

SMR Training program

General information

Number of Training Days: 7 Days

Duration: October 2026

1st – 2nd at OAP, TINT Bangkok

8th – 9th at KX Building, Bangkok

19th – 21th at KX Building, Bangkok

Location: KX Building, TINT Building, OAP Building

Scope & Form: The class is taught full days from 9:00-17:00. The teaching will be a combination of lectures, Q&A sessions and project work.

Evaluation: Pre- and Post-tests, Assignment, Software simulations, and Physical experiments

Curriculum

Day 1: 1st October 2026	
Module 1: Nuclear Simulation and Practical Analysis Workshop	
	Speakers: Expert 1 –TINT, CU. KMUTT Expert 2 –TINT, CU. KMUTT Location: OAP, TINT Bangkok
9:00 - 9:10	– Pre-test (10 min)
9:10 - 10:30	Session 1: Nuclear fundamentals – Fundamentals of reactor neutronics and chain reactions (80 min) Dr. Sunchai (CU)
10:30 - 10:45	– Coffee break
10:45 - 12:00	– Fundamentals of reactor thermal hydraulics and heat removal (75 min) Dr. Somboon (CU)
12:00 - 13:00	– Lunch
13:00 - 14:30	Session 2: Nuclear Simulation – Fundamentals of Reactor behavior under normal, transient, and selected accident conditions (70 min) TINT – Brief Lab (20 min) TINT
14:30 – 14:45	Coffee break
14:45 - 16:45	– Visiting research reactor & Reactor experiment criticality and show / input rod worth measurement (120 min) TINT
16:45 - 17:00	– Lab result evaluation (15 min)

Day 2: 2nd October 2026

Module 2: Nuclear Simulation and Practical Analysis Workshop

	Speakers: Expert 1 – OAP, TINT Expert 2 – OAP, TINT Location: OAP, TINT Bangkok
9:00 - 9:10	– Pre-test (10 min)
9:10 - 10:30	Session 1: Nuclear Simulation – Reactor behavior experiments and demonstrations under normal, transient, and selected accident conditions (80 min)
10:30 - 10:45	Coffee break
10:45 - 12:00	– Use of basic nuclear reactor simulation tools (e.g., HotSpot, TRACE, PARCS) (75 min)
12:00 - 13:00	Lunch
13:00 - 14:10	Session 2: Workshop & Discussion – Interpretation of simulation results for power distribution, reactivity effects, and system response (70 min)
14:10 - 15:20	– Fundamentals of radiation safety, radiation detection, and dose assessment (70 min)
15:20 - 15:35	Coffee break
15:35 - 16:45	– Introduction to source term estimation and environmental dispersion modeling (educational safety context) (70 min)
16:45 - 17:00	– Post-test (15 min)

Day 3: 8th October 2026

Module 3: Fundamentals of Nuclear Engineering for SMRs

	Speakers: Local expert 1 – IAEA, CU, TINT Local expert 2 – IAEA, CU, TINT Location: KX Building, Bangkok
9:00 - 9:20	– Welcome and course introduction (20 min)
9:20 - 9:30	– Pre-test (10 min)
9:30 - 10:30	Session 1: Nuclear fundamentals – Fundamentals of reactor neutronics and chain reactions (60 min)
10:30 - 10:45	Coffee break
10:45 - 12:00	– Fundamentals of reactor thermal hydraulics and heat removal (75 min)
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)
14:00 - 15:00	– Cross-cutting characteristics of SMR technologies (modularity, passive safety, simplified systems, operational flexibility) (60 min)
15:00 - 15:15	Coffee 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)
16:15 - 16:30	– Post-test (15 min)

