

**4-DAY SCIENCE TEACHER WORKSHOP**  
**“SCIENCE OF NUCLEAR ENERGY & RADIATION”**  
 Rev. 6 – 07/05/2007

<b><u>TUESDAY, JULY 17, 2006</u></b>			
4:00 PM	Registration and check-in	All	University Forest Apartments Apartment 2000
6:00 PM	Welcome, course introduction and logistics Teacher introductions Discussion of Pre-workshop HW assignment and course expectations	Sophie Gutner	University of Richmond Gottwald Center for the Sciences Gottwald Auditorium
7:00 PM	Walk from Gottwald Center for the Sciences to Heilman Dining Center		
7:15 PM	Dinner Keynote Speaker	<b>Dr. Ann Bisconti</b> <b>(Bisconti Research Inc)</b>	Richmond Room, Lower Level Heilman Dining Center

<b>Wednesday July 18, 2007</b>			
7:00 AM	Breakfast	-	Westhampton Room, Heilman Dining Center
8:00 AM	Introduction & Logistics	Sophie Gutner & Staff	Gottwald Center for the Sciences Gottwald Auditorium
8:15 AM	Radiation and nuclear energy basics	Keith Welch	Gottwald Center for the Sciences Gottwald Auditorium
9:15 AM	Discussion		Gottwald Center for the Sciences Gottwald Auditorium
9:30 AM	Break	-	Gottwald Center for the Sciences Atrium
9:45 AM	Biological Effects of Radiation	Carl Tarantino	Gottwald Center for the Sciences Gottwald Auditorium
10:45 AM	Discussion		Gottwald Center for the Sciences Gottwald Auditorium
11:00 AM	Beneficial Uses of Nuclear Science and Technology	Sama Bilbao y León	Gottwald Center for the Sciences Gottwald Auditorium Gottwald Auditorium
12:00 AM	Lunch	-	Richmond Room, Lower Level Heilman Dining Center
1:00 PM	Geiger meter survey, its care and use in the classroom [1/2 class ]	Reed Johnson	Gottwald Center for the Sciences Room D115
1:00 PM	Demonstration of Gamma Ray counting and spectroscopy with NaI and Ge detectors (Emphasis on source identification) [1/2 class]	Keith Welch	Gottwald Center for the Sciences Room D116
2:00 PM	Break	-	Gottwald Center for the Sciences Atrium
2:15 PM	Geiger meter survey [1/2 Class]	Reed Johnson	Gottwald Center for the Sciences Room D115
2:15 PM	Demonstration of Gamma Ray counting [1/2 Class]	Keith Welch	Gottwald Center for the Sciences Room D116
3:30 PM	Trip to MCV Medical facility		
4:00 PM	Nuclear Medicine (Lecture and tour of the MCV facilities: Cyclotron, PET Scanner and Radiochemistry Lab)	Mark Crosthwaite Paul Riley	MCV Hospital
6:00 PM	Trip to Science Museum of Virginia (SMV)		
7:00 PM	Dinner and Tour @ Science Museum of Virginia	-	SMV

<b>Thursday, July 19, 2007</b>			
7:00 AM	Breakfast		Westhampton Room, Heilman Dining Center
8:00 AM	Introduction, Logistics and Questions	Sophie Gutner & Staff	Gottwald Center for the Sciences Gottwald Auditorium
8:15 AM	Reactor Theory, 101	Reed Johnson	Gottwald Center for the Sciences Gottwald Auditorium
9:15 AM	Break		Gottwald Center for the Sciences Atrium
9:30 AM	Nuclear Power Fundamentals	Todd Flowers	Gottwald Center for the Sciences Gottwald Auditorium
10:30 AM	Discussion		Gottwald Center for the Sciences Gottwald Auditorium
10:45 AM	Break	-	Gottwald Center for the Sciences Atrium
11:00 AM	Reactor Safety	Ross Anderson	Gottwald Center for the Sciences Gottwald Auditorium
12:00	Discussion		Gottwald Center for the Sciences Gottwald Auditorium
12:15 AM	Lunch	-	Richmond Room, Lower Level Heilman Dining Center
1:15 PM	The nuclear fuel cycle (Part 1): Mining, enrichment and fuel fabrication	Joe Montague	Gottwald Center for the Sciences Gottwald Auditorium
2:15 PM	Discussion		Gottwald Center for the Sciences Gottwald Auditorium
2:30 PM	Break		Gottwald Center for the Sciences Atrium
2:45 PM	The nuclear fuel cycle (Part 2): Used nuclear fuel management (Yucca Mountain, Utah, reprocessing, etc)	Kevin McCoy	Gottwald Center for the Sciences Gottwald Auditorium
3:45 PM	Discussion	-	Gottwald Center for the Sciences Gottwald Auditorium
4:00 PM	Break		Gottwald Center for the Sciences Atrium
4:15 PM	The Future of Nuclear: New nuclear plant construction, Nuclear Economics and the Hydrogen economy	Dana Knee	Gottwald Center for the Sciences Gottwald Auditorium
5:15 PM	Discussion		Gottwald Center for the Sciences Gottwald Auditorium
5:30 PM	Adjourn – Evening free to explore Richmond		

