The ISaR Institute for Safety and Reliability
The ISaR Institute is a scientific organization offering expertise and methods for assessing and optimizing the safety and the reliability of nuclear power plants and other complex systems. Main fields of activity are consulting on nuclear and interdisciplinary safety issues, analytical research related to simulation and probabilistic safety assessment, and training of graduates for nuclear careers. ISaR is located at the campus of the TU München in Garching near Munich.

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Training Course on Operation of Nuclear Power Plants

Place
Munich, Germany

Date
February 15th - 19th, 2010

Who should attend?
The course module is tailored to university graduates in engineering and science preparing for careers at nuclear utilities, vendors, suppliers, regulators, international organisations, expert organisations and consultants. The module is also well suited for young academic professionals in nuclear organisations and for nuclear re-education of engineers and scientists working in other fields.

Lecturers
The lectures are given by internationally renowned experts and executives from industry, research institutes and universities.

Registration deadlines
Early registration: January 25th, 2010
Late registration: February 10th, 2010

Registration fees*
Early registration: 2,500 €
Late registration: 3,000 €

Public bodies and ENEN members receive a 20% reduction. Grants are available for a limited number of students.

Information / registration
Ms. Heike Roehrich
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Walther-Meissner-Str. 2
85748 Garching
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Phone: +49 89 289 139 - 11
Fax: +49 89 289 139 - 49
E-mail: courses@isar.tum.de
Further details and registration at www.isar.tum.de/courses

Venue and Accommodation
The lectures will be given on the premises of the Technical University of Munich.

* Fees include VAT, cover lectures and course material.
Summary

This course module covers present day practices in the operation of light water reactor (LWR) power plants. The technological bases of plant operation are explained as well as successful strategies to achieve excellence in plant safety, availability and economical competitiveness. Special emphasis is put on the procedural and organisational aspects of operation.

Objectives

Participants are expected to achieve a good understanding of

- the organisation of a nuclear power plant
- structure and major contents of the plant documentation
- definitions of different operating conditions and reactor states
- concepts to control abnormal events and accidents
- refueling management procedures
- major maintenance and periodic test concepts
- the preparation of outages
- basic requirements and concepts related to industrial safety and fire protection
- ageing phenomena and procedures to deal with them
- boundary conditions set by laws and regulation
- significance and major concepts of coolant chemistry
- requirements and organisation of radiation protection
- the procedures to treat operational waste and spent fuel
- good practices to implement lessons learned from operating experience
- national and international systems for event classification and reporting
- the role of human factor aspects for NPP operation
- role and design of safety management systems
- how plant modifications are planned, prepared and managed.

Syllabus

- Organizational and operational structures of NPPs
- Process structure for operation
- Operational manual, technical specifications
- Accident management procedures
- Normal operation conditions
- Control of abnormal operation conditions, incidents and accidents
- Shut-down, outage states, start-up procedures
- Maintenance and periodic tests
- Outage preparation
- Ageing phenomena
- Coolant chemistry
- Refueling strategies
- Industrial safety, fire protection, environment
- Waste treatment (operational waste, spent fuel)
- Feedback of experience
- Safety management systems and tools
- Process of plant modifications
- Related laws and regulations
Training Course on
Building New Nuclear Power Plants

Place
Munich, Germany

Date
February 22nd - 24th, 2010

Who should attend?
The course module is tailored to university graduates in engineering and science preparing for careers at nuclear utilities, vendors, suppliers, regulators, international organisations, expert organisations and consultants. The module is also well suited for young academic professionals in nuclear organisations and for nuclear re-education of engineers and scientists working in other fields.

Lecturers
The lectures are given by internationally renowned experts and executives from industry, research institutes and universities.

Registration deadlines
Early registration: January 25th, 2010
Late registration: February 17th, 2009

Registration fees*
Early registration: 1,500 €
Late registration: 1,800 €

Public bodies and ENEN members receive a 20% reduction. Grants are available for a limited number of students.

Information / registration
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Further details and registration at www.isar.tum.de/courses

Venue and Accommodation
The lectures will be given on the premises of the Technical University of Munich.

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Summary

This course module covers strategies and procedures to build new nuclear capacity. The scope ranges from early preparatory steps in the political context up to the construction phase including the full range of technical, communicational and administrative tasks to be performed.

