Course Overview

The first Canadian Nuclear Society (CNS) Thermalhydaulics Course was held in Toronto in 2017. We are now offering the second CNS Thermalhydaulics Course **on-line** on November 18-19, 2021 (Toronto local time) on account of the COVID-19 pandemic.

The objectives of this course are an overview of thermalhydraulics (TH), followed by broadening the area of TH as applied to CANDU reactors. The attendees will be presented with the fundamentals of TH, the importance of TH in nuclear-energy utilization and nuclear safety, TH phenomena, TH discipline applied for different nuclear facilities with a focus on CANDU, and areas of application (design, operation, safety evaluation, uncertainty, scaling, R&D, etc.)

The CNS is presenting this course to enhance the professional and technical capabilities of its members (and non-members) working in, or interested in, the nuclear industry. The course is ideally suited for beginning professionals, but also beneficial as a refresher overview course to experienced professionals. Come broaden your nuclear knowledge beyond your specific area of work and your own area of expertise.

The following 9 topics (90 minutes on each topic) would be covered in the course:

- Thermalhydraulics Overview
- Thermalhydraulics Fundamentals
- Fuel and Fuel-channel Thermalhydraulics
- Experiments to support Thermalhydraulics
- Primary Heat-Transport System Operations
- Containment Thermalhydraulics – NEW
- Thermalhydraulics Computer Codes Used for Safety Demonstrations
- V&V of Thermalhydraulic Computer Codes and Simulation Uncertainty Assessment
- Safety Analysis and Trip Coverage – NEW

Besides two NEW topics introduced this time, the existing topics will be also enhanced to make the lectures easier to follow based on the feedbacks received from the first course.

Registration

Please register on-line via the link on the Course web page, which you can reach directly by clicking the course web page, which you can reach directly at https://cns-snc.ca/events/cns-candu-thermalhydraulics/ or via the CNS web site (http://www.cns-snc.ca).

The registration fees are shown below, and include HST (HST # 870488889RT)

Early-Bird Rate
(Register by October 25, 2021)

- ☐ **CNS Member: $200.00**
  [Must be a CNS member in good standing]
- ☐ **Non-CNS Member: $250.00**
- ☐ **Full-time student (CNS member) or CNS retiree member: $100.00**

Regular Rate
(Register after October 25, 2021)

- ☐ **CNS Member: $250.00**
  [Must be a CNS member in good standing]
- ☐ **Non-CNS Member: $300.00**
- ☐ **Full-time student (CNS member) or CNS retiree member: $150.00**

The registration deadline is November 16, 2021

CNS Thermalhydraulics Course (ON-LINE)

Organized by:
The Canadian Nuclear Society
Nuclear Science & Engineering Division

2021 November 18-19
(Thursday-Friday, Toronto Time)

Course held on-line
(Connection details to be communicated later after your registration)

Course contact (not for registration):
Wei Shen, wei.shen@candu.org

For registration questions, contact
Elmir Lekovic, cns_office@cns-snc.ca

CNS Thermalhydraulics Course
2021 November 18-19
(Thursday-Friday, Toronto Time)
Course held on-line

Objectives of the course

- **To provide an overview of thermalhydraulics**
- **To broaden the area of thermalhydraulics as applied to CANDU reactors**
- **To provide an overview of the primary heat-transport system**
- **To network with colleagues in the industry**

Thursday November 18, 2021

08:15 Welcome & Opening Remarks
W. Shen (COG)

08:30 Thermalhydraulics Overview
N. Popov (UNENE)

10:00 Break

10:20 Thermalhydraulics Fundamentals
D. Novog (McMaster Univ.)

11:50 Lunch

12:50 Fuel and Fuel-channel Thermalhydraulics
Y. Guo (CNSC)

14:20 Break

14:40 Experiments to support Thermalhydraulics
J. Yang (CNL)

16:10 End of Day-1 Lectures

Friday November 19, 2021

08:15 Primary Heat-Transport System Operations
J. Froats (Ont. Tech U)

9:45 Break

10:00 Containment Thermalhydraulics
Q. Cui (SNCL-Candu)

11:30 Lunch

12:10 Thermalhydraulics Computer Codes Used for Safety Demonstrations
A. Delja (CNSC)

13:40 Break

13:50 Verification and Validation of Thermalhydraulics Computer Codes and Simulation Uncertainty Assessment
G. Waddington (CNL)

15:20 Break

15:30 Safety Analysis and Trip Coverage
V. Lau (SNCL-Candu)

17:00 Closing Remarks
W. Shen (COG)

17:10 End of Day-2 Lectures