International Conference on Human Resource Development
for Nuclear Power Programmes: Building and Sustaining Capacity
Strategies for Education and Training, Networking and Knowledge Management
12-16 May 2014, Vienna, Austria

Education and Training Networks as a Tool for Nuclear Security Human Resource Development and Capacity Building

Division of Nuclear Security
Department of Nuclear Safety and Security
13 May 2014

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International Atomic Energy Agency

Human Resource Development for Capacity Building for Nuclear Security

Comprehensive Training Programme

Objective: To raise awareness, to fill gaps between the actual performance of personnel and the required competencies and skills and, to build-up qualified instructors/trainers

Promoting Nuclear Security Education

Objective: To support the development of teaching material, faculty expertise and preparedness, and the promotion of nuclear security education in collaboration with the academic and scientific community

Ultimate Goal: To develop capabilities for supporting sustainable implementation of the international legal instruments and IAEA guidelines for nuclear security worldwide, and to foster nuclear security culture.

Educational and Training Networks as Tools

- To achieve this goal, the Division of Nuclear Security helped establish two international networks
  - International Nuclear Security Education Network (INSEN) – 2010
  - International Network of Nuclear Security Training and Support Centers (NSSC) – 2012

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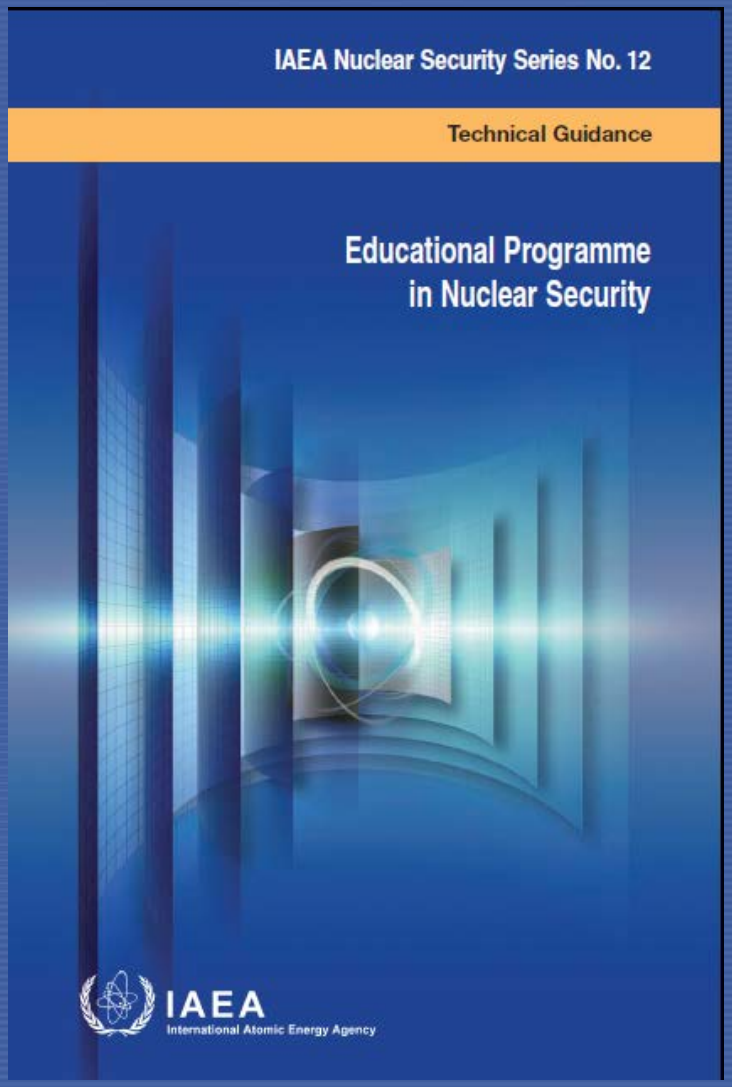
IAEA and Nuclear Security Education

