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H2Technology

SMR Training program

General information

Number of Training Days: 7 Days

Duration: 5 Nov – 2 Dec 2026

Venue: TINT Building, OAP Building, Century Park Hotel, Unicorn Building (West, True Digital Park)

Course Format: Delivered as a full-day course (09:00–17:00) combining lectures, case studies, interactive discussions, Q&A sessions, and project work.

Evaluation: Based on pre- and post-tests, assignments, software simulations, and practical exercises.

Program Schedule

Day 1 (5 Nov 2026)

Module 1: Reactor Practice and Simulation Workshop

	Instructors: • Dr. Kanokrat Tiyaapun, Thailand Institute of Nuclear Technology (TINT) • Assoc. Prof. Dr. Sunchai Nilswankosit, Chulalongkorn University (CU) • Asst. Prof. Dr. Piyatida Trinuruk Kaewchinda, King Mongkut's University of Technology Thonburi (KMUTT) Venue: Alpha Conference Room, 4 th floor, 60th Anniversary OAP Building, Office of Atoms for Peace (OAP), Vibhavadi Rangsit Rd., Bangkok
08:50 - 09:10	– Welcome and Course Introduction – Pre-test
09:10 - 10:30	Session 1: Nuclear Fundamentals – Fundamentals of Reactor Neutronics and Chain Reactions (80 min) (Assoc. Prof. Dr. Sunchai Nilswankosit)
10:30 - 10:45	Break
10:45 - 12:00	– Fundamentals of Reactor Thermal Hydraulics and Heat Removal (75 min) (Assoc. Prof. Dr. Sunchai Nilswankosit)
12:00 - 13:00	Lunch
13:00 - 14:30	Session 2: Reactor Practice and Simulation – Fundamentals of Reactor Behavior using Reactor Simulator (70 min) – Lab Brief (20 min)
14:30 - 14:45	Break
14:45 - 16:45	– Reactor Experiment (120 min) 1) Criticality Experiment 2) Rod Worth Measurement
16:45 - 17:00	– Lab Result Evaluation (15 min)

Day 2 (6 Nov 2026)**Module 2 : Accident Simulation and Practical Analysis Workshop**

	Instructors: • Prof. Dr. Somboon Rassamee, Chulalongkorn University (CU) • OAP experts (Mr. Natchapon Promprasert, Ms. Sakulrat Klangswat, Ms. Paagjira Gajaseni, Mr. Narongweth Boontem) • Asst. Prof. Dr. Piyatida Trinuruk Kaewchinda, King Mongkut's University of Technology Thonburi (KMUTT) Venue: Alpha Conference Room, 4 th floor, 60th Anniversary OAP Building, Office of Atoms for Peace (OAP), Vibhavadi Rangsit Rd., Bangkok
09:00 - 09:10	– Pre-test (10 min)
09:10 - 10:30	Session 1: Accident Simulation – Plume Dispersion Modelling under Selected Accident Conditions (80 min) (OAP expert team)
10:30 - 10:45	Break
10:45 - 12:00	– Use of Basic Modelling Tools (HotSpot) (75 min) (OAP expert team)
12:00 - 13:00	Lunch
13:00 - 14:10	Session 2: Workshop & Discussion – Interpretation of Simulation Results (70 min) (OAP expert team)
14:10 - 15:20	– Fundamentals of Radiation Safety, Radiation Detection, and Dose Assessment (70 min) (Mr. Narongweth Boontem)
15:20 - 15:35	Break
15:35 - 16:45	– Introduction of Source Term Estimation (70 min) (Prof. Dr. Somboon Rassamee)
16:45 - 17:00	– Post-test (15 min)