Day 4: 9th October 2026	
Module 4: SMR Technology Applications and Integration	
	<p>Speakers: IAEA expert 1 – IAEA IAEA expert 2 – IAEA or MIT expert – MIT</p> <p>Location: KX Building, Bangkok</p>
9:00 - 9:10	– Pre-test (10 min)
9:10 - 10:40	<p>Session 1: Technology Applications</p> <p>– SMR Core Design and Fuel Cycle Fundamentals: Core design principles, fuel types, burnup characteristics, fuel management, and refueling strategies (90 min)</p>
10:40 - 10:55	Coffee break
10:55 - 12:00	– Modular Deployment and Operational Features: Factory fabrication, transportability, scalability, and load-following capabilities (65 min)
12:00 - 13:00	Lunch
13:00 - 14:00	<p>Session 2: Technology Integrations</p> <p>– Integration with Industrial Energy Systems: Coupling SMRs with industrial facilities for process heat and cogeneration (60 min)</p>
14:00 - 15:00	<p>– SMRs for Hydrogen Production: Technical interfaces and integration with hydrogen production systems (30 min)</p> <p>– Hybrid Energy Systems and Grid Interaction: Integration with renewables, energy storage, and flexible multi-energy systems (30 min)</p>
15:00 - 15:15	Coffee break
15:15 - 16:45	– Backend Fuel Cycle and Spent Fuel Management: Storage, transportation, and lifecycle management of spent nuclear fuel (90 min)
16:45 - 17:00	– Post-test (15 min)

Day 5: 19th October 2026	
Module 5: Regulatory Safety Framework, Risk Assessment, and Safety Culture for SMR Deployment	
	<p>Speakers: Dr. Wisan – H2Technology OAP Expert 3 - OAP</p> <p>Location: KX Building, Bangkok</p>
9:00 - 9:10	– Pre-test (10 min)
9:10 - 10:30	<p>Session 1: Regulatory Safety Framework</p> <ul style="list-style-type: none"> – Regulatory frameworks and institutional arrangements for SMR deployment (60 min, instructor from OAP?) – 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 (20/20 min)
10:30 - 10:45	Coffee break
10:45 - 12:00	<ul style="list-style-type: none"> – 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 (Con't) (30/30 min) – Fundamental nuclear safety principles (defense-in-depth, redundancy, diversity, passive safety) (45/50 min)
12:00 - 13:00	Lunch
13:00 - 13:50	<p>Session 2: SMR Risk Assessment and Safety Culture</p> <ul style="list-style-type: none"> – Risk assessment approaches for nuclear systems: deterministic and probabilistic safety analysis (conceptual level) (50 min)
13:50 - 14:40	– Regulatory compliance and licensing pathways for SMR projects (50 min)
14:40 - 15:30	– Regulatory compliance and licensing pathways for SMR projects (50 min)
15:30 - 15:45	Coffee break
15:45 - 16:35	– Lessons learned from the Fukushima Daiichi nuclear disaster for safety governance and institutional readiness (50 min)
16:35 - 16:50	– Post-test (15 min)

Day 6: 20th October 2026	
Module 6: Techno-Economic Assessment of SMR Deployment	
	Speakers: Dr. Pronnapa Sanongboon – CNL Location: KX Building, Bangkok
9:00 - 9:10	– Pre-test (10 min)
9:15 - 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)
10:30 - 10:45	Coffee break
10:45 - 12:00	– Levelized cost of energy (30 min) – Net present value (30 min) – Comparison with alternative low-carbon technologies (30 min)
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)
14:15 - 15:15	– Techno-economic assessment: economic feasibility, technical feasibility, and performance against baseline (60 min)
15:15 - 15:30	Coffee break
15:30 - 16:45	– Group work assignments (45 min) – Presentation, discussion, and evaluation (30 min)

Day 7: 21st October 2026**Module 7: Policy and Strategic Planning for SMR Deployment**

	Speakers: IAEA Expert 3 – IAEA OAP Expert 4 – OAP EGAT Expert – EGAT Location: KX Building, Bangkok
9:00 - 9:10	– Pre-test (10 min)
9:10 - 10:10	Session 1: Policy and Regulation – Policy instruments supporting SMR deployment (market design, incentives, financing frameworks) (60 min)
10:10 - 10:25	Coffee break
10:25 - 11:25	– Regulatory pathways and institutional readiness (60 min) Session 2: Strategic Planning – Role of SMRs in national energy transition and industrial decarbonization strategies (35 min)
12:00 - 13:00	Lunch
13:00 - 14:25	– Role of SMRs in national energy transition and industrial decarbonization strategies (Con't) (25 min) – Comparative assessment of SMRs within national power and industrial policy planning (60 min)
14:25 - 15:25	– Stakeholder engagement, risk communication, and public acceptance (60 min)
15:25 - 15:40	Coffee break
15:40 - 16:40	– Strategic planning under uncertainty (energy security, climate targets, competitiveness) (60 min)
16:40 - 16:55	– Post-test (15 min)