The Engineering Directorate of the National Science Foundation (NSF/ENG) has awarded Kansas State University (KSU) a three year continuing award to support a Research Experience for Teachers (RET) Site Program on real-time embedded system design. **Ten upper elementary and/or middle school** teachers from both urban and rural schools in Kansas or adjacent metropolitan areas will be selected to participate in this **four-week** summer research program. The primary goal of this program is to bring knowledge of engineering to the elementary and middle school classroom by involving teachers in engineering research. Beyond professional development, this program strives to develop stronger partnerships between Kansas State University and local school districts.

The focus of this program will be on the **design and implementation of real-time embedded systems**. Teachers will have the opportunity to work on research projects in the lab and to further their professional development by developing specialized sensors and actuators, programming Lego MINDSTORMS™ robots using Java, and developing comprehensive, complete "science fair" projects using hardware and software components developed on campus. Participants will participate in active lectures during the morning sessions, followed by hands-on laboratories during the afternoon sessions. Admission to the program is competitive. To apply, simply fill out and submit the application form together with two reference letters.

**Requirements** for admission and expectations of participants:

- Teaching in an upper elementary and/or middle school (grades 3-8).
- Willing to participate in Kansas Robotics League.
- Wanting to learn about embedded systems, robots and the Java programming language.
- Access to a Microsoft Windows-compatible laptop computer for the four week summer session (a small portion of the stipend can be used to purchase a personal laptop).
- Willing to commit to attending four weeks of classes/lab sessions at Kansas State University in Manhattan, Kansas (during the month of June).
- Living in Kansas or adjacent metropolitan areas; e.g., Kansas City, Missouri.

**Benefits** for participants:

- $7,000 stipend ($3,500 stipend at beginning of program and $3,500 upon completion of summer program).
- 2 - Lego MINDSTORMS™ Development Kits (RCX1.0, etc.), electronic sensors and actuators, electronic tools (digital multimeter, soldering iron, etc.).
- Optionally, 6 semester hours of College of Education credits (tuition paid by participant).
Important dates:

- Application due date: March 1, 2004
- Notification of acceptance: March 15, 2004
- Program dates: 8:30 am - 4:30 pm, Monday-Friday, June 7, 2004 – July 2, 2004

Selection of participants:

Review of submitted applications will begin on March 2, 2004. Selection of participants who meet the requirements will be at the discretion of the selection committee. The committee will make selections based upon merit, along with a number of demographic factors. These factors include, but are not limited to, balancing rural, suburban and urban teachers, including teachers in low SES districts, balancing gifted and regular classroom teachers and teachers serving under-represented groups. We anticipate this program to be funded a total of three summers (2003, 2004, and 2005). Thus, we would strongly encourage applicants who are not selected this year to re-apply next year.
**National Science Foundation (NSF)  
Research Experience For Teachers (RET) Site Program  
Collaborative Learning Through Real-Time Embedded System Design  
Kansas State University**

**Application Form (Page 1 of 3)**

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**BACKGROUND:**
In the space provided below, briefly describe your background in mathematics, science, and technology. In particular, to what extent are you familiar with robotics? Lego Mindstorms? basic electronics? and programming languages? Also, describe course(s)/area(s) taught at the upper elementary and middle school layer (just list course/area titles).
GOALS:
In the space provided below, briefly discuss what you hope to learn from the KSU NSF-RET Site Program this summer.

PLANS:
Finally, how do you plan to incorporate what you learn into your courses and school curriculum? Please be as detailed as possible.
Application Form (Page 3 of 3)

STATISTICAL INFORMATION (OPTIONAL):
*** The following information is optional and strictly confidential. It will be used by the National Science Foundation for statistical purposes only. ***

Gender:
- Male
- Female

Ethnic Group/Racial Background:
- White (not of Hispanic origin)
- African American/Black (not of Hispanic origin)
- Native American or Alaskan Native
- Hispanic
- Asian
- Pacific Islander

Please list any Special Needs:

APPLICATION MATERIAL SUBMISSION:

In addition to the application form, please attach two letters of reference (one should be from your principal or immediate supervisor). Reference letters should contain information regarding the applicant’s background in mathematics, science, and technology. Please mail the completed application form and reference letters on or before March 1, 2004 to:

Mitchell L. Neilsen, Coordinator
KSU RET-Site Program
Department of Computing and Information Sciences
234 Nichols Hall
Kansas State University
Manhattan, Kansas 66506-2302

Phone: (785) 532-6350
E-mail (preferred): neilsen@cis.ksu.edu
Web page: http://www.cis.ksu.edu/chert/ret-site/