

Within the scope of the school, the following topics will be addressed in an integrated fashion:

- Fundamentals of nuclear safety and safety systems
- Reactor safety design, safety case, and safety analysis methods
- Neutronics, thermal hydraulics, instrumentation & control, materials, and fuels applied to industry and research needs
- Experimentation and testing of normal operating conditions and accident scenarios
- Validation and licensing of models and codes
- Human Factors in preventing and mitigating events
- Challenges facing the nuclear industry
- Economics of power production, safety, and reliability

Students will be grouped in teams to work on course assignments that build on the lecture materials and addresses challenging questions in reactor safety.

Each team will be working closely with and mentored by senior scientists and professors who are leaders in the field. Successful students will take away a solid theoretical foundation, as well as a set of practical examples to guide their future work on experimental design, model development and validation.

Organization and Faculty

The MeV Summer School is intended to fill a critical educational gap for engineers and applied scientists involved in the design, licensing and operation of 21st century nuclear power plants. Ensuring the safe and efficient operation of such a large number of nuclear power plants, most of which will run for 60-80 years, is a challenge worthy of the most dedicated professionals. The MeV experience will provide them with better tools for that task.

The school is being organized through the cooperation of national laboratories and universities that share the goal of building a strong workforce to support global nuclear expansion. The faculty will be drawn from the top experts in academia, industry and government. The general organization and conduct of the school will be overseen by an international board of senior experts. A local secretariat will provide technical, logistical and administrative support to students and faculty.

Executive Committee

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 Alen Icenhour (ORNL)
 Chris Stanek (CASL)
 Nam Dinh (NCSU)
 George Imel (ISU)
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 Dave Kropaczek (NCSU)
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 Marius Stan (ANL)
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Scientific Secretariat

INL (Current School)
 Blaise Collin
 Brandon Miller
 Stacey Wilson

Secretariat

INL (Current School)
 Tandy Bales
 Lexie Byrd
 Velma Pepin

Advisory Board

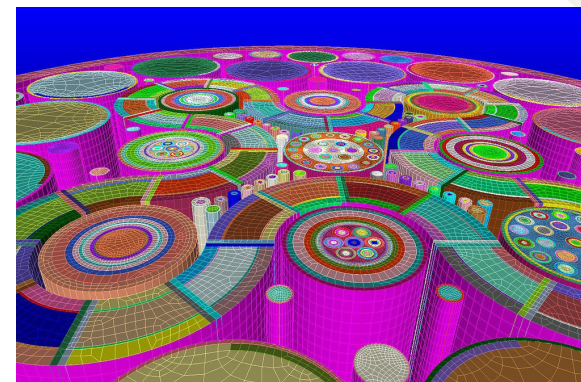
Hany Abdel-Khalik (NCSU)
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 Moon Hee Chang (South Korea)
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 Ray Gamino (LMCO)
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 Baldev Raj (India)
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 Kord Smith (MIT)
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 Timothy Valentine (ORNL)
 Karen Vierow (TAMU)
 Jasmina Vujic (UC Berkeley)
 Paul Wilson (UW)



Nuclear Safety Analysis: Past, Present, and Future

July 17-27, 2017
 Idaho Falls, Idaho



The MeV Summer School will provide early career nuclear engineers with advanced studies in integrated modeling, experimentation, and validation to prepare them for some of the key challenges and demands facing nuclear energy. Successful students will leave with a holistic, forward-looking view of MeV that cannot be provided by any other current curriculum. The school provides a forum for drawing the best topical expertise from around the globe. It is the aim of the school to foster the development of a next-generation network of engineering scientists capable of leading the cultural transformation to risk-informed design, operation and safety of advanced nuclear power plants.

The MeV Summer School integrates a wide range of teaching and mentoring expertise, deeply underpinned by knowledge, skills, and experience. The 2017 central theme is how we can use past nuclear safety experience in combination with current technology and research to improve the future of nuclear technology.

The courses are designed to broaden student knowledge and equip them with modern approaches to safety analysis; emphasis is placed on anticipating future needs of the profession.

Graduate credit from ISU will be awarded for the successful completion of the MeV Summer School.