- Increased interest in nuclear energy and nuclear security globally
- Requests from member-states for support in capacity-building and human resource development
- IAEA Nuclear Security Series No. 12 – Educational Programme in Nuclear Security published in 2010
  - Master of Science Programme
  - Certificate Programme



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International Nuclear Security Education Network
established in 2010

A partnership between the IAEA and universities, research institutions and other stakeholders

- Promotion of nuclear security education
- Development of educational materials
- Professional development for faculty members
- Collaborative research and resource sharing

Currently over 100 members from 40 member states

<u>Mission:</u> to enhance global nuclear security by developing, sharing and promoting excellence in nuclear security education

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INSEN Structure: Working Groups

Develop Educational Materials

Exchange information and develop materials for nuclear security education

- *Coordinate the development of peer-reviewed textbooks and instructional materials*
- *Incorporate results of nuclear security research in instructional materials*

Promote Faculty Development and Student Exchange

Promote faculty development and cooperation among educational institutions.

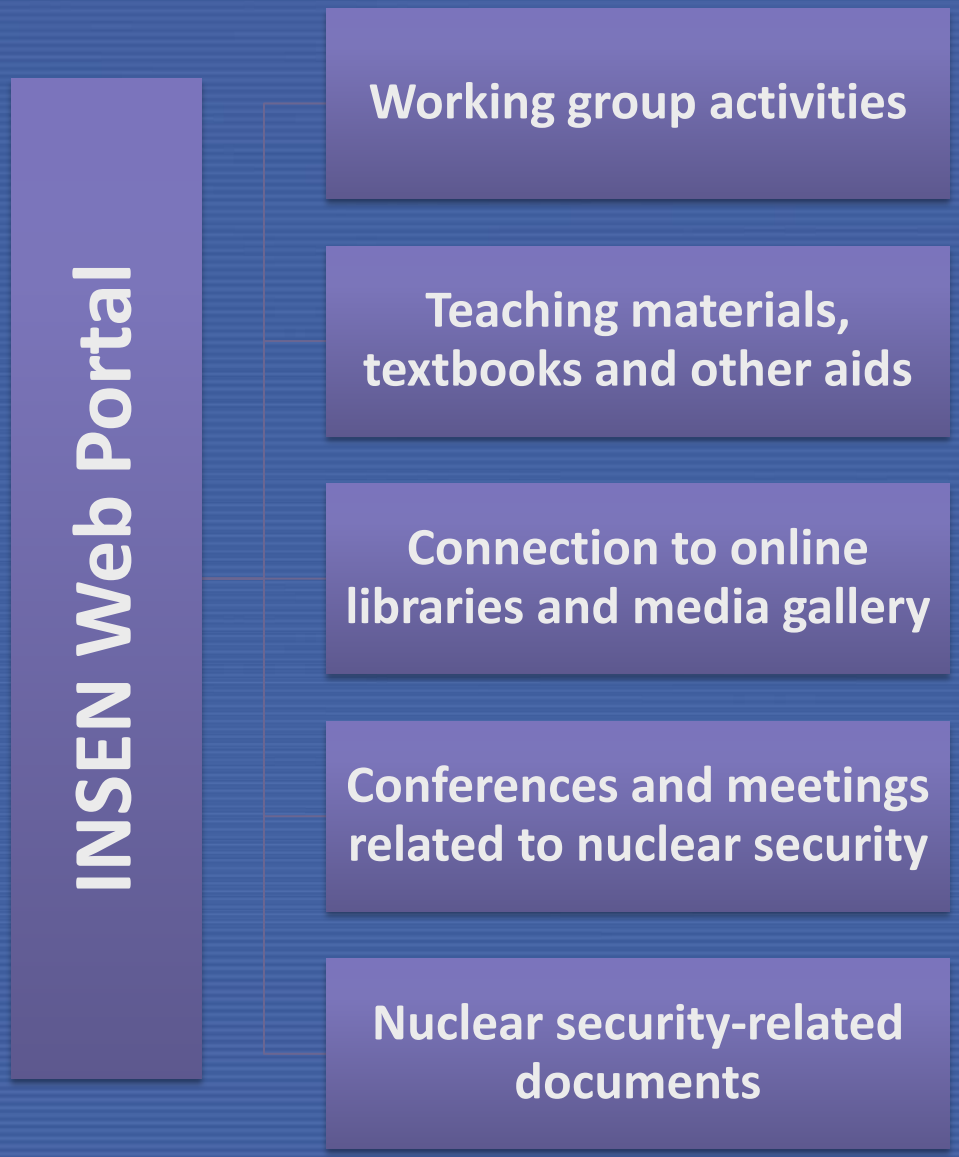
- *Develop tailored curricula for in depth courses*
- *Establish a mechanism to facilitate the exchange of students, teaching staff and researchers*