Day 3 (18 Nov 2026) Module 3: Fundamentals of Nuclear Engineering for SMRs	
	Instructors: • Prof.Dr.Eng. Topan Setiadipura • Dr.Eng. Dwi Irwanto Venue: Crystal Room II & III & IV Room, 3 rd floor, Century Park Hotel, Bangkok
08:50 – 09:00	– Pre-test (10 min)
9:10 - 10:20	Session 1: SMR Technologies, Design Concepts and Safety Features – Global status of SMR development and drivers for SMR deployment (70 min) (Prof.Dr.Eng. Topan Setiadipura)
10:20 - 10:35	Break
10:35 - 12:00	– SMR technology classification (85 min) (Dr.Eng. Dwi Irwanto)
12:00 - 13:00	Lunch
13:00 - 14:00	Session 2: SMR Technology Characteristics – Reactor behavior and safety from first-principles engineering perspectives (60 min) (Prof.Dr.Eng. Topan Setiadipura)
14:00 - 15:00	– Cross-cutting characteristics of SMR technologies (modularity, passive safety, simplified systems, operational flexibility) (60 min) (Dr.Eng. Dwi Irwanto)
15:00 - 15:15	Break
15:15 - 16:15	– Overview of reactor safety analyses and computer codes used in the analyses for licensing of nuclear reactor designs (60 min) (Dr.Eng. Dwi Irwanto)
16:15 - 16:30	– Post-test (15 min)

Day 4 (19 Nov 2026)	
Module 4: SMR Technology Applications and Integration	
	Instructors: • Prof.Dr.Eng. Topan Setiadipura • Dr.Eng. Dwi Irwanto Venue: Crystal Room II & III & IV Room, 3 rd floor, Century Park Hotel, Bangkok
9:00 - 9:10	– Pre-test (10 min)
9:10 - 10:40	Session 1: Technology Applications – SMR Core Design and Fuel Cycle Fundamentals: Core Design Principles, Fuel Types, Burnup Characteristics, Fuel Management, and Refueling Strategies (90 min) (Dr.Eng Dwi Irwanto)
10:40 - 10:55	Break
10:55 - 12:00	– Modular Deployment and Operational Features: Factory Fabrication, Transportability, Scalability, and Load-following Capabilities (65 min) (Prof.Dr.Eng. Topan Setiadipura)
12:00 - 13:00	Lunch
13:00 - 14:00	Session 2: Technology Integrations – Integration with Industrial Energy Systems: Coupling SMRs with Industrial Facilities for Process Heat and Cogeneration (60 min) (Dr.Eng Dwi Irwanto)
14:00 - 15:00	– SMRs for Hydrogen Production: Technical Interfaces and Integration with Hydrogen Production Systems (30 min) – Hybrid Energy Systems and Grid Interaction: Integration with Renewables, Energy Storage, and Flexible Multi-Energy Systems (30 min) (Prof. Dr.Eng.Topan Setiadipura)
15:00 - 15:15	Break
15:15 - 16:45	– Backend Fuel Cycle and Spent Fuel Management: Storage, Transportation, and Lifecycle Management of Spent Nuclear Fuel (90 min) (Prof. Dr.Eng.Topan Setiadipura)
16:45 - 17:00	– Post-test (15 min)

Day 5 (30 Nov 2026)

Module 5: Techno-Economic Assessment of SMR Deployment

	Instructor: • Dr. Pronnapa Sanongboon – Canadian Nuclear Laboratories (CNL) Venue: Classroom 7 (2 nd floor) - Unicorn Building, West, True Digital Park, Bangkok
09:00 - 09:10	– Pre-test (10 min)
09:15 - 10:45	Session 1: Economic Assessment (90 min) – Understanding Cost Structure of SMRs: Capital Costs, O&M Costs, Financing Costs, and Construction Time (60 min) – Cost of SMR Generation (30 min) (Dr. Pronnapa Sanongboon)
10:30 - 10:45	Break
10:45 - 12:00	– Levelized Cost of Energy (30 min) – Net Present Value (30 min) – Comparison with Alternative Low-carbon Technologies (30 min) (Dr. Pronnapa Sanongboon)
12:15 - 13:15	Lunch
13:15 - 14:15	Session 2: Technical Assessment and Case Studies – Parametric Framework for Techno-economic Analysis of Nuclear-enabled Energy Systems (60 min) (Dr. Pronnapa Sanongboon)
14:15 - 15:15	– Techno-economic Assessment: Economic Feasibility, Technical Feasibility, and Performance against Baseline (60 min) (Dr. Pronnapa Sanongboon)
15:15 - 15:30	Break
15:30 - 16:45	– Group Work Assignments (45 min) – Presentation, Discussion, and Evaluation (30 min) (Dr. Pronnapa Sanongboon)

