

ISS Training Strategy

Guido Gluschke – February 7, 2019



Overview

- Introduction
- Capacity and Competence Building Activities
 - Master programs
 - Professional Development Courses
 - Advanced Training Courses
 - Cyber Exercises
 - eLearning Activities
- Training Strategy



Brandenburg University of Applied Sciences In A Nutshell

Institute for Security and Safety (ISS) belongs to the Brandenburg University of Applied Sciences (THB), Brandenburg, Germany

THB founded in 1992

Fields of study:

engineering, information science, media, economy

~3,000 students,

~70km away from Berlin (SW)





Institute for Security and Safety (ISS) In A Nutshell

ISS founded by Prof. Friedrich Holl and Guido Gluschke in 2012 as an interface between THB and international organisations in order to implement activities for the IAEA

In between, ISS supported IAEA, UN, ITU, EU, NATO, OSCE, WEF and others in the security domain

ISS's focuses on advise and capacity and competence Building in the fields of nuclear and cyber security

ISS was in 2010 founding member of the IAEA International Nuclear Security Education Network (INSEN)





IAEA International Nuclear Security Education Network (INSEN)

Mission:

to enhance global nuclear security by developing, sharing and promoting excellence in nuclear security education

INSEN institutions: 178

INSEN Member States: 63

According to the mission three Working Groups (WGs) exist:

WG I – Educational materials

WG II – Faculty development & cooperation

WG III – Promote nuclear security education





Int'l Initiatives On Cyber Security ISS Was Involved In (IAEA, OSCE, EU, Chatham House, NTI, WEF, ISS)



IAEA Nuclear Security Series No. 17, Computer Security at Nuclear Facilities, IAEA Vienna, Mar 2011

NS 22 Computer Security for Nuclear Security Professionals, INSEN, Oct 2013

Cyber Security at Nuclear Facilities: National Approaches, Institute for Security and Safety, Potsdam, Jun 2015

Cyber Security at Civil Nuclear Facilities: Understanding the Risks, Chatham House, London, Oct 2015

Outpacing Cyber Threats: Priorities for Cybersecurity at Nuclear Facilities, Nuclear Threat Initiative, Washington, Dec 2016

Cyber Security in the Energy Sector - Recommendations for the European Commission on a European Strategic Framework and Potential Future Legislative Acts for the Energy Sector, European Commission, Brussels, Feb 2017

Analysis of the Implementation of the Initial Set of Confidence-Building Measures to Reduce the Risks of Conflict Stemming from the Use of Information and Communication Technologies, OSCE, Vienna, Feb 2017

Cyber Security Policies and Critical Infrastructure Protection, Gluschke, Casin, Potsdam, Sep 2018

Cyber Resilience in the Electricity Ecosystem: Principles and Guidance for Boards, World Economic Forum, Geneva, Feb 2019



Capacity Building On Cyber And Nuclear Security (www.uniss.org)

 **Fachhochschule
Brandenburg**
University of
Applied Sciences
**Institute for
Security and Safety**

**Education And
Capacity Building
For Nation States**

 **Fachhochschule
Brandenburg**
University of
Applied Sciences
**Institute for
Security and Safety**

**Master of Science
(M.Sc.) in
Nuclear Security**

 **Fachhochschule
Brandenburg**
University of
Applied Sciences
**Institute for
Security and Safety**

**Professional
Development
Course on
IT/Cyber Security**

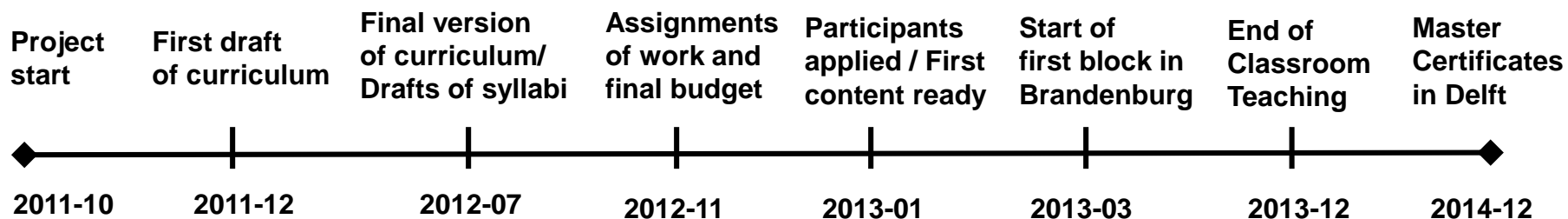


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Pilot Master in Nuclear Security 2011-2014