Promote Nuclear Security Education

Promote nuclear security education

- *Identify requirements for nuclear security specialists*
- *Assist in the development of nuclear security job descriptions*
- *Provide materials to be uploaded on the NUSEC portal*

Nuclear Security Portal (NUSEC)



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International Nuclear Security Education Network

Summit 2012
Working Group I
Working Group II
Working Group III
Education and Training
Nuclear Security Documents
Faculty Member & Students Exchange

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INSEN
International Nuclear Security Education Network

About INSEN
INSEN Members
INSEN Events
- INSEN Workshop 2010
- INSEN Annual Meeting 2011
- INSEN Annual Meeting 2012
  - Photo Gallery

INSEN Event | Announcements | Network Bureau

UCLan Nuclear provides regulatory and operational know-how in academia (University of Central Lancashire, UK) 1 Sep 2013

Courses and training available autumn 2013 We are pleased to announce a suite of Masters level courses for those looking to join the nuclear industry and for those in the industry looking to extend t ...

Read More

New Online Learning course - Systematic Approach to Training (SAT) 23 Dec 2013

As part of a wider e-learning project to support Newcomer countries, the IAEA Division of Nuclear Power, has just introduced a new online training module: "Systematic Approach to Training (SAT)", the ...

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IAEA Recommended List of M.Sc. Courses

Prerequisite courses

- NS.PR1. Applied mathematics
- NS.PR2. Basic nuclear physics

Required courses

- NS1. Introduction to nuclear security
- NS2. International and national legal framework regulating nuclear security
- NS3. Nuclear energy, nuclear fuel cycle and nuclear applications
- NS4. Methods and instruments for nuclear and other radioactive material measurements
- NS5. Effect of radiation, safety and radiation protection
- NS6. Threat assessment
- NS7. Physical protection systems design and evaluation
- NS8. Physical protection technologies and equipment
- NS9. Security of nuclear and other radioactive material in transport
- NS10. Detection of criminal or unauthorized acts involving nuclear and other radioactive material out of regulatory control
- NS11. Interdiction of, and response to, criminal or unauthorized acts involving nuclear and other radioactive material
- NS12. Crime scene investigation and forensic techniques
- NS22. IT/cyber security

IAEA Recommended List of M.Sc. Courses

Elective courses

- NS13. Nuclear material accountancy and inventory control of other radioactive material
- NS14. Vulnerability assessment of physical protection systems
- NS15. Risk assessment and management of State nuclear security measures
- NS16(a). Physical protection systems for nuclear and other radioactive material, sources and facilities
- NS16(b). Physical protection systems for radioactive material and sources
- NS17. Import/export and transit control mechanism and regime
- NS18. Nuclear security at major public events
- NS19. Nuclear forensics and attributions
- NS20. Infrastructure and procedures for detection and response to incidents involving nuclear or other radioactive material out of regulatory control
- NS21. Cooperation of stakeholders at national and international level