Day 6 (1 Dec 2026)**Module 6: Regulatory Safety Framework, Risk Assessment, and Safety Culture for SMR Deployment**

	Instructors: • Dr. Wison Luangdilok, H2Technology LLC, USA • Dr. Chaiyod Soontrapa, Office of Atoms for Peace (OAP) Venue: Classroom 7 (2 nd floor) - Unicorn Building, West, True Digital Park, Bangkok
09:00 - 09:10	– Pre-test (10 min)
09:10 - 10:30	Session 1: Regulatory Safety Framework – Regulatory Frameworks and Institutional Arrangements for SMR Deployment (60 min) (Dr. Chaiyod Soontrapa) – Site Selection Criteria and Environmental Impact Assessment Considerations, including Key Site Parameters (e.g., Flooding, Seismic Hazards, Groundwater Characteristics, and External Events) Relevant to SMR Siting (20 min) (Dr. Wison Luangdilok)
10:30 - 10:45	Break
10:45 - 12:00	– Site Selection Criteria and Environmental Impact Assessment Considerations, including Key Site Parameters (e.g., Flooding, Seismic Hazards, Groundwater Characteristics, and External Events) Relevant to SMR Siting (Cont'd) (30 min) – Fundamental Nuclear Safety Principles (Defense-in-depth, Redundancy, Diversity, Passive Safety) (45 min) (Dr. Wison Luangdilok)
12:00 - 13:00	Lunch
13:00 - 13:50	Session 2: SMR Risk Assessment and Safety Culture – Risk Assessment Approaches for Nuclear Systems: Deterministic and Probabilistic Safety Analysis (Conceptual Level) (50 min) (Dr. Wison Luangdilok)
13:50 - 14:40	– Regulatory Compliance and Licensing Pathways for SMR Projects (50 min) (Dr. Wison Luangdilok)
14:40 - 15:30	– Nuclear Safety Culture: Principles, Leadership Responsibility, and Organizational Practices (50 min) (Dr. Wison Luangdilok)
15:30 - 15:45	Break
15:45 - 16:35	– Lessons Learned from the Fukushima Daiichi Nuclear Disaster for Safety Governance and Institutional Readiness (50 min) (Dr. Wison Luangdilok)
16:35 - 16:50	– Post-test (15 min)

Day 7 (2 Dec 2026)**Module 7: Policy and Strategic Planning for SMR Deployment**

	Instructors: • Dr. Raja Abdul Aziz Raja Adnan, Atomic Energy Advisory Council, Malaysia • Dr. Kampanart Silva, National Energy Technology Center (ENTEC) Venue: Classroom 7 (2 nd floor) - Unicorn Building, West, True Digital Park, Bangkok
09:00 - 09:10	– Pre-test (10 min)
09:10 - 10:20	Session 1: Policy and Regulation – Policy Instruments Supporting SMR Deployment (Market Design, Incentives, Financing Frameworks) (70 min) (Dr. Raja Abdul Aziz Raja Adnan)
10:20 - 10:45	Break
10:45 - 11:45	– Regulatory Pathways and Institutional Readiness (60 min) (Dr. Raja Abdul Aziz Raja Adnan)
11:45 - 12:45	Lunch
12:45 - 13:45	Session 2: Strategic Planning – Role of SMRs in National Energy Transition and Industrial Decarbonization Strategies (60 min) (Dr. Raja Abdul Aziz Raja Adnan)
13:45 - 14:45	– Comparative Assessment of SMRs within National Power and Industrial Policy Planning (60 min) (Dr. Kampanart Silva)
14:45 - 15:00	Break
15:00 - 15:55	– Stakeholder Engagement, Risk Communication, and Public Acceptance (55 min) (Dr. Kampanart Silva)
15:55 - 16:50	– Strategic Planning under Uncertainty (Energy Security, Climate Targets, Competitiveness) (55 min) (Dr. Kampanart Silva)
16:50 - 17:05	– Post-test (15 min)