Objectives

Participants are expected to achieve a good understanding of:

- present day practices of planning, construction and building new nuclear capacity
- the relevant licensing models
- the different decision making processes
- the financial boundary conditions and dispositions
- siting procedures and criteria
- structure and main contents of safety analysis reports and environmental impact assessments
- quality assurance provisions related to new build
- the relevant phases and processes of commissioning.

Syllabus

- Overview of models and their history
  - preparatory phase up to decision on construction
  - financial provisions
  - siting
  - choice of plant design
  - environmental impact assessment
  - preparation of decision in principle

- After decision on construction
  - construction planning
  - planning for the grid
  - development of a safety analysis report
  - quality assurance
  - planning and organisation of commissioning

- Examples
  - historic and present
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www.ntech.mw.tum.de

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Training Course on
Decommissioning of Nuclear Installations

Place
Munich, Germany

Date
February 25th - 26th, 2010

Who should attend?
The course module is tailored to university graduates in engineering and science preparing for careers at nuclear utilities, vendors, suppliers, regulators, international organisations, expert organisations and consultants. The module is also well suited for young academic professionals in nuclear organisations and for nuclear re-education of engineers and scientists working in other fields.

Lecturers
The lectures are given by internationally renowned experts and executives from industry, research institutes and universities.

Registration deadlines
Early registration: January 25th, 2010
Late registration: February 22nd, 2010

Registration fees*
Early registration: 1,000 €
Late registration: 1,200 €

Public bodies and ENEN members receive a 20% reduction. Grants are available for a limited number of students.

Information / registration
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E-mail: courses@isar.tum.de
Further details and registration at www.isar.tum.de/courses

Venue and Accommodation
The lectures will be given on the premises of the Technical University of Munich.
Summary

This course module covers strategies and procedures to decommission nuclear installation after their useful life.

Objectives

Participants are expected to achieve a good understanding of

- how

Syllabus

- Decommissioning options and phases: Introduction and overview of decommissioning projects
- Regulatory aspects
- Specific process engineering technologies
- Basic requirements of technologies
- Dismantling
- Treatment of radioactive substances
- Conditioning of radioactive wastes
- Component maintenance
- Storage and transportation
- Interim storage
- Final disposal
- Water management
- Operational systems for decommissioning
  - ventilation
  - water collection and treatment
  - fire detection and protection
- Radioprotection and dose management
- Evaluation of experience (lessons learned)
- Typical time schedule and cost estimation
Training Course on
The Role of Nuclear Power for Energy Supply and Economics

Place
Munich, Germany

Date
March 01st - 02nd, 2010

Who should attend?
The course module is tailored to university graduates in engineering and science preparing for careers at nuclear utilities, vendors, suppliers, regulators, international organisations, expert organisations and consultants. The module is also well suited for young academic professionals in nuclear organisations and for nuclear re-education of engineers and scientists working in other fields.

Lecturers
The lectures are given by internationally renowned experts and executives from industry, research institutes and universities.

Registration deadlines
Early registration: January 25th, 2010
Late registration: February 24th, 2010

Registration fees*
Early registration: 1.000 €
Late registration: 1.200 €
ENEN members receive a 20% reduction.
Grants are available for a limited number of students.

Information / registration
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Venue and Accommodation
The lectures will be given on the premises of the Technical University Munich.
Summary

This course module deals with the whole spectrum of energy supply and economics and the role of nuclear energy within this context. It covers energy demand and resources, the concept of sustainability, the role and functionality of energy and electricity markets as well as the macroeconomic aspects of electricity and nuclear power production.

Objectives

Participants are expected to achieve a good understanding of:

- the different sectors of energy consumption and energy supply
- the impact of population growth
- bases and limits of forecasts
- common definitions such as load sectors, elasticity, resources and sustainability
- cost structures of relevant electricity generation options
- the role of relevant international institutions
- functioning of electricity markets
- how transmission and distribution is regulated
- role and structure of relevant taxes, subsidies and certificates
- interactions between economic growth and energy prices
- main factors relevant for security of supply
- principles and concepts of risk analyses.