INSEN Achievements in Nuclear Security Education

- Over 100 members in total (over 80 institutions from 40 member states, +10 International Organizations, +4 Observers)
- Development and peer review of teaching materials and textbooks
  - 14 course packages out of 23 are completed (the rest to be completed in 2014-2015)
  - three INSEN textbooks (Introduction to NS, Security of Nuclear and Other Radioactive Material in Transport, and Computer Security)
  - four textbooks are scheduled to be developed in 2014-2015
- Professional development courses for faculty in the areas of nuclear security attended by over 150 faculty and instructors from 31 member states
- NSS 12 *Educational Programme in Nuclear Security* to be revised on the basis of input from INSEN members and to reflect newly-developed guidance documents.
- INSEN members are implementing a pilot M.Sc. degree programme in nuclear security based on NSS12 curriculum and INSEN teaching materials.

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IAEA supporting a pilot M.Sc. Programme on Nuclear Security based on NSS No 12 Educational Programme in Nuclear Security

Participating Institutions

- Technical University of Delft, The Netherlands
- Fachhochschule Brandenburg, Germany
- Technical University Vienna, Austria
- University of Oslo, Norway

Major Achievement

Implementation

- Launch of accredited Nuclear Security Master Programme: March 2013
- Expected graduation: December 2014
- Basis of teaching material: INSEN peer reviewed material, supported by IAEA Nuclear Security Fund

Supported by the IAEA & the European Commission

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First module - Germany	*Second module - Netherlands*	*Third module - Austria*
Legal framework The European approach Threat Intelligence Threat Assesment	Nuclear energy Nuclear fuel cycle Effects and Protection Protection systems	Protection Technologies Methods and instruments Measurements
Academic Skills		
Fourth module - Austria	*Fifth module - Germany*	*Sixth module - Netherlands*
Unauthorized acts Interdiction and response	Security Management Governance Policy IT and Cyber Security Audit	Transport, Culture, Ethics Crises management Risk management Crime Scene Investigation Forensic techniques
Academic Skills		
Thesis and Examination - Netherlands		

MSc in Nuclear Security - Audience

Graduates of universities holding an academic degree e.g. a Bachelor degree, or any other equivalent degree (technical or non-technical)

Potential careers in different fields, such as regulatory authorities, nuclear industry, various government agencies, law enforcement, academia, international affairs/security, legal affairs, intelligence, etc.

Master of Science in Nuclear Security

18 April 2013 - Director General Amano at the Delft University of Technology in the Netherlands

Education priorities for the future

- Incorporate feedback from the first pilot program into future academic activities in nuclear security
- Based on feedback from pilot program:
  - Revise the NSS12 guidance document
  - Update educational materials and textbooks
- Support INSEN members, which consider launching MSc programs at their institutions
- Continue promoting nuclear security education as part of existing degree programs (through certificate or concentration options)
- Support the use of new forms of teaching and learning in nuclear security education
  - Online e-learning degree programmes and modules
  - Learning by experience
  - Problem-oriented learning tailored to nuclear security functions

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Bridging Nuclear Security Training and Education

IAEA-ICTP International School on Nuclear Security

- Announced by the Italian government in 2010 at the Nuclear Security Summit in Washington (USA), and reinforced at the Nuclear Security Summits in 2012 and 2014 as a continued initiative
  - Supported each year by the Italian Government
  - Next school scheduled for Spring 2015