Content And Dissamination 6 Modules, 2 Weeks Each

<i>First module - Germany</i>	<i>Second module - Netherlands</i>	<i>Third module - Austria</i>
March 2013 Legal framework The European approach Threat Intelligence Threat Assessment	April 2013 Nuclear energy Nuclear fuel cycle Effects and Protection Protection systems	June 2013 Protection Technologies Methods and instruments Measurements
Academic Skills		
<i>Fourth module - Austria</i>	<i>Fifth module - Germany</i>	<i>Sixth module - Netherlands</i>
August 2013 Unauthorized acts Interdiction and response	October 2013 Security Management Governance Policy IT and Cyber Security Audit	December 2013 Transport, Culture, Ethics Crises management Risk management Crime Scene Investigation Forensic techniques
Academic Skills		
Thesis and Examination - Netherlands		Jan - Sep 2014





Current Master in Nuclear Security (www.mins.study)




Technische Hochschule
Brandenburg
University of Applied Sciences
Institute for Security
and Safety


OVERVIEWINTRODUCTIONAPPLICATIONTEAMDOWNLOADNEWSISSCONTACT

Master in Nuclear Security (MiNS)


(Click on images below for more information)




FOR STUDENTS AND
CAREER PATHS



FOR COMPANIES AND
OTHER EMPLOYERS



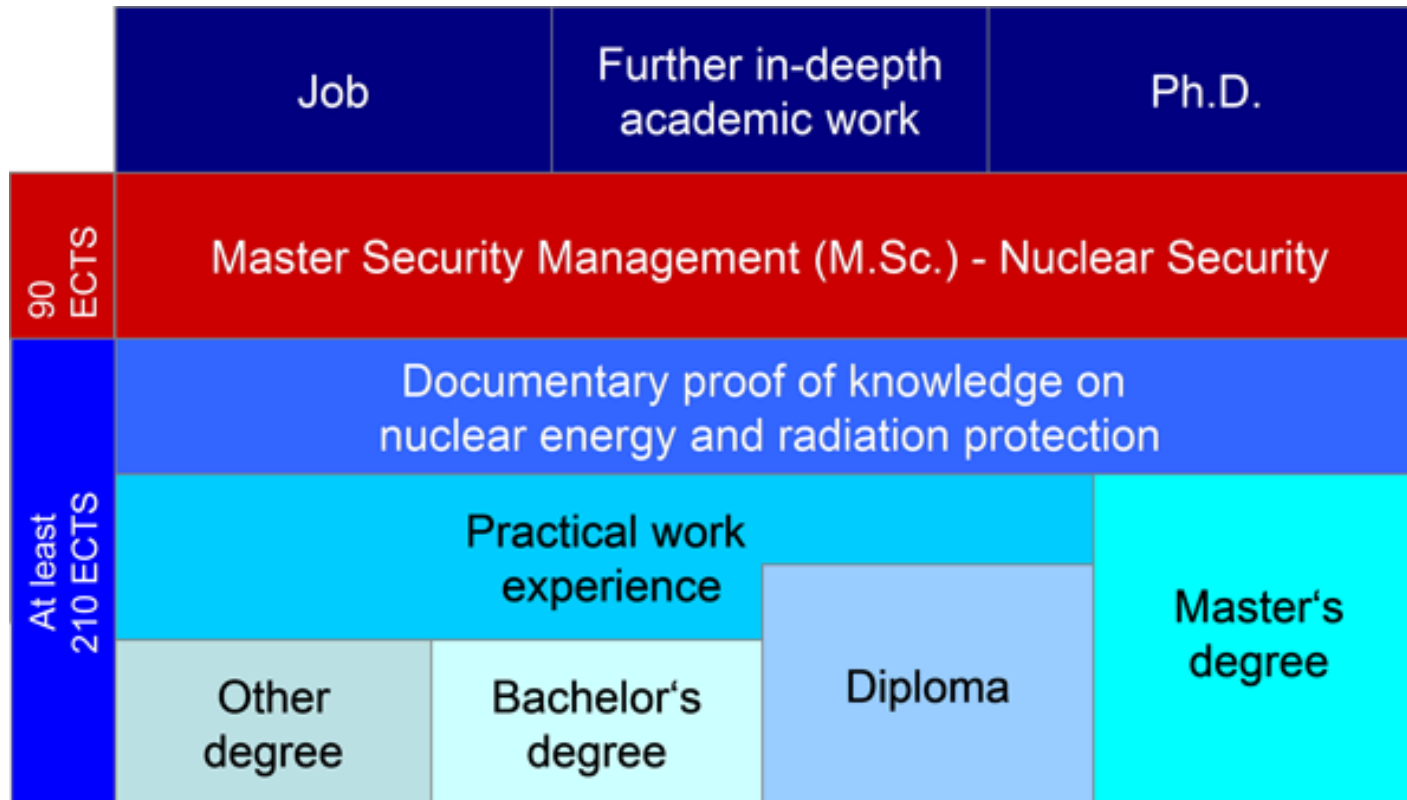
FOR EDUCATIONAL
INSTITUTIONS



SUPPORT AND PROMOTION
OPPORTUNITIES



MiNS Career





MiNS Impemented As A Distance Learning Program

Nuclear Security Management

Dashboard > Courses > NSM > Nuclear Security Background > 2.2 Decades gap between Safety and Security

NAVIGATION

- Dashboard
 - Site home
 - Site pages
 - Current course
 - NSM
 - Participants
 - Badges
 - Nuclear Security Management
 - Nuclear Concerns
 - Nuclear Security Background
 - 2.1 3S - Security/Safety/Safeguards
 - 2.2 Decades gap between Safety and Security**
 - 2.3 IAEA Nuclear Security Series Overview
 - 2.4 International initiatives in Nuclear Security
 - 2.5 IAEA Convention and Amendment to the Conventio
 - Test yourself Lesson 2
 - Case study: HEU reduction in civilian activity as ...
 - Assignment: Further steps to enhance Global Nuclea...
 - Essential Elements of Nuclear Security
 - Management Basics for Nuclear Security
 - Understanding Security Management
 - Organizing Security
 - Protecting Assets
 - My courses

ADMINISTRATION

- Page module administration
 - Edit settings
 - Locally assigned roles
 - Permissions
 - Check permissions
 - Filters

2.2 Decades gap between Safety and Security

