Radiation Detection for Nuclear Security Summer School

Pacific Northwest National Laboratory is pleased to offer a new summer school course that emphasizes the needs for radiation detection in nuclear security. We will provide students with a unique understanding of nuclear security challenges faced in the field and expose them to the technical foundations, analyses, and insight that will be required by future leaders in technology development and applications relevant to nuclear security missions. The course will heavily emphasize laboratory and field demonstrations, including direct measurements of special nuclear material, and students will attend seminars given by top experts in the field. We will enroll approximately 12 students in a 2-week summer school that combines lectures, real-world technology demonstrations, and tours of operational facilities with relevance to nuclear security.

Officers train to intercept smuggled nuclear material to reduce the threat of nuclear proliferation using handheld radiation detection devices.

There is no charge for the course, but students are responsible for transportation to and from the class, meals and lodging. Information on local airports, rental agencies, public transportation and available lodging will be provided. Students will also present a 15 minute presentation on their own research.

Mark Your Calendar:

First Week: Reed College, Portland, OR, June 11-15, 2012
Second Week: Pacific Northwest National Laboratory, Richland, WA, June 18-22, 2012

Funded by: NNSA Office of Nonproliferation and Verification R&D
Course Outline and Activities

Week 1 – Foundations
Reed College Nuclear Reactor
Portland OR, June 11-15, 2012

Lectures include:
• Fundamentals of Radiation Detection
• Gamma-ray Spectroscopy
• Neutron Multiplicity Counting
• Nuclear Fuel and Enrichment
• Radiation Imaging
• System-level View of Nuclear Security

Activities include:
• Tour of TRIGA Mark I nuclear reactor
• Modeling Source Terms
• First Responder Training
• Impact of Material on Detection Performance

Week 2 – Applications
Pacific Northwest National Laboratory
Richland, WA, June 18-22, 2012

Seminars include:
• Interdiction
• Emergency Response
• Nuclear Safeguards
• Arms Control and Treaty Verification
• Seminars given by world-leading experts in nuclear security.

Activities include:
• Border Guard/Interdiction Training
• Determining Sensitivity of Radiation Portal Monitors
• Tours of nuclear facilities such as the AREVA Fuel Fabrication Plant and the Hanford B Reactor

Eligibility
The course is designed for graduate students in science and engineering programs with an interest in careers within the US national laboratory system or federal government agencies responsible for nuclear security. Experienced upper-level undergraduates will also be considered. Special consideration will be given to students whose research is funded by NNSA’s Office of Nonproliferation and Verification R&D (NA-22), and students performing research in fields with potential nuclear security applications.

Only US citizens are eligible for this course.

Instructors
Robert C. Runkle is a nuclear physicist, James E. Baciak is a nuclear engineer and Jean A. Stave is a scientist and former educator.

For More Information
For more information, or to request an application, please contact:
Dr. James Baciak
Pacific Northwest National Laboratory
Phone: (509) 375-3088
James.Baciak@pnnl.gov

About PNNL
Pacific Northwest National Laboratory is a Department of Energy Office of Science national laboratory where interdisciplinary teams advance science and technology and deliver solutions to America’s most intractable problems in energy, the environment and national security. PNNL employs 4,900 staff, has an annual budget of nearly $1.1 billion, and has been managed by Ohio-based Battelle since the lab’s inception in 1965.
Radiation Detection for Nuclear Security Summer School
11-22 June 2012
Application instructions

Please read these instructions completely.

Objective

Students in the Radiation Detection for Nuclear Security Summer School will participate in a 2-week summer school that combines lectures, real-world technology demonstrations, and tours of operational facilities with relevance to nuclear security. The summer school will emphasize mission needs for radiation detection in nuclear security with heavy emphasis on demonstrations and discussion on current fielded technologies and the real-world challenges that are not normally considered in an academic setting. The summer school will prepare students interested in working for national laboratories or the United States government with an understanding of the current challenges for applied technology.

Eligibility

The targeted student population consists of those most considering future employment at national laboratories.

Students must be U.S. citizens.

Students must be enrolled in graduate degree program in a field relevant to radiation detection including nuclear engineering, nuclear physics, nuclear chemistry, high-energy physics, ...

Priority will be given to those students closest to graduation.

It is strongly recommended that students bring a laptop to the summer school.

Application Procedure

- Complete this application
- Send a resume or CV
- Send a copy of university transcripts. Unofficial transcripts are acceptable.
- Provide contact information for your research advisor or other individual who can speak to your research experience.

Application Deadline: 1 March 2012

Admission Notification: on or before 1 April 2012
Pre-Arrival Procedures

All students accepted into the summer school must complete and submit the following before arrival:

- PNNL on-line orientation and training.
- PNNL application for temporary dosimetry.

Information and forms concerning orientation, training, and temporary dosimetry will be provided upon acceptance into the summer school.

Costs and Fees

There is no charge for the Radiation Detection for Nuclear Security Summer School. However, students are responsible for funding their own meals, lodging and transportation to and from Portland, Washington, and between Portland, Oregon and Richland, Washington. Additional travel information (accommodations for the summer school with discounted rates, directions for arrival and departure, weekday meals, etc.) will be provided with the admission notification.
Radiation Detection for Nuclear Security Summer School Application

Personal Information

Name: ____________________________________________________________________________

(last) (first) (middle initial)

Graduate school years completed: _____________ Expected graduate date: ________________

Home College/University: ____________________________________________________________

Email address: ______________________________________________________________________

Faculty Advisor and email address: ______________________________________________________

Undergraduate College/University: ____________________________________________________

Major: __________________________ GPA: _______________________________

Permanent Address

__________________________________________________________ (street)

__________________________________________________________ (city) (state) (zip code)

Telephone number: ________________________________

Local School Address (leave blank if same as permanent address)

__________________________________________________________ (street)

__________________________________________________________ (city) (state) (zip code)

Telephone number: ________________________________

Dates current address is valid: _________________
Additional Information

1. In 300 words or less, briefly describe any research in which you are currently participating.

E-mail completed application to:
James Baciak
Pacific Northwest National Laboratory
902 Battelle Boulevard
P.O. Box 999, MSIN J4-65
Richland, WA 99352
Tel: 509-375-3008
james.baciak@pnnl.gov