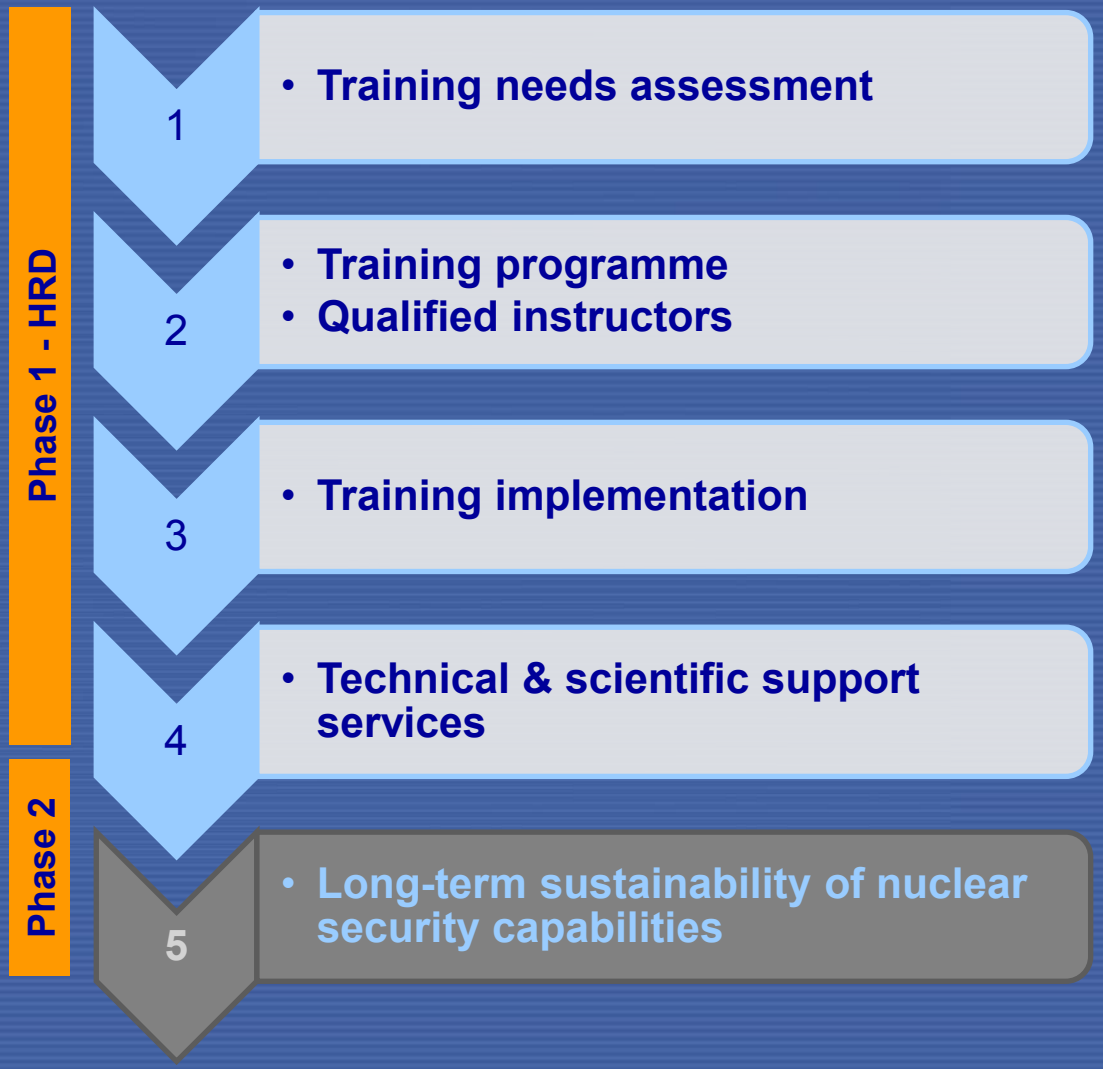
IAEA Nuclear Security Training Catalogue

- 26 courses in the Catalogue covering all aspects of nuclear security
  - Additional courses – member-state requests through official channels
  - Modularized and standardized
- Developing online e-learning modules on basic topics in nuclear security
  - The Use of Radiation Detection Instruments (available)
  - Physical Protection, Transport Security, Nuclear Material Accounting and Control for Nuclear Security, Radiological Crime Scene Management, and Computer Security (available in 2014)
  - Triple Bar in Nuclear Security (available in 2014)

Nuclear Security Support Centres

Primary objectives are:

- Develop **human resources** through the implementation of a tailored training programme
- Develop a **network** of **experts**
- Provide **technical support** for lifecycle equipment management and **scientific support** for the detection of and the response to nuclear security events



