

*Next Generation Nuclear Security*  
*Measuring Progress & Charting the Way Forward*  
13 April 2011

# **International Nuclear Security Education Network (INSEN)**

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# Two key milestones in 2010

- IAEA publishes *IAEA Nuclear Security Series #12: Educational Programme in Nuclear Security*
- IAEA and several universities and research institutions  
Establishment of INSEN

# IAEA Guidance Document

## Educational Programme in Nuclear Security



Might be of value for:

- decision makers
- operators
- managers at regulatory authorities
- law enforcement agencies
- managers working at other government nuclear organizations responsible for nuclear security

Addressed to:

- university curriculum developer
- faculty members
- human resource development managers

[http://www-pub.iaea.org/MTCD/publications/PDF/Pub1439\\_web.pdf](http://www-pub.iaea.org/MTCD/publications/PDF/Pub1439_web.pdf)

# Objectives

- Provide a comprehensive and current overview of nuclear security educational needs
- Provide guidance for developing a curriculum of a Master of Science and a Certificate Programme in Nuclear Security
- Emphasis on both the theoretical knowledge and the practical skills necessary to meet nuclear security requirements
- Propose concepts on how to establish the new discipline of nuclear security at educational institutions

# Recommended courses for MSc programme in Nuclear Security

## Prerequisite courses

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

## Required courses

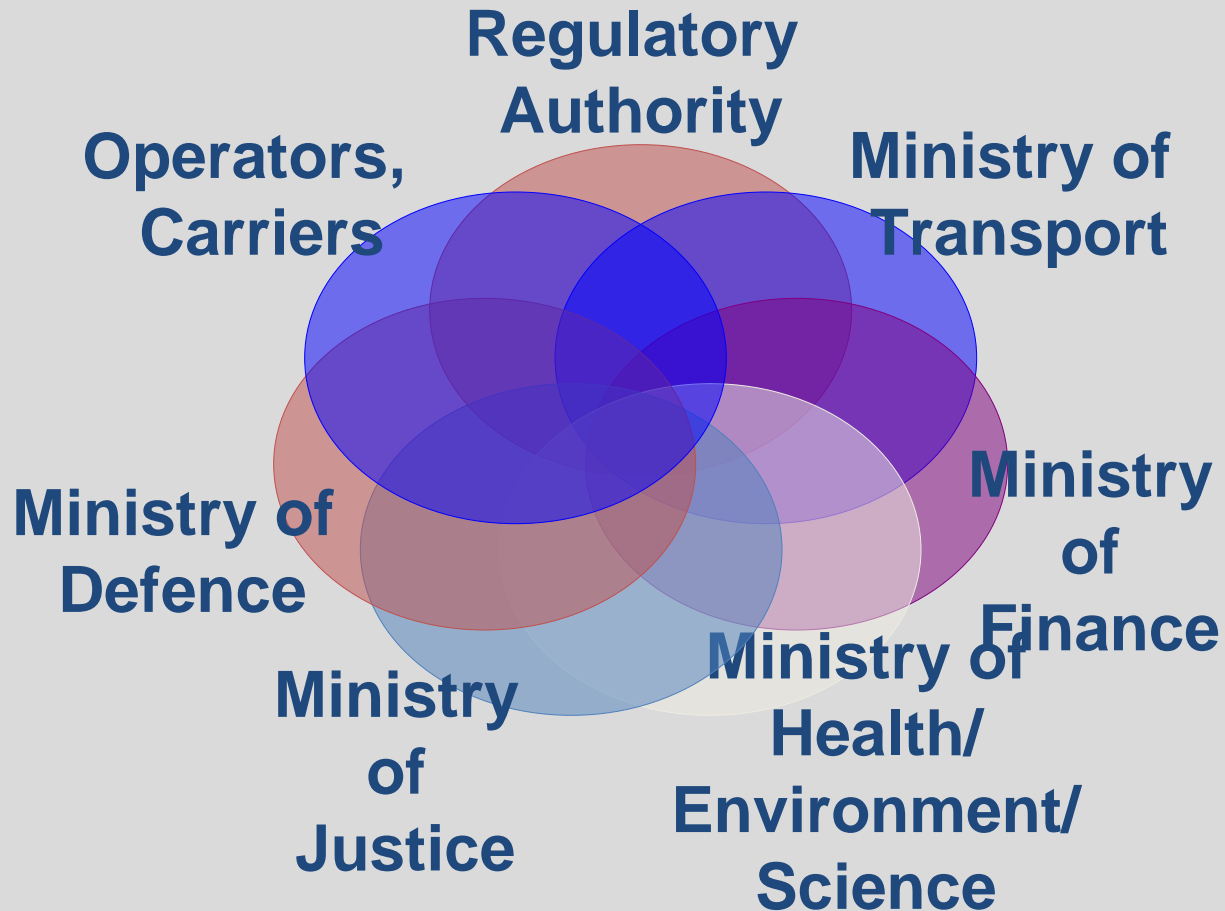
- NS1. Introduction to nuclear security
- NS2. International and national legal framework regulating nuclear security
- NS3. Nuclear energy, nuclear fuel cycle and nuclear applications
- NS4. Methods and instruments for nuclear and other radioactive material measurements
- NS5. Effect of radiation, safety 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 scenes investigation and forensic techniques

