

- In the aftermath of the reactor core melts at TMI2 and Chernobyl, societal reasonableness requests minimal consequences of an hypothetic severe accident.

- The objective of this course is to provide an overview on severe accidents for Nuclear Engineering MSc students. No prior knowledge of severe accident is required.

- The 4-day course programme is structured in 20 lectures covering the accident scenarios (including the description of historical accidents), Probabilistic Risk Assessment, mitigation concepts for current and future Light Water Reactors, basic corium physico-chemistry and thermal-hydraulics, mechanistic models for the various in-vessel and ex-vessel corium configurations, containment response, fission products and scenario codes.

- Course instructors are:

- Dr Gérard COGNET: severe accident project officer at CEA Saclay.
- Christophe JOURNEAU: PLINIUS corium experimental platform scientific officer at CEA Cadarache.

- The course is organised within the Belgian interuniversity programme for Master of Science in Nuclear Engineering.

<http://www3.sckcen.be/BNEN>

Course co-ordination:

Christophe JOURNEAU
CEA Cadarache
Severe Accident Mastering Lab.
DTP-STH-LMA
13108 St Paul lez Durance
France

Tel: +33 (0)4 42 25 41 21

Fax: +33 (0)4 42 25 77 88

E-mail : christophe.journeau@cea.fr

Course venue:

SCK•CEN, club-house, Mol Belgium

Itinerary: <http://www.sckcen.be>

Course language : English

Course fee:

The course is free of charge for academic registered MSc students. Industrial participants should contact the registration office.

Registration deadline: February 15, 2004

Registration office:

Catherine SPECT: cspect@sckcen.be

BNEN

BNEN is a consortium of the Belgian universities *Katholieke Universiteit Leuven, Université Catholique de Louvain, Université de Liège, Universiteit Gent, Vrije Universiteit Brussel* in collaboration with the *Belgian Nuclear Research Centre SCK•CEN*.



Special Training Course Severe Accidents

**Mol, Belgium
March 2-5, 2004**

Organised by:



*Belgian Nuclear higher
Education Network*



Severe Accident Course

Mol, March 2-5, 2004, 09.00 – 17.00

Gérard Cognet - Christophe Journeau, CEA

Day 1 (2 March 04) Gérard Cognet	Day 2 (3 March 04) Christophe Journeau	Day 3 (4 March 04) Christophe Journeau	Day 4 (5 March 04) Gérard Cognet
Introduction to Severe Accidents	Thermodynamics of corium: Phase diagrams, databases	In Vessel Corium Coolability or Vessel Failure. Jet ablation	Direct Containment Heating
The TMI-2 accident: Core degradation / phenomenology	Corium Formation and Relocation	Corium-Water Interactions	Containment Response to SA (short term and long term)
The Chernobyl-4 accident: description	Corium thermophysical properties	Corium rheology	Release and Transport of Fission Products
Accident Scenarios and Probabilistic risk assessment	Corium Pools thermal hydraulics	Ex Vessel Corium: Spreading	Mitigation Concepts For Future plants (EPR, AP600, VVER1000)
Severe Accident Management in current plants	Coupling between physico-chemistry and thermal hydraulics (1)	Molten Core – Concrete Interactions	Corium Experimentation
Scenario codes	Coupling between physico-chemistry and thermal hydraulics (2)	Ex Vessel Corium: Coolability	Discussion and Conclusions