Probabilistic Safety Assessment

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Overview

Probabilistic risk/safety assessment (PRA/PSA) is a systematic and comprehensive methodology to evaluate risks associated with a complex engineered technological entity (such as airliners, chemical plants, offshore platforms or nuclear power plants).

PSA usually answers three basic questions:
- What can go wrong with the studied technological entity, or what are the initiators or initiating events (undesirable starting events) that lead to adverse consequence(s)?
- What and how severe are the potential detriments, or the adverse consequences that the technological entity may be eventually subjected to as a result of the occurrence of initiator(s)?
- How likely to occur are these undesirable consequences, or what are their probabilities or frequencies?

Successful implementation of PSA model in a technological entity helps to foresee adverse consequences, evaluate them and manage them effectively. It plays an important role in presenting the risk to regulators/government/publicfor review and taking appropriate decisions.

This course is divided in two modules: A) Basics of PSA Modeling and B) Advance PSA Modeling & Analysis. The basic module covers the basics PSA modeling approach and underlying techniques/tools such as hazard analysis, fault tree, event tree, human reliability, uncertainty propagation, sensitivity analysis etc. The advance module covers recent developments in overall PSA modeling approach and underlying techniques such as use of software reliability approaches, dynamic fault trees, dynamic event trees, advance human reliability analysis approaches, risk informed decision making techniques & regulation etc.

This course intends to provide education, knowledge and training on applying PSA model to technological entities. On successful completion, the participants are expected to gain understanding on evaluating safety risks and identify appropriate design, operations, maintenance,training and management actions for addressing these risks.

Modules	A: Basics of PSA Modeling : Dec07 - Dec 11 B: Advance PSA Modeling & Analysis : Dec14 - Dec18 **Number of participants for the course will be limited to fifty.**
You Should Attend If…	• You are an engineer and working on evaluation of hazards and risks of your system/plant. • You are a research scientist interested PSA Modeling aspects of engineering entities. • You are a student or faculty from academic institution interested in learning how to perform reliability and risk modeling of engineering systems.
Fees	The participation fees for taking the course is as follows: **Participants from abroad : US $500 per module &US $800 for both modules (A&B)** **Industry/ Research Organizations: `25,000 per module and`40,000 for both modules** **Academic Institutions: `15000 for single module and `25000 for both modules** The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided accommodation on payment basis.

The Faculty

Dr. Carol Smidts is currently Full Professor in the Department of Mechanical and Aerospace Engineering and the Director for the Center of Excellence in Instrumentation, Control and Safety at the Ohio State University. Her current research interests are in software measurement, software reliability prediction, impact of software risk on the probabilistic risk assessment framework, and science-based human reliability analysis verification and validation.

Dr. Durga Rao Karanki is currently working as a Scientist at Paul Scherrer Institute (Swiss Federal ETH Domain), Switzerland. His current research focuses on integrated deterministic and probabilistic safety analysis (Dynamic PSA) using Dynamic Event Tree (DET) methodology and uncertainty propagation in DETs.

Smt Rajee Guptan is currently heading the Probabilistic Safety Assessment section of Reactor Safety and Analysis Directorate, Nuclear Power Coroporation Ltd, Mumbai. Her primary responsibilities include Probabilistic Safety Assessment and implementation of its recommendations for Indian Nuclear Reactors; finalizing specification for PSA performance of bought out reactors; reviewing draft safety guides of IAEA and AERB; providing training to generate PSA manpower at operating stations.

Dr. Neeraj Kumar Goyal is currently serving as Associate Professor at Reliability Engineering Centre, Indian Institute of Technology Kharagpur, India. His research interests include Probabilistic Risk Assessment, Software Reliability and System Reliability Modeling.

Dr. V.N.A. Naikan is currently Professor and Head of the Reliability Engineering Centre at the Indian Institute of Technology Kharagpur, India. His research interests include Reliability and Quality Engineering, Condition Monitoring and System Simulation.

Dr. S. K. Chaturvedi is currently working as Associate Professor at Reliability Engineering Centre, Indian Institute of Technology, Kharagpur (WB) India. He has research interest in the area of reliability modeling and analysis, network reliability, life-data analysis, maintenance and optimization.

Course Coordinators

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