



The Next Steps for the Gulf Nuclear Energy Infrastructure Institute (GNEII)

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Outline



- Introduction & Background
- Foundational Pillars
- GNEII Education Curriculum—Phase I
- Sustainability & Transition
- KU-IAEA Collaborating Centre
- Conclusion

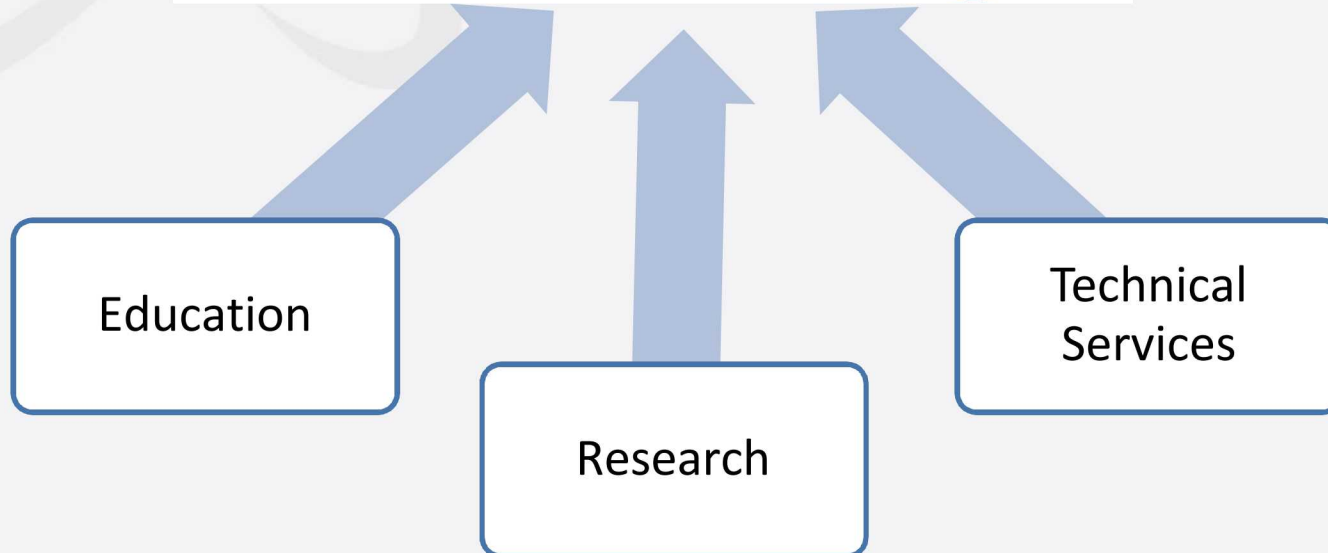
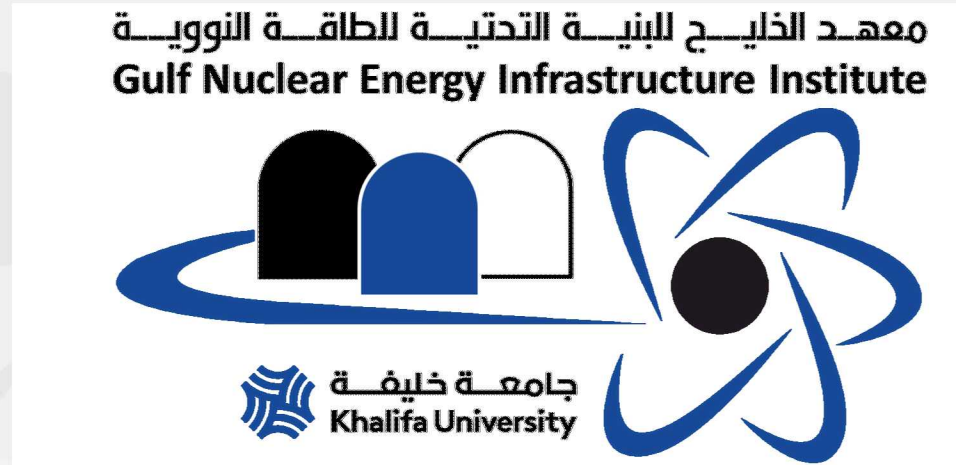
Introduction & Background (1/2)

- Focus of this presentation is on the UAE experience in nuclear safety and security programmes (GNEII)
- GNEII is:
 - A Gulf/Middle East regional human resource development capability
 - Hosted at Khalifa University, Abu Dhabi, UAE
 - A strategic partnership between UAE & U.S. Stakeholders
 - An educational & research entity
 - Beyond traditional training courses
 - A leader in '3S' & emergent nuclear energy infrastructure knowledge



- GNEII's Mission:
 - develop a **responsible nuclear energy culture and institutionalize safety, security, and safeguards norms** in the future decision-makers of Gulf-region nuclear energy programs through professional development
- GNEII's Vision:
 - provide the Gulf, and surrounding region, with **a continual source of indigenous nuclear energy professionals** with whom the global community can effectively collaborate to achieve broader nuclear energy security, safeguards and safety priorities
- Established in 2011, 7 years of operation