# Recommended courses for MSc programme in Nuclear Security

## Elective courses:

- NS13. Nuclear material accounting 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
- NS21. Cooperation of stakeholders at national and international level
- NS22. IT/Cyber-security

# Nuclear Security Careers



Educational programmes should be targeted at people interested in careers in the nuclear security field from various entities.

# Concepts for establishing 'nuclear security' at universities

- Expansion of existing academic programmes
- Establishment of certificate programmes
- Establishment of specializations in nuclear security
- International approach

# Challenges for Universities

- Selection of concept to implement nuclear security education
- Development of qualified faculty
- Development of textbooks and teaching material
- Establishment of nuclear security laboratories

# International Nuclear Security Network (INSEN)



IAEA Workshop, 29-31 March 2010

**36 participants:**

**17 universities**

**2 international organizations**

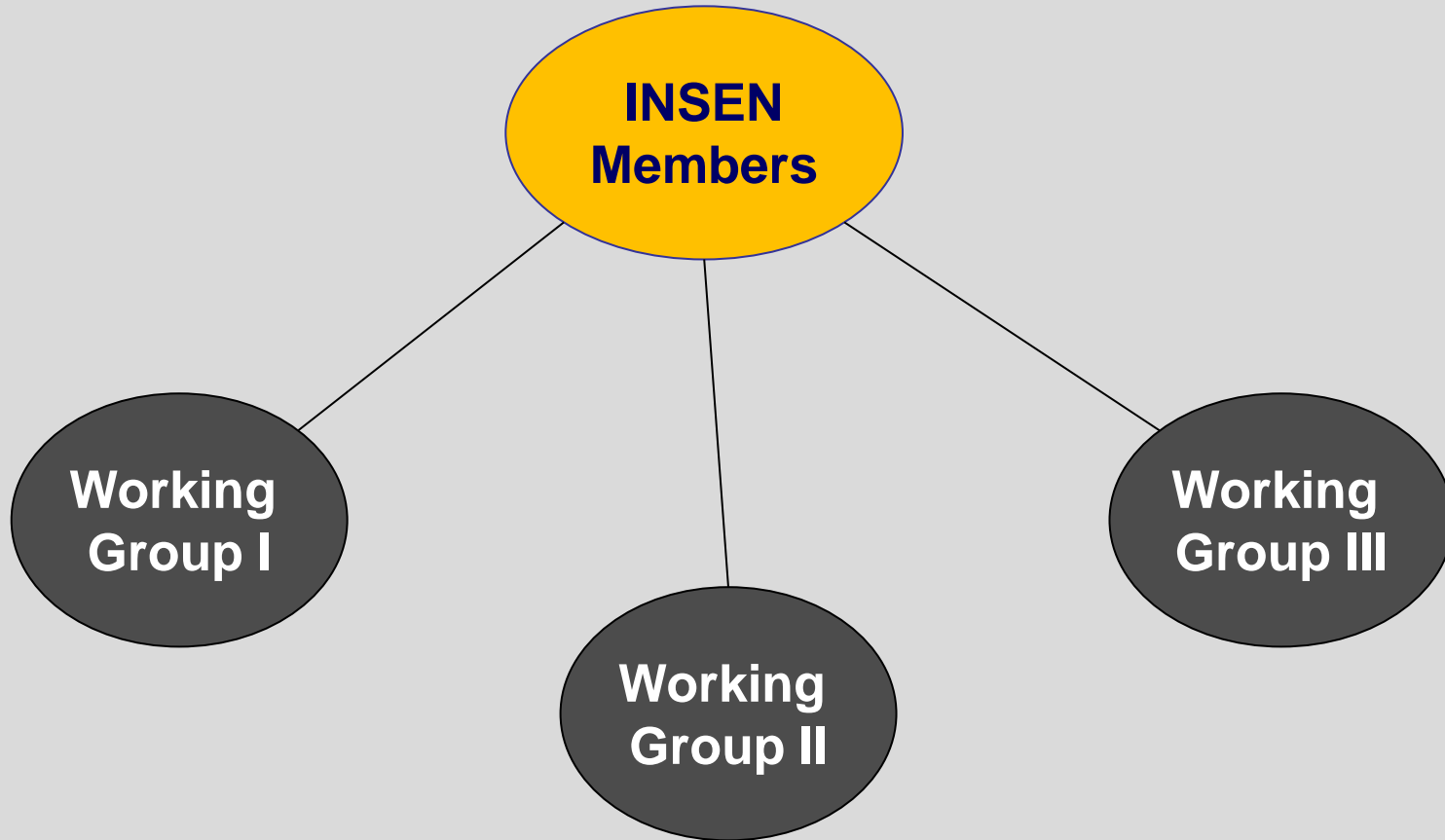
**several other stakeholders**

A partnership between the IAEA and universities, research institutions and other stakeholders *to enhance global nuclear security by developing, sharing and promoting excellence in nuclear security education*

# INSEN membership

- **Membership is informal and open to:**
  - Any educational and research institution already involved or, that plans to be involved, in nuclear security education in the future
  - Any other nuclear security stakeholder that is interested or involved in nuclear security education

# INSEN management & structure



INSEN is guided by all members.

# INSEN: Working Group I

## Exchange of information and development of materials for nuclear security education

- Develop textbook ‘Introduction to Nuclear Security’ covering areas proposed in IAEA Nuclear Security Series #12
- 9 INSEN Members and the IAEA
- Work Plan:
  - Develop first draft chapters for peer review (April to June 2011)