Syllabus

- Energy demand / consumption and supply / resources
  - dependence on population and economic growth
  - elasticity, forecasts
  - role of energy for life and civilisation
  - resources
  - different sectors of energy consumption (electricity, heat, traffic, natural gas, etc.) and different technologies (incl. R&D) + transmission and distribution
  - different load sectors with respect to electricity generation
- Sustainability in energy policy / economics
  - overview of relevant national and international institutions
  - triangle of goals in sustainability
  - role of energy mix
  - generic evaluation of different energy sources and technologies with respect to sustainability
- Energy markets and electricity markets
  - value creation chain
  - market mechanism
  - costs and cost structure of electricity generation options
  - regulation of transmission and distribution
  - regime of emissions trading
  - energy taxes
- Macroeconomic and environmental aspects of energy / electricity, especially of nuclear energy
  - economic growth and role of energy prices
  - security of supply and risks analyses
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www.isar.tum.de

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www.ntech.mw.tum.de

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www.enen-assoc.org

Training Course on
Business Economics for Nuclear Power Plants

Place
Munich, Germany

Date
March 03rd, 2010

Who should attend?
The course module is tailored to university graduates in engineering and science preparing for careers at nuclear utilities, vendors, suppliers, regulators, international organisations, expert organisations and consultants. The module is also well suited for young academic professionals in nuclear organisations and for nuclear re-education of engineers and scientists working in other fields.

Lecturers
The lectures are given by internationally renowned experts and executives from industry, research institutes and universities.

Registration deadlines
Early registration: January 25th, 2010
Late registration: February 26th, 2010

Registration fees*
Early registration: 500 €
Late registration: 600 €
ENEN members receive a 20% reduction.
Grants are available for a limited number of students.

Information / registration
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Further details and registration at www.isar.tum.de/courses

Venue and Accomodation
The lectures will be given on the premises of the Technical University Munich.

* Fees include VAT, cover lectures and course material.
This course module deals with the economics and the financing of nuclear power from the perspective of investors and financing organisations. The conditions for the nuclear sector are compared to those for other energy supply options and set into a broader perspective of investments into generation, distribution and supply of power.

Objectives

Participants are expected to achieve a good understanding of

- the main differences between the financing needs and conditions for different types of power generation
- economics of operation as well as decommissioning
- budgeting and economic planning
- cost comparisons for different type of generation capacity
- economics of a nuclear power plant in the planning phase and during operation considering e.g. capital cost, rate of interest, depreciation
- the impact of financial market conditions on nuclear investments

Summary

Syllabus

- Economics and financing of new power plants
- Cost comparisons for different types of generation capacity
- Economics of power plant operation
- Economics of decommissioning
- Budgeting and economic planning
- Impact of financing on the generation, distribution and supply of power
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Training Course on
Dialogue with Politics and the Public

Place
Munich, Germany

Date
March 04th - 05th, 2010

Who should attend?
The course module is tailored to university graduates in engineering and science preparing for careers at nuclear utilities, vendors, suppliers, regulators, international organisations, expert organisations and consultants. The module is also well suited for young academic professionals in nuclear organisations and for nuclear re-education of engineers and scientists working in other fields.

Lecturers
The lectures are given by internationally renowned experts and executives from industry, research institutes and universities.

Registration deadlines
Early registration: January 25th, 2010
Late registration: March 01st, 2010

Registration fees*
Early registration: 1,000 €
Late registration: 1,200 €

ENEN members receive a 20% reduction.
Grants are available for a limited number of students.

Information / registration
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Further details and registration at www.isar.tum.de/courses

Venue and Accommodation
The lectures will be given on the premises of the Technical University of Munich.
Summary

This course module covers interdependencies between nuclear energy and the public, and how the interactions will influence everyone’s work in this business. The Course wants to give participants, while using case studies and role plays, where they act as representatives of different stakeholders, practical advice in handling with public bodies and the media.

Objectives

Participants should achieve a good understanding of how nuclear business is dependent, like hardly anyone else, and regardless the technical feasibility and economic aspects of planning, on the support of policy and the public opinion. Participants become sensitised about the interrelationship between politics, the public and further organisations, and that everyone working in the fields of nuclear business is involved in these interactions.

Syllabus

- Public acceptance in Europe: Influencing factors and strategies, overview of good practices and arguments for political and public discussions
  - key drivers (waste, security, events)
  - differences between member states
  - role of press and media
- European executive and legislative institutions, political parties
- Case studies from UK, Finland or Switzerland
- Role play on stakeholder interaction with past analysis