Foundational Pillars (1/3)



- Pillar #II: **Technical Services**

- Leverage Khalifa University Nuclear Engineering Department capabilities
- Provides opportunities for:
 - Practical exercises
 - Hands-on instruction
 - Real-life scenario simulations



KU Environmental Radiation Measurements Laboratory



KU Radiation Detection and Safeguards Laboratory

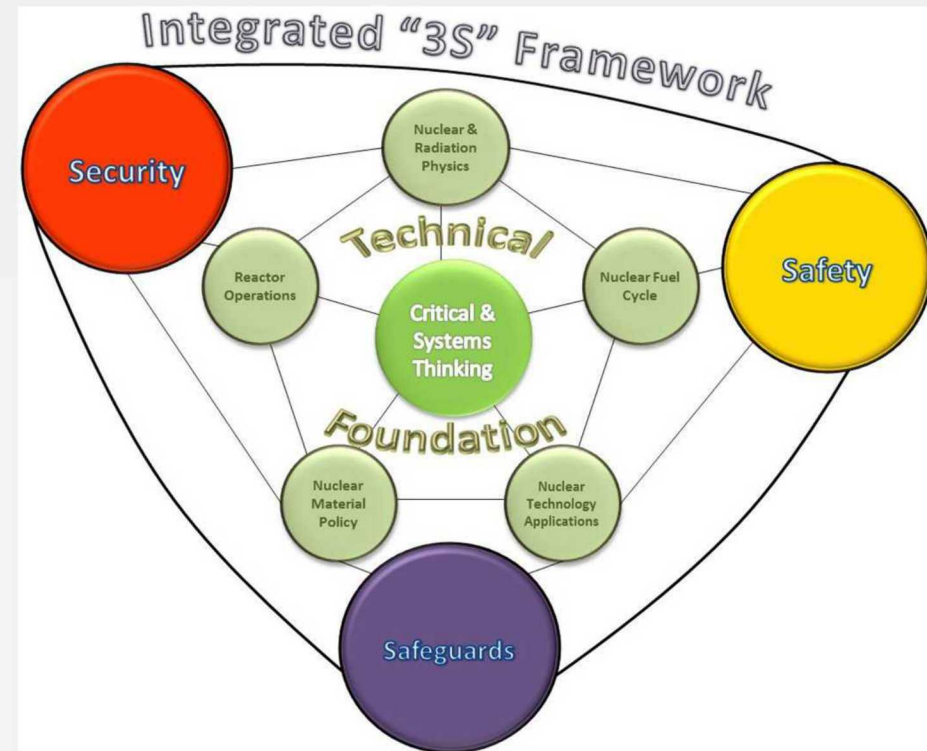
Foundational Pillars (3/3)



- Pillar #III: **Research**-New Opportunities
 - GNEII/KU-USG Stakeholders Collaboration
 - MOU 2.0 (Research emphasis)
 - Research projects and publications integral to GNEII ongoing success
 - To create a mechanism for GNEII to propose, initiate, conduct and publicize research in its core competency areas
 - Goal: provide a mechanism to ensure that regional research on nuclear matters are shared with global nuclear energy community

- Pillar #1: **Education**

- GNEII integrated 3S educational paradigm for responsible nuclear energy programs
- From 2011 to 2016, GNEII offered a semester long ‘Fundamentals Course’
- GNEII is transitioning from its previous curriculum to a more structured degree-based program



GNEII 2016 Fundamentals Course Curriculum

17-Jan Week 1	Overview, Need for Nuclear, History, Components, Economics, Critical & System Thinking, Scientific Method, 3S System		
24-Jan Week 2	Nuclear & Radiation Physics, Neutron Interactions, Basic Reactor Theory, Radiation Effects, Nuclear Technology		
31-Jan Week 3	Reactor Operations, Power Plant Systems, Probabilistic Risk Assessment		
7-Feb Week 4	Nuclear Fuel Cycle, Nuclear Nonproliferation History & Policy		
14-Feb Week 5	SAFEGUARDS (2 weeks) State System of Accountancy Controls, Non-Destructive and Destructive Analysis, Bulk and Item Facilities		
21-Feb Week 6			
28-Feb Week 7	SAFETY (2 weeks) Safety Culture, Engineered Safety Features, Emergency Response Planning, Radiation Safety		
6-Mar Week 8			
13-Mar Week 9	SECURITY (2 weeks) Security Culture, Physical Protection Systems, Detect, Delay, Respond, Evaluate		
20-Mar Week 10			
27-Mar Week 11			
3-Apr Week 12	Capstone Research & Preparation (2 weeks)		
10-Apr Week 13	Capstone Preparation & Dry Runs	SYMPOSIUM: Capstone Presentations & Certificates	