In 1986 IAEA released "Special report: Nuclear Plant safety", where indicate 30 years of experience in safety building of civil nuclear power plants. Authors split the Safety approaches and emphasizes by several time periods:

1. "Pre-history" of safety (1947-1957)
2. Safety of design (1957-1967)
3. Safety of construction (1967-1979)
4. Safety in operation (1979-1986)
5. International safety (1986-...)

Then we can continue, based on Nuclear Safety articles and reports:

6. Passive safety systems (1995-2005)
7. NPP's life extension management (2005-...)
8. Accident management and con...

It is interesting that in the beginning of look place. And it was more than 30 years ago.

In the 1970s the number of projects for Fukushima NPPs.

After 30 years of studies about Chernobyl. But we will extract some of them:

1. The lack of safety culture, the lack of safety culture, the lack of safety culture
2. Facility design issues, that could be improved
3. Delayed accident management

Much more activity on safety measures could be managed in more effective manner after the Chernobyl disaster.

It were old reactors, different core construction from Chernobyl, but:

- It was boiling type of reactor, the same as at Chernobyl NPP, with the same hydrogen explosion hazard in design.
- Seismic and tsunami potential region with historical cases above NPP was designed to withstand and week preparedness to severe incidents.
- Evacuation issues caused by tsunami consequences.

So, even 25 years later having state-of-the-art modeling and simulation technologies, safety governance and regulatory obligation to avoid any accident, we are still on the stage of a lack of management and safety culture importance underestimation.

Getting back to "generations" of safety, we will see that everything noted as highest priority measures many years before will come unfinished or partly implemented even half of century later.

And what is about "young" Nuclear Security?

We can virtually split the history of Nuclear Security in several stages:

1. "Pre-history" of security (1970-1979) 2. Security by obligation (1980-1990) 3. Protection of weapon stocks (1991-2000) 4. Terrorist threat (2001-2009) 5. International efforts (2010-...)

Before 1975 there were no obligations or documents those stated anything about importance of security measures. Of course, there was some inherent understanding of need to protection of nuclear materials and references about it at IAEA that is mostly additive to existing research activities.

Current students from:
Brazil, Chad, Eritrea, Sierra Leone, The Netherlands, Germany

Next students from:
Ghana, Kenya, Malawi, Uganda, Yemen, Zimbabwe

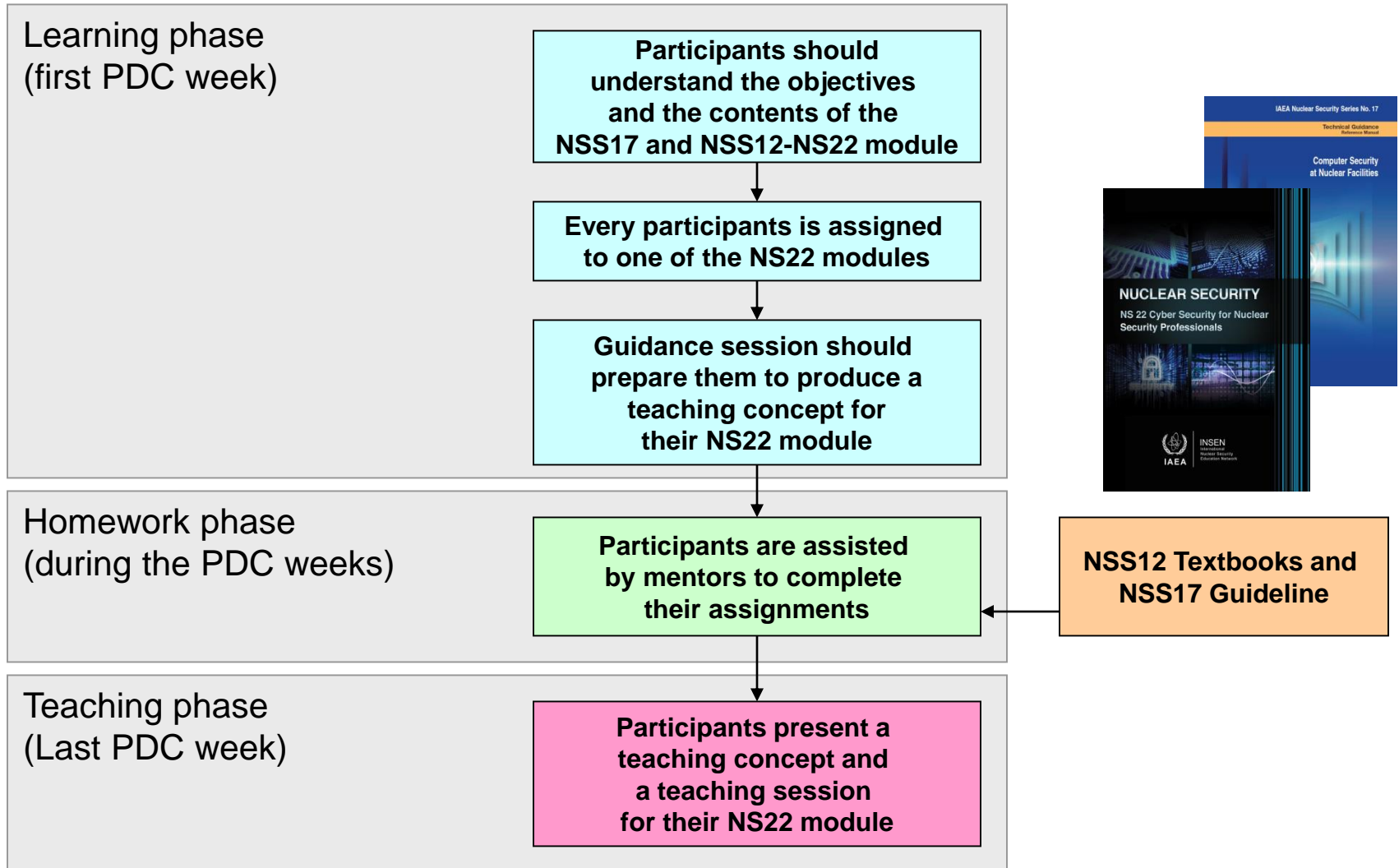


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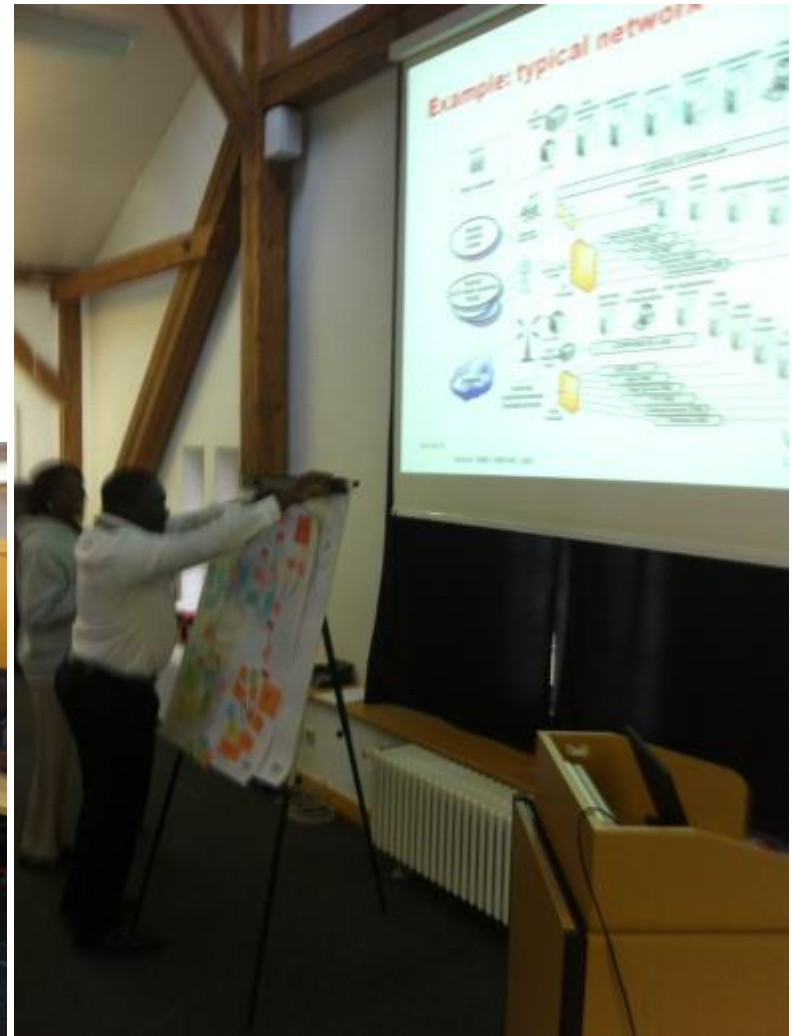


Nuclear IT/Cyber Security Professional Development Course (PDC) Learning Model





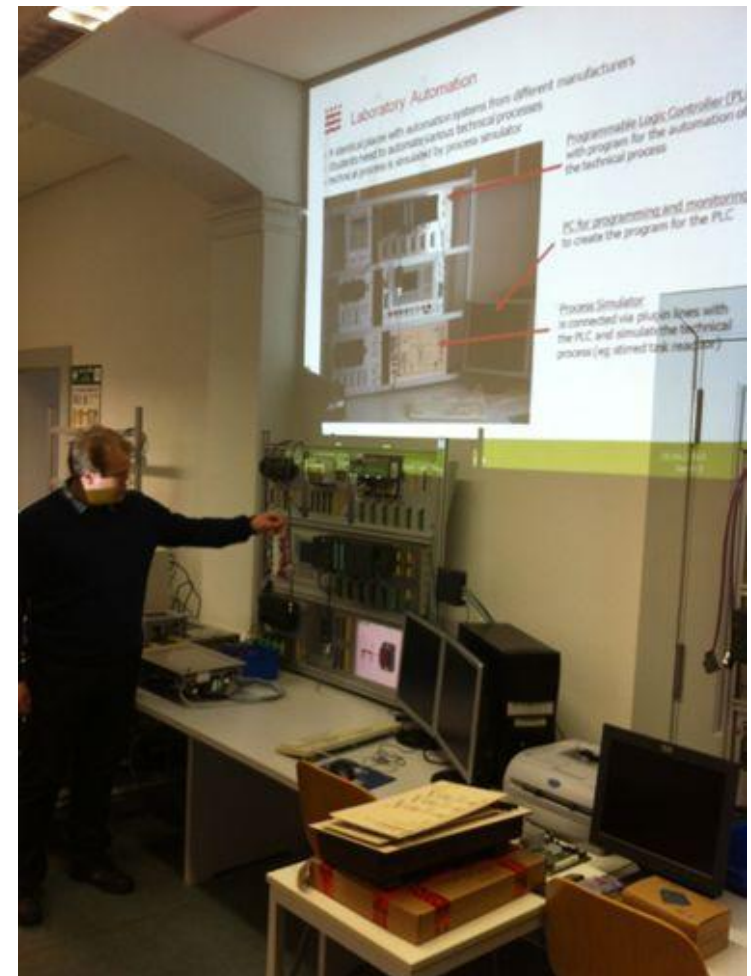
PDC Classroom-Work





Labs at Brandenburg University of Applied Sciences

- ICS and IT/Cyber Security Labs at Brandenburg University of Applied Sciences





Four Nuclear IT/Cyber Security PDCs 2012-2014





Four Nuclear IT/Cyber Security PDCs 2012-2014

- 4 Nuclear IT/Cyber Security PDCs
- 59 Participants
- 21 Countries
 - Austria
 - Canada
 - Egypt
 - Ghana
 - Iraq
 - Jamaica
 - Jordan
 - Kenya
 - Malaysia
 - Morocco
 - Nigeria
 - Poland
 - Republic of Macedonia
 - Russian Federation
 - South Africa
 - South Korea
 - Tanzania
 - Thailand
 - UK
 - Ukraine
 - US



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Advanced Training Courses

ISS supported IAEA, US State Department, US DoE by providing trainer for Nuclear Cyber Security Training Courses and Schools, i.a. in

- Triest, Italy
- Rio de Janeiro, Brazil
- Moskau, Russia
- Accra, Ghana
- Mumbai, India
- Idaho Falls, US
- Budapest, Hungary
- Karlsruhe, Germany
- Vienna, Austria

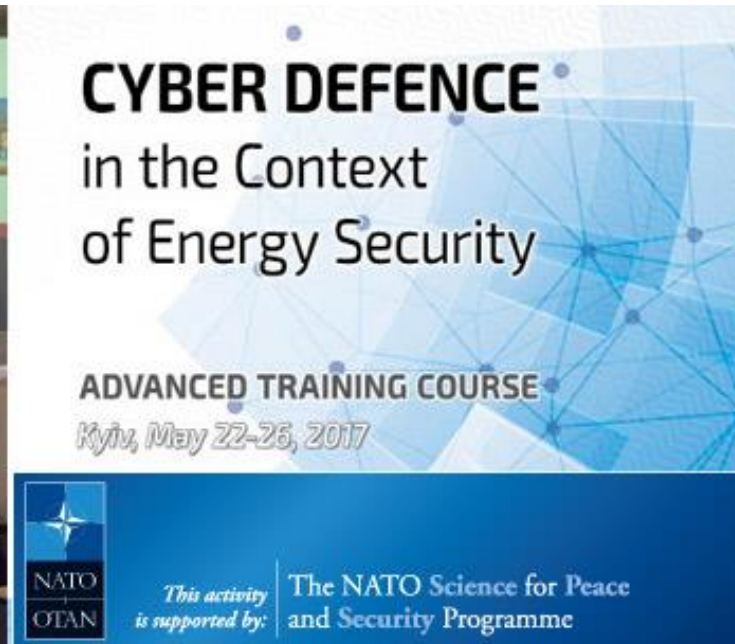
IAEA works in training courses and exercises with hypothetical facilities and mock-ups





Advanced Training Courses

ISS supported NATO by developing and conducting a one-week Cyber Defence ATC in Kiev for the energy sector in Ukraine





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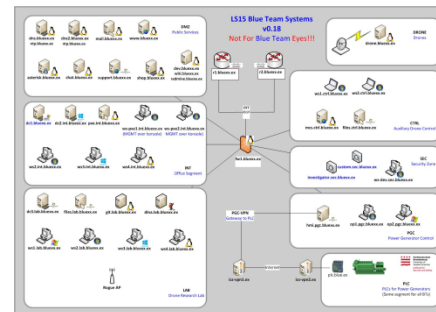
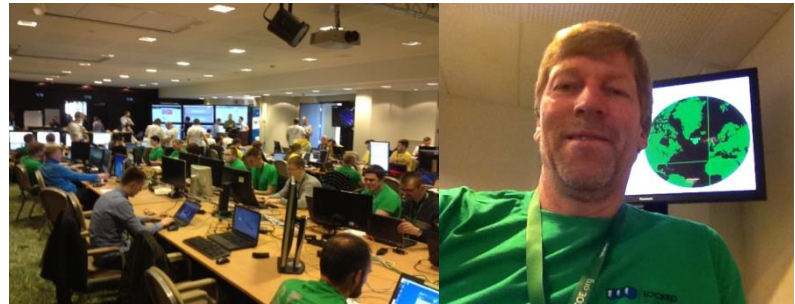
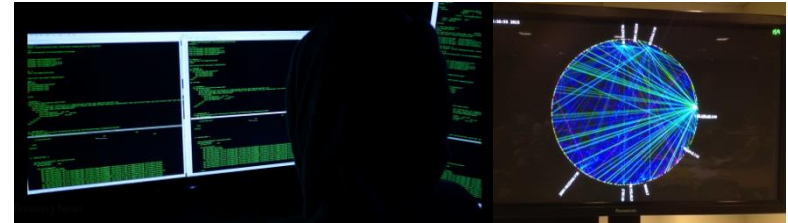


ISS Cyber Security Exercises

ISS supported various Cyber Security Exercises, e.g.

- NATO Locked Shield Exercise 2015 in ICS Security
- Guardtime Cyber Security Exercise for the UK Nuclear Sector 2018 and 2019
- New IAEA ITC Cyber Security Exercise on ICS Security 2018

ISS develops currently an Cyber Security Exercise on attacks against SCADA and Physical Protection Systems for the nuclear sector of Kazakhstan which will be held in February 2018



- Reconnaissance
- Weaponization
- Delivery
- Exploitation
- Installation
- Command & Control
- Actions on Objective



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ISS Developed Dynamic 3D Environments (Demo: vips.uniss.org)

ISS developed various distance learning approaches, e.g.

- elearning modules
- 3D environments
- VR and AR environments

In 2019 ISS will look at micro-learning approaches





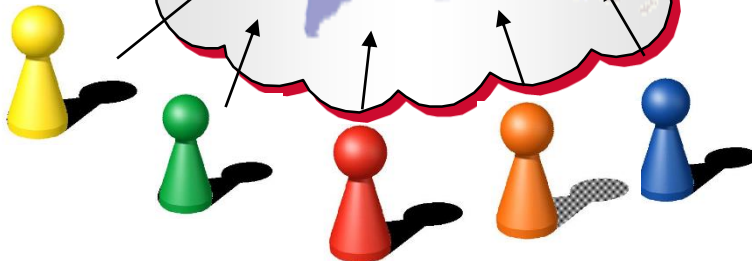
Vision: Interactive 3D Environment Connected With Players From Universities Worldwide



The
Insider



The Bad Guy



Individual players from international
universities and organizations



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Fundamental Aspects Of A Modern Educational Approach

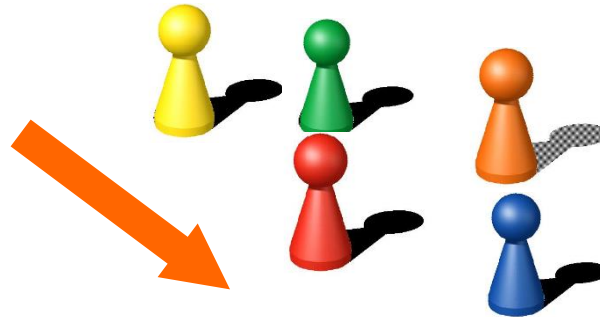
- ISS has rich experience in international education
- ISS has good knowledge in developing and tailoring individual international capacity building activities and is innovative
- ISS has international reach out through INSEN
- For the ITU CoE program ISS starts in the 2019 cycle with offering distance learning modules on its eLearning platform
 - This guarantees a high flexibility for participants of the program
 - Learning could be tailored to daily work needs of participants
 - Worldwide access to program is given
 - New topics should be integrated easily into the program
 - It overcomes visa and travel issues



Our Vision On Future International Education

Generic Educational Program

Content and learning methods are generic for interest group (fixed generic curriculum)



Target Group-oriented Educational Program

Content and learning methods are tailored to need of target group (module based curriculum)



Individual Educational Program

Content and learning methods are tailored to individual needs (individual curriculum)

Thank you for your attention!

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www.uniss.org**

