Course Outline

Nuclear Physics Review
- Nuclear vs. Electrical Forces
- Radioactivity & Radiation

Fundamentals of Radiation Detection
- Ions
- Direct vs Indirect Ionization
- Interaction of Photons with Matter
- Linear Energy Transfer

Principles of Radiation Detectors
- Gas Filled Detectors
- Scintillation Detectors
- Semiconductor Detectors
- Personal Dosimetry

Standards for Detector Calibration
- NCRP 112 & ANSI 323

Sample Analysis and Counting Statistics
- Error & Uncertainty
- Determining Detector Efficiency
- Accuracy vs Precision

Gamma Survey Meter Calibrations
- Sources & Methods Used
- Inverse Squared Law

Beta Survey Meter Calibrations
- Sources & Methods Used
- Extrapolation Chambers
- Beta Correction Factors

Neutron Survey Meter Calibrations
- Challenges in Performing Measurements
- Sources & Methods Used
- TEPCs in Neutron Detection

Contamination Monitoring Instrument Calibrations
- General Considerations
- 2 Pi vs 4 Pi Source Geometries
- MDA Calculations

Calibration Quality Control
- Components of a QC Program
- Designing a QC Chart

Calibration Facility Operation and Maintenance
- Design Considerations
- ALARA
- Use of Positioning Devices

Instrument Use and Control
- Calibration
- Performance Checks
- Efficiencies

New Instrument Selection and Evaluations
- General Considerations
- Key Instrument Properties
- Evaluation Criteria
Course Description
This 5-day course covers the principles for operating and calibrating hand-held detectors and different stationary detectors such as area monitors, tool monitors, and personnel contamination monitors. The class will cover gamma, beta, and neutron dose rate instrumentation operation and calibrations as well as alpha, beta, and gamma contamination monitor operation and calibrations. The class will provide a balance of classroom lecture as well as hands-on practical sessions using actual radiation detection instrumentation and the RSCS Training simulators.

The instructors of the course are Certified Health Physicists and instrumentation technicians with extensive experience in their field. At RSCS, they operate a nuclear instrumentation calibration facility, an analytical measurement laboratory, and also perform consulting for Radioactive Material Licensees.

Class Schedule
Classes will run October 5th through October 9th, 8:00 AM to 5:00 PM on Monday-Thursday, and 8:00 AM to 12:00 PM on Friday. The Instrumentation course will end at noon on Friday and an optional exam will be offered Friday afternoon. On Monday, RSCS will provide lunch and a catered social after class. Monday-Thursday.

Registration and Accommodations
The fee for the course is $1,495.00. Since enrollment is limited, early registration is advised. An early bird discount of $100 will apply to all students who register and provide payment or purchase order for the course by August 28th. Payment must be received in full no later than September 11th. Registrations made after this date will be expected to be paid at the time of registration. A full refund will be provided for course cancellations made within 3 days of enrollment. A $200 fee will be applied to all cancellations received before 10 business days to the start of the course. No refunds will be given after that period. To register, contact RSCS at 800-525-8339 x220.

Courses will be held at the Best Western Wynwood Hotel in Portsmouth NH. The hotel is located near Strawberry Banke, America’s third-oldest community where you can explore the many restored houses from colonial times and watch craftsmen ply their trades as in earlier days. Or, you can take an evening stroll through the flowered gardens of Prescott Park where you may encounter an outdoor musical or theatrical performance! The hotel is also near several beautiful beaches, including the Hampton Beach resort area. Course participants are responsible for their hotel accommodations. A block of rooms at the Wynwood Hotel has been held at a reduced rate of $99.95 plus 9% tax per night if booked before the September 14th cut-off date. After the cut-off date, the group rate will apply only on a space available basis. Call direct at 603-436-7600. Remember to tell the Best Western you are attending the RSCS course.

More Information
To register for the course online, or to contact us for additional information, visit us at rad safety.com or call us at 800-525-8339.

About Us
Established in 1989, Radiation Safety & Control Services provides technical consulting, training and instrument support services to commercial nuclear, private industrial, medical, academic and governmental facilities. Services offered include:

- Health Physics Consulting
  - Management & Technical Staffing
  - License Applications & Amendments
  - Program Development & Assessment

- Radiation Safety Supplies
- Environmental & Geotechnical Support
- Decommissioning Support
- Modeling & Characterization
- Specialty Surveys

Health Physics Software
- Radiation Safety Manager
- Decommissioning Cost Estimation
- Analytical Data Management System

Calibration & Analytical Lab
- NIST-Traceable Instrument Calibration for gamma, beta & neutron detection instruments
- Full Service Repair Lab On Site
- Radioactive Source Leak Testing
- Radon Testing
- Tritium Testing

Radiation Detection Equipment Sales
- Radiation Detection Equipment Sales & Leasing
- Simulated Radiation Detection Equipment
- Radiation Safety Supplies