Curriculum (tentative) ~40 hours

From 1942 to 2017: 75 Years of Nuclear Safety

- The Evolution of Nuclear Safety: An Overview
- Designing Nuclear Safety: Defense in Depth and Safety Systems
- Challenging Safety Systems: A Series of Historical Nuclear Incidents Including the Big Three
- Nuclear Safety in Face of an Aging Nuclear Fleet
- The Issue of Waste: Used Fuel Management

Modeling & Simulation

- Tools of Today: How Industry Utilizes Current Modeling & Simulation Codes
- The Future of Modeling: How Research Institutions Help Develop the Tools of Tomorrow
- Nuclear Plant Simulator: the Constant Training of Operators

Experimental Validation

- Testing Safety: Experiments Designed to Validate the Safety Approach of Nuclear Reactors
- Transient Testing: Understanding the Behavior of Fuel During a Nuclear Accident
- Advanced Fuels & Materials: The Path Towards Safer Nuclear Power
- Bridging the Gap: How Experiments Support Modeling and Vice-Versa

Regulations & Licensing

- Safety Authorities: Roles and Responsibilities
- Licensing: Approval of Systems and Methodologies
- Reacting to a Nuclear Event: Emergency Guidelines and Preparedness Plans
- Nuclear Proliferation: Prevention and Reprocessing

The Economics of Nuclear Power

- The Cost of Safety: What Differentiates Nuclear Power from Other Energy Sources
- Delivering the Nuclear Promise: Combining Improved Operational Efficiency with Sustained Safety and Reliability
- Nuclear Plant Closure: The Dark Side of Competitive Markets

In the evening sessions, students have an opportunity to interact with school lecturers and senior scientists from regulators, industry, academia, and national labs. A student booklet will be prepared introducing each student's research, allowing the students to obtain feedback and input from prominent experts/lecturers, and facilitates student-student interactions and networking.

The program also includes panel and group discussions with representatives from nuclear industry, academia, and government. The panel will be open for questions/answers and interaction with the panelists. The group discussion will focus on topics covered that day.

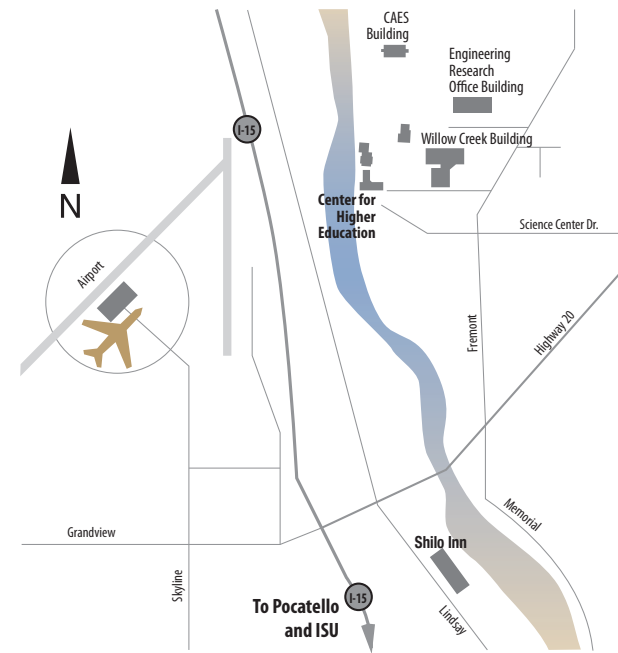
Classroom instruction will be augmented by tours to the Materials and Fuels Complex (MFC), including Transient Reactor Test (TREAT) Facility, Hot Fuel Examination Facility (HFEF), Experimental Breeder Reactor I (EBR-I), and the Center for Advanced Energy Studies.

Sponsors:

Idaho National Laboratory
Argonne National Laboratory
Oak Ridge National Laboratory
Center for Advanced Energy Studies
Idaho State University
U.S. Department of Energy, Office of Nuclear Energy

Venue

The MeV Summer School will be held at University Place in Idaho Falls, Idaho, at the Center for Higher Education and at the MFC facilities at INL.



Information

For detailed program information, application instructions, fees, etc., please visit www.mevschool.org or contact:

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Application Information

2017 MeV Modeling, Experimentation & Validation Summer School

Nuclear Safety Analysis: Past, Present, and Future

July 17-27, 2017

Held at University Place Center for
Higher Education, Idaho Falls, Idaho

Complete the online application form on
the MeV school website at mevschool.org.

Application Deadline

April 7, 2017

Acceptance Notification

April 28, 2017

Tuition

\$3,000 USD

Tuition includes lodging and most meals, but some meals will be at student's expense. Scholarships are available for university students, please note interest in the appropriate area of online application form if applicable. Scholarship award announcement will be provided with school acceptance notification.