  - Peer Review Meeting (first week of July 2011)
  - Incorporation of comments by authors (July/August 2011)
  - Technical Editing (August/September 2011)
  - Finalizing text (September/October 2011)
  - Publishing (October/December 2011)

# INSEN: Working Group II

## Faculty development and cooperation among educational institutions

- 6 INSEN Members and the IAEA
- Development of guidelines related to qualification of teaching staff (by Q4 2011)
- Draft Syllabus (Q2 2011)
- Teaching Material (by late July 2011)
- Pilot course on 'Introduction to Nuclear Security: Professional Development' (September 2011)
  - King's College London to host pilot course
  - Lectures, discussions, sub-group work
  - Designed for a multi-disciplinary participant base

# INSEN: Working Group III

## Promotion of nuclear security education

- Promotional material for different audiences
- Joint INSEN paper submitted to INMM conference
- Explore possibility to produce a video together with nuclear security stakeholders promoting careers in nuclear security (depends on available funding)
- Explore possibilities of how to promote nuclear security education among other university networks, nuclear industry and law enforcement agencies (depends on available funding)

# NUCLEAR SECURITY INFORMATION PORTAL

INSEN - Windows Internet Explorer

http://nusec.iaea.org/portal/UserGroups/INSEN/tabid/409/Default.aspx


afnehmen

LEO Ergebnisse für "aufne... INSEN Course: E-learning

Home Office of NucSec Documents Databases Partners User Groups Members' Corner

search

You are in : User Groups > INSEN



**Links**

- Working Group I
- Working Group II
- Working Group III
- INSEN NS public website
- Educational Material
- Nuclear Security Documents
- Online libraries
- Media Gallery
- Career Opportunities
- Education and Training

**Announcements**

2 Mar 2011 **RUSSIA CELEBRATE GRADUATION OF NUCLEAR SECURITY EXPERTS**  
The following information was released by the National Nuclear Security Administration (NNSA):&... [Read more](#)

