

Position Statement - WG4 - Education and Training

Interdisciplinary requirements for nonproliferation education

Prof. Suresh Aghara and Marco Marzo
Integrated Nuclear Security and Safeguards Laboratory (INSSL)
University of Massachusetts Lowell

What we need:

- Professionals that know deeply nonproliferation and safeguards, and not only are aware of those areas;
- To establish a formal educational process that builds experts on nonproliferation, nuclear safeguards and security;
- To form professionals that are able to improve practices and procedures, and not only follow procedures;
- To form professionals which understand and are able to apply the synergies between nuclear safeguards and nuclear security.

Objectives of a formal educational process:

- Nuclear nonproliferation, and nuclear safeguards have to be considered in a broader sense, as they present multidisciplinary nature. Therefore it is essential to educate professionals with a broad overview on all aspects relevant to nonproliferation and safeguards.
- An expert should know:
 - (1) All elements of the nonproliferation regime
 - (2) The technical aspects related to nuclear materials, nuclear facilities and nuclear safeguards and security, getting a deeper understanding in nuclear fuel cycle, safeguards application at International, State, and facility levels.
 - (3) International and geopolitical issues related to nonproliferation, including the historical evolution of nonproliferation and international safeguards; and
 - (4) International and domestic legal framework on nuclear safeguards and security

How to establish the Education Program

- We envisage a graduate certificate on nuclear security and safeguards
- Through core courses, students would develop skills and knowledge on nonproliferation regime, international safeguards, weapons of mass

destruction, global and regional treaties, import/export controls on dual-use technologies, detecting special nuclear material, and methods for assessing and quantifying the risk of nuclear terrorism;

- By completing optional courses the students would get a deeper understanding in nuclear fuel cycle, international non-proliferation regime, the safeguards approaches at State and facility levels, the verification methods for safeguards, nuclear forensic, and radiation detection and instrumentation techniques.
- The courses should foster the development of analytical skills, emphasizing the information evaluation as primary and essential tool for nonproliferation and safeguards.

Specific Courses

- Weapons of Mass Destruction
- Fundamentals of nuclear security and safeguards
- Non-Proliferation regime and International Safeguards
- Nuclear Fuel Cycle and Acquisition Path Analysis
- Nuclear Material Accounting and Control
- State-level approaches
- Information evaluation
- Safeguards approaches at facility level
- Synergies between nuclear safeguards and security
- Mechanisms of trade control
- Threat Assessment and Risk Management
- Nuclear Instrumentation