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International Network of Nuclear Security Training and Support Centres (NSSC)

- Key to coordinated collaboration at the international and regional levels
- Members from over 50 institutions worldwide
- Information exchange, resource sharing, coordination with educational networks

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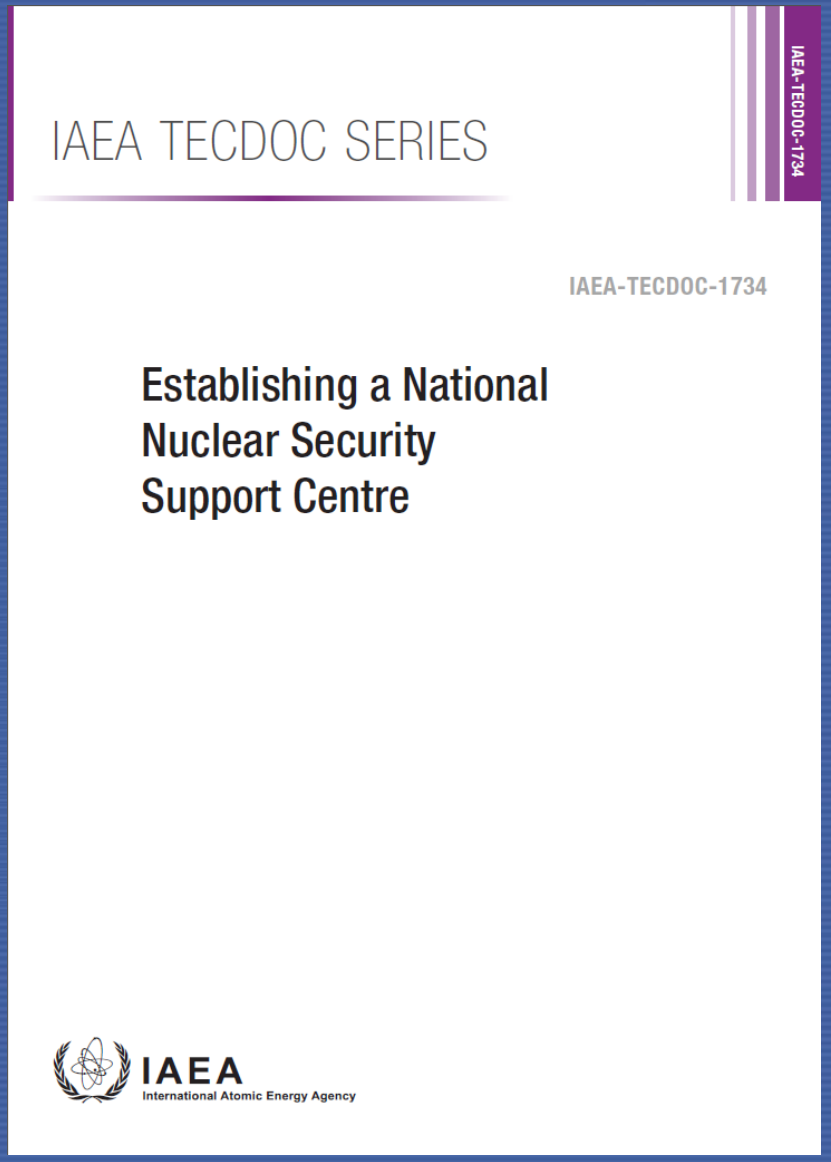
NSSC Network Objectives

- Promote a high level of nuclear security training and support services
- Facilitate the cooperation and assistance activities (including technical and scientific), to optimize the use (and leveraging) of available resources
- Contribute to the development of nuclear security training standards

Assistance in Establishing NSSC

- Methodology on how to establish and maintain a NSSC
- Methodology on how to assess training needs
- Development of tailored nuclear security training programme
- Preparation of instructors
- Facilitation of training for technical and scientific support
- Provision of technical equipment (limited amount)



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