11 Feb 2011 **Featured article on INSEN**  
INSEN is now a featured article on the Nuclear Security public web site.  
[Read more](#)

3 Feb 2011 **Prioritizing Investment in Nuclear Security Education**  
*Bulletin of the Atomic Scientist* (01 April 2011)

**INSEN Events**

28 Mar 2011 **Carnegie International Nuclear Policy Conference**  
The 2011 Carnegie International Nuclear Policy Conference will take place from Monday, March 28 through Tuesday, March 29 at the Ronald Reagan International Trade Center in Washington, D.C. Widely co... [Read more](#)

11 Apr 2011 **Joint ICTP-IAEA International School on Nuclear Security**  
ICTP and its UN partner the International Atomic Energy Agency (IAEA) have announced plans to hold an "International School on Nuclear Security" at the Centre's Trieste campus next year.  
[Read more](#)

23 May 2011 **Intensive Course on International Nuclear Safeguards Policy and Information Analysis at CNS**  
The James Martin Center for Nonproliferation Studies (CNS) in cooperation with Lawrence Livermore National Laboratory and with support of the U.S. Department of Energy National Nuclear Security Administration... [Read more](#)

24 May 2011 **International Nuclear Safeguards Policy**

**INSEN Members Partners**

- Abdus Salam Intl. Centre for Theoretical Physics
- Ahmadu Bello University
- Atomprof Institute
- Bhabha Atomic Research Centre
- Brandenburg University
- Center for Nonproliferation Studies
- Delft University of Technology
- European Nuclear Education Network
- Harvard University
- Hôpital A. Michallon, CHU de Grenoble
- Institute for Radiological Protection and Nuclear Safety
- International Science and Technology Center
- King's College London
- Moscow Engineering Physics Institute (MEPhI)
- Naif Arab University for Security Sciences

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NUSEC Portal open to INSEN Members and Observers

# IAEA Web Portal

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graph TD; A[IAEA Web Portal] --> B[Other IAEA Web Portals]; A --> C[NUSEC Web Portal]; C --> D[BMWG Border Monitoring Working Group]; C --> E[INSSP Integrated Nuclear Security Support Program]; C --> F[INSEN International Nuclear Security Education Network]; C --> G[Nuclear Forensics Working Group];
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**Other IAEA  
Web Portals**

**NUSEC  
Web Portal**

**BMWG  
Border  
Monitoring  
Working  
Group**

**INSSP  
Integrated  
Nuclear  
Security  
Support  
Program**

**INSEN  
International  
Nuclear  
Security  
Education  
Network**

**Nuclear  
Forensics  
Working  
Group**

# **INSEN Web Portal**

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graph TD; A[INSEN Web Portal] --> B[Working Groups Activities]; A --> C[Educational and Training Material]; A --> D[Nuclear Security Career related Opportunities]; A --> E[Nuclear Security related Meetings Information]; A --> F[Nuclear Security related Documents];
```

**Working  
Groups  
Activities**

**Educational  
and  
Training  
Material**

**Nuclear  
Security  
Career  
related  
Opportunities**

**Nuclear  
Security  
related  
Meetings  
Information**

**Nuclear  
Security  
related  
Documents**

# Other Initiatives

- University of Stockholm and other European institutions proposall to establish a *European Nuclear Security Research Network* (ENSERN) under the EU Framework 7 (Security)
  - WP 1: Concept for a *European Journal of Nuclear Security*
  - WP 4: ‘Train the educators’ – IAEA advisory role
  - This initiative would support INSEN WG II efforts
- Delft University of Technology and other institutions plan to establish a *European Master of Science Programme in Nuclear Security* with the support of European Commission Erasmus Funding
  - IAEA advisory role
  - This initiative would support INSEN efforts

# New INSEN Members & Observers since January 2011

- Africa

- Ahmadu Bello University, Nigeria

- Europe

- Eidgenössische Technische Hochschule Zürich ist eine technisch-naturwissenschaftliche Universität (ETHZ), Switzerland
- Dalton Nuclear Institute, The University of Manchester, UK
- University of Central Lancashire, UK
- Stockholm International  
Peace Research Institute (SIPRI), Sweden

Currently:  
45 INSEN Members

## United States

- Partnership for Nuclear Security, U.S. Department of State

Currently:  
4 INSEN Observers