<b>Friday, July 20, 2007</b>			
7:00 AM	Breakfast		Westhampton Room, Heilman Dining Center
8:00 AM	Introduction, Logistics and Questions	Sophie Gutner & Staff	Gottwald Center for the Sciences Gottwald Auditorium
8:15 AM	Careers in Nuclear Science, Engineering and Technology	Lisa Stiles	Gottwald Center for the Sciences Gottwald Auditorium
9:15 AM	Discussion		Gottwald Center for the Sciences Gottwald Auditorium
9:30 AM	Break		Gottwald Center for the Sciences Atrium
9:45 AM	Energy Source Comparison: Pros and Cons	Sama Bilbao y León Mike Stuart	Gottwald Center for the Sciences Gottwald Auditorium
11:15 AM	Discussion		Gottwald Center for the Sciences Gottwald Auditorium
11:30 AM	Lunch		Richmond Room, Lower Level Heilman Dining Center
12:30 PM	Use of nuclear science and technology and radiation in the classroom	Anna Shore	Gottwald Center for the Sciences Gottwald Auditorium
2:00 PM	Break		Gottwald Center for the Sciences Atrium
2:15 PM	Breakout Sessions by Teacher Discipline : Lesson Plans	Various facilitators	Gottwald Center for the Sciences Gottwald Auditorium
3:30 PM	Non-Proliferation and Homeland Security Issues	Felix Killar	Gottwald Center for the Sciences Gottwald Auditorium
5:00 PM	Discussion		Gottwald Center for the Sciences Gottwald Auditorium
7:00 PM	Closing Dinner Keynote Speaker	Angelina Howard (NEI)	Richmond Room, Lower Level Heilman Dining Center

<b>SATURDAY, JULY 21, 2007</b>			
7:00 AM	Breakfast		University Forest Apartments Apartment 2000
8:00 AM	Check out		University Forest Apartments Apartment 2000
8:30 AM	Leave for Surry Power Station		
10:00 AM	Arrive at Surry Nuclear Information Center (SNIC)		
10:30 AM	Introduction to Surry	David Christian	SNIC
11:00 AM	GROUP 1: See-Thru Reactor and SNIC Tour [1/2 Class]	David Sanderson Carol Elmore Faron Clair	SNIC
	GROUP 2: Visit to the SPS Simulator [1/2 Class]	Dave Wilson	Training Building
12:30 PM	Lunch		SNIC
1:30 PM	GROUP 2: See-Thru Reactor and SNIC Tour [1/2 Class]	David Sanderson Carol Elmore Faron Clair	SNIC
1:30 PM	GROUP 1: Visit to the SPS Simulator [1/2 Class]	Dave Wilson	Training Building
3:00 PM	Course closure, evaluations	All	SNIC
4:00 PM	End of course		

### **PRE-WORKSHOP HOMEWORK ASSIGNMENT (2 Contact Hours)**

- Read the article “A future for nuclear power in Virginia” by Richard M. Roberds. Virginia Issues and Answers, Fall 2004. Prepare and submit a short summary describing the future role of nuclear energy in Virginia, based on the Roberds article and your own personal opinion.
- Find a recent news piece on nuclear power or radiation, prepare a short summary and submit
- Provide 3 questions that you expect to get answered during the workshop.
- Details about this assignment can be found at <http://local.ans.org/virginia/3dSTW/2007/assignment.html>

### **POST-WORKSHOP ASSIGNMENTS (5 Contact Hours)**

- Provide the answers to your own three questions (provided as a part of the pre-workshop assignment)
- Test online (multiple choice test)
- Preparation and submission of a lesson plan using the material provided during the workshop.

### **EVALUATION**

The successful completion of the workshop will be evaluated based on:

- Summaries and three questions provided in the pre-workshop assignment
- Class participation
- Answers to their own questions at the end of the workshop
- Test online (multiple choice test)
- Post-workshop assignment