenge for improvement are the greatest
- To **ensure** that the RET summer program will make a sustainable impact on STEM learning at the high school level using techniques that are replicable and that can be widely implemented and disseminated across the United States

Teacher Qualifications

Our program seeks high school science and mathematics teachers from Milwaukee-area schools, with particular consideration given to teachers working in urban districts that serve a significantly diverse socioeconomic and demographic population. Teachers in such districts typically face strong challenges concerning motivation and skill level in students' learning main concepts in science and mathematics.

Teachers in the areas of Chemistry, Physics, Earth Sciences, Mathematics, and Generalized Physical Science are eligible to apply. Teachers must be highly motivated and open to trying new approaches to student engagement and curricula based on sound learning science practices and cutting-edge engineering research experiences. Teachers must also complete the summer program, academic year workshops, and present results of this experience at the WSST conference. Teachers will be compensated for their involvement and time.

Overview and Schedule

- Up to 10 teachers for 2014
- Spring term component:
 - Orientation Date: to be determined
- Summer Component:
 - 6 week program; 5 days per week.
 - Proposed Start Date: Monday, June 23, 2014
 - Proposed End Date: Friday, August 1, 2014 (no classes July 4)
- Academic year workshops (4 two-hour sessions over the course of the school year. Dates determined by participating teachers)
- Participation in WSST or WMC conference (Spring, 2015)

Criteria for Selection

1. Selection will be determined based on a demonstrated interest and commitment to creating effective hands-on engineering innovation development activities and learning science application in science and mathematics classrooms.
2. Participants will be required to be interviewed before selection.
3. Participants will be expected to attend every session, be an engaged member of the research and learning groups, participate in the poster competition, and present at the WSST conference.

Financial Considerations

Teachers will receive a stipend of \$7,500 for successful participation in the program for one year. This includes the summer sessions, the year-long professional development sessions, and the poster competition. Up to \$2,000 will be available for each participant to purchase classroom supplies and teaching materials. An additional \$500 stipend will be paid for mandatory presentation at the WSST or WMC conference. Payments will be made in installments.

Application Checklist

An applicant's file will be considered complete when all of the items in the application checklist below are received by the UWM-CEAS RET Summer program. We strongly recommend that you keep a copy of your application. Application materials must be received by **March 7, 2014**.

- Fully completed application forms
- Brief (1 paragraph) statement of research goals and interests
- Current resume
- Letter of approval for implementation of RET unit by your Principal

Application and Contact Information

If you have any questions about the RET Program at the University of Wisconsin-Milwaukee, please contact:

- Ilya Avdeev avdeev@uwm.edu
- Tracy Posnanski tjp@uwm.edu
- Amy Kaminski kamins73@uwm.edu



Application Form

Name _____

Home Address _____

Phone _____ E-mail Address _____

Current Employer and School _____

Teaching Area(s) _____

Anticipated Subjects (2014 -2015 School Year) _____

Please attach:

- 1. A current resume that provides information on employment history, educational background and community and volunteer activities.
2. A short statement, not to exceed one page double-spaced, that describes your research interests and goals for the summer RET program
3. A letter of recommendation/approval from your principal demonstrating:
A) Agreement with RET objectives;
B) Agreement to provide released time to attend WSST;
C) Agreement to fulfill RET objectives and implement RET unit into curriculum.

Declaration on Applying

In submitting this application, you affirm that you have read this complete application; that, to the best of your belief and knowledge, the information you have given is true and accurate; that if accepted as a summer RET Teacher, you further understand if you choose to enroll in the program:

- That, except for circumstances beyond your control, you will complete the program in its entirety.
• That unexcused absences will result in your dismissal from the program.

Your signature below affirms your Declaration on Applying.

Please print your name on this line

Signature _____ Date _____

Please submit the completed application electronically to: kamins73@uwm.edu OR mail to: Ilya Avdeev, UW-Milwaukee, CEAS Mechanical Engineering, 3200 N. Cramer St., Milwaukee, WI 53211

Application and attachments must be received by March 7, 2014. Applicants will be notified of their selection shortly thereafter. For more information, please see our website:

http://uwm-engineering-ret.org

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1. Current teaching assignment

Course title(s)	Grade level of majority of students	Approximate number of students	Minutes of Instruction per week

2. Certification

Grade(s)	Field	Number of Certification

3. Years of experience as a teacher: include full-time and part-time, public and private

Teaching years in total	
As a science teacher	
As a math teacher	
In a high school	
In a middle school	
At this school	
Grades in this school (e.g., 9-12, k-12)	

4. Education, Graduate work and advanced degree(s)

Highest degree earned: _____ Date: _____

Are you currently working toward an advanced degree? ____Yes ____ No

If yes, please indicate the degree you are pursuing, the institution, and the specialization area:

Degree: _____ Institution: _____ Area: _____

Anticipated graduation date: _____

Graduate work: estimated number of credit hours earned beyond your highest degree: _____

5. Recent Professional Development Experience:

Describe recent participation in professional development in STEM, dates and estimated hours:
