

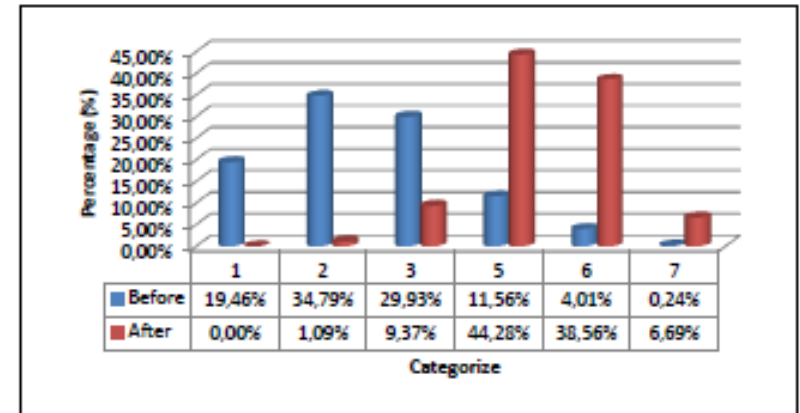
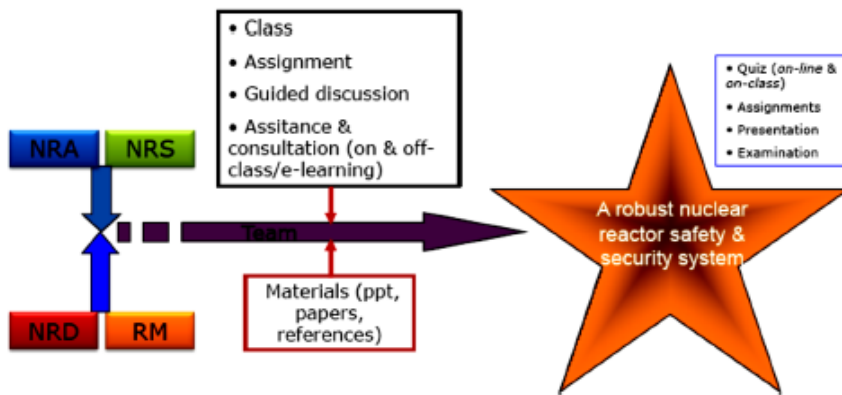
# Nuclear Security Education for an International Student

Yanuar Ady Setiawan

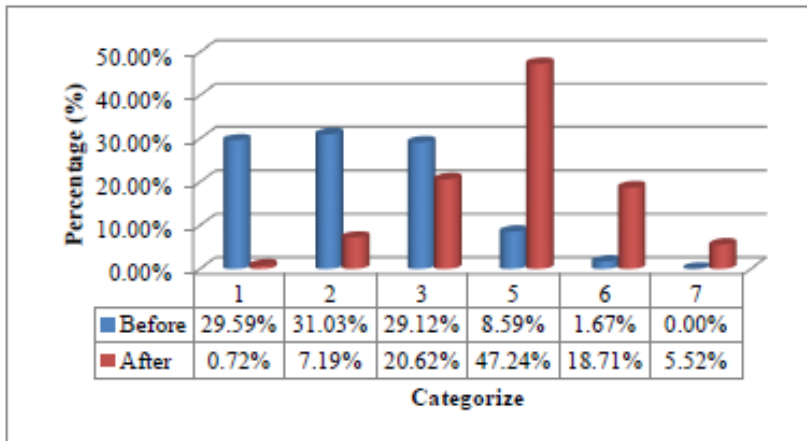
Federation of American Scientists (FAS) Symposium  
April 21, 2017  
Washington D.C.



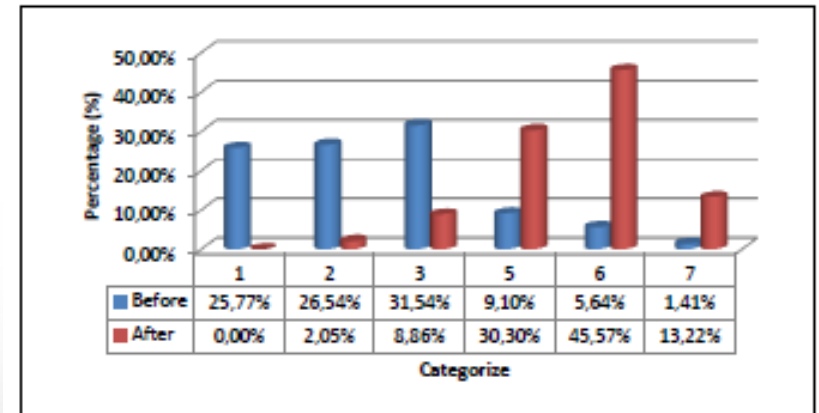
# Immediate Impact of PNS Support



2014



2013



2015

# UGM Nuclear Engineering Curriculum

NE 3S Core Courses: 24 of 27 credits

Concentration Courses: 20 credits

3S Elective Courses: 4-8 credits

Course Title	Credits	3S Content
Introduction to Nuclear Engineering	3	Safety Security Safeguards
Radiation Detection and Measurement	3	Safety Security Safeguards
Nuclear Reactor Physics	3	Safety Security
Radiochemistry	2	Safety Security
Radiation Protection	2	Safety
Nuclear Computation	2	Safety Security Safeguards
Radioactive Waste Management and Treatment	3	Safety Security Safeguards
Nuclear Safety, Security, and Safeguards System	3	Safety Security Safeguards
Radiation Detection and Measurement Laboratory	1	Safety Security Safeguards
Radiochemistry Laboratory	1	Safety Security
Nuclear Reactor Physics Laboratory	1	Safety Security
<b>Total Credit Hours</b>	<b>24</b>	

Course Title	Credits	3S Content
Nuclear Reactor Thermal Hydraulics	3	Safety
Nuclear Power Plant Technology	2	Safety
Nuclear Instrumentation	2	Safety Security Safeguards
Nuclear Material	2	Security Safeguards
Nuclear Reactor Analysis	3	Safety Safeguards
Nuclear Fuel Management and Processing	3	Safety Security Safeguards
Radiation Chemistry	2	Safety Security
Nuclear System Design	3	Safety Security Safeguards
<b>Total Credit Hours</b>	<b>20</b>	

Course Title	Credits	3S Content
Advanced Reactor Technology	2	Safety Security Safeguards
Nuclear Fuel Management in Reactor Core	2	Safety Security Safeguards
Nuclear Fusion Reactor Technology	2	Safety Security Safeguards
Radioisotope Application	2	Safety Security
Radiation Application	2	Safety Security
Isotope Separation Technique	2	Safety Security Safeguards
<b>Total Credit Hours</b>	<b>12</b>	



# NSSPI at Texas A&M University

Semester	Course Title	Class Hours per Week
Year 1 Fall	Radiation Interactions and Shielding	3
	Radiation Detection and Materials Measurement	3
	Nuclear Non-Proliferation and Arms Control	3
Year 1 Spring	Nuclear Reactor Theory	3
	Nuclear Reactor Analysis and Experimentation	4
	Nuclear Fuel Cycles and Nuclear Material Safeguards	3
	Seminar	1
Year 2 Fall	Design of Nuclear Reactors with Safety, Security, Safeguard (3S) Focus (Capstone Course)	4
	Seminar	1
	Technical Electives and Research	7
Year 2 Spring		
	Total Credit Hours	32

Elective Course Title	Department
Monte Carlo Methods for Particle Transport	Nuclear Engineering
Emergency Response Dose Assessment	Nuclear Engineering
Nuclear Security Systems Design	Nuclear Engineering
Radiochemistry and Nuclear Forensics	Chemistry
Inverse Problems: Nuclear Forensics	Mathematics
Deterrence and Coercion	The Bush School of Government & Public Service
International Security	The Bush School
The Role of Intelligence in Security	The Bush School
Nuclear Terrorism Threat Assessment and Analysis	The Bush School

Education Portal (<http://nsspi.tamu.edu/nssep>)

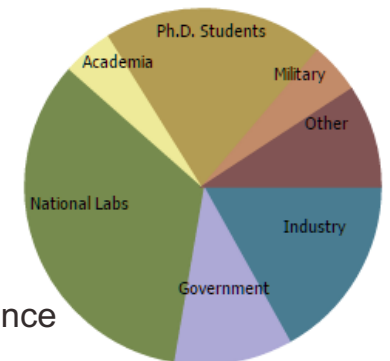
- Nuclear and Atomic Physics;
- Nuclear Fuel Cycle;
- Radiation Detection;
- Introduction to Statistics;
- Containment & Surveillance;
- Nuclear Material Accountancy;
- Physical Protection Systems;
- Threats to Nuclear Security;
- Insider Threats;
- Nuclear Security Culture;
- Spent Nuclear Fuel Safeguards;

11 years, 79 graduates:

- 54 M.S. degrees
- 5 M.E. degrees
- 20 Ph.D. degrees

Other Programs:

- Nuclear Facility Experience (NFE)
- Study abroad
- Conference & Symposium
- Short course
- Workforce/course development





# Opportunity for International Student

## NNSA Consortium Grant:

- \$25 million for UC Berkeley in 2011
- \$25 million for UMich in 2014
- \$25 million for NCSU in 2014
- \$25 million for UC Berkeley in 2016

U.S. Citizenship requirement strongly applied for NNSA fellowship/research/project

## Stanton Fellowship:

- Harvard Belfer Center
- Carnegie Endowment
- CFR (U.S. Citizenship)
- Stanford CISAC
- MIT
- RAND
- Texas A&M NSSPI

## National Laboratory Internship:

- SRNL, BNL, Sandia (U.S. Citizen only)
- PNNL, LLNL, LANL (U.S. Citizenship might be required)
- ANL (U.S. Citizenship on nonproliferation program)
- INL and ORNL (open to non-U.S. citizen for nuclear security-related program)

## Summer Short Course:

- PNNL: Radiation detection for nuclear security summer school (U.S. Citizen only)
- LANL: Dr. G. Robert Keepin Nonproliferation summer school (U.S. Citizen only)
- BNL : Nuclear Nonproliferation, Safeguards, and Security (open to non-U.S. Citizen)
- LLNL-CNS(MIIS) : International Safeguards Policy (open to non-U.S. Citizen)



Thanks to:

Federation of American Scientists (FAS)

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Indonesia Endowment Fund for Education (LPDP)

Nuclear Engineering of Universitas Gadjah Mada (UGM)

My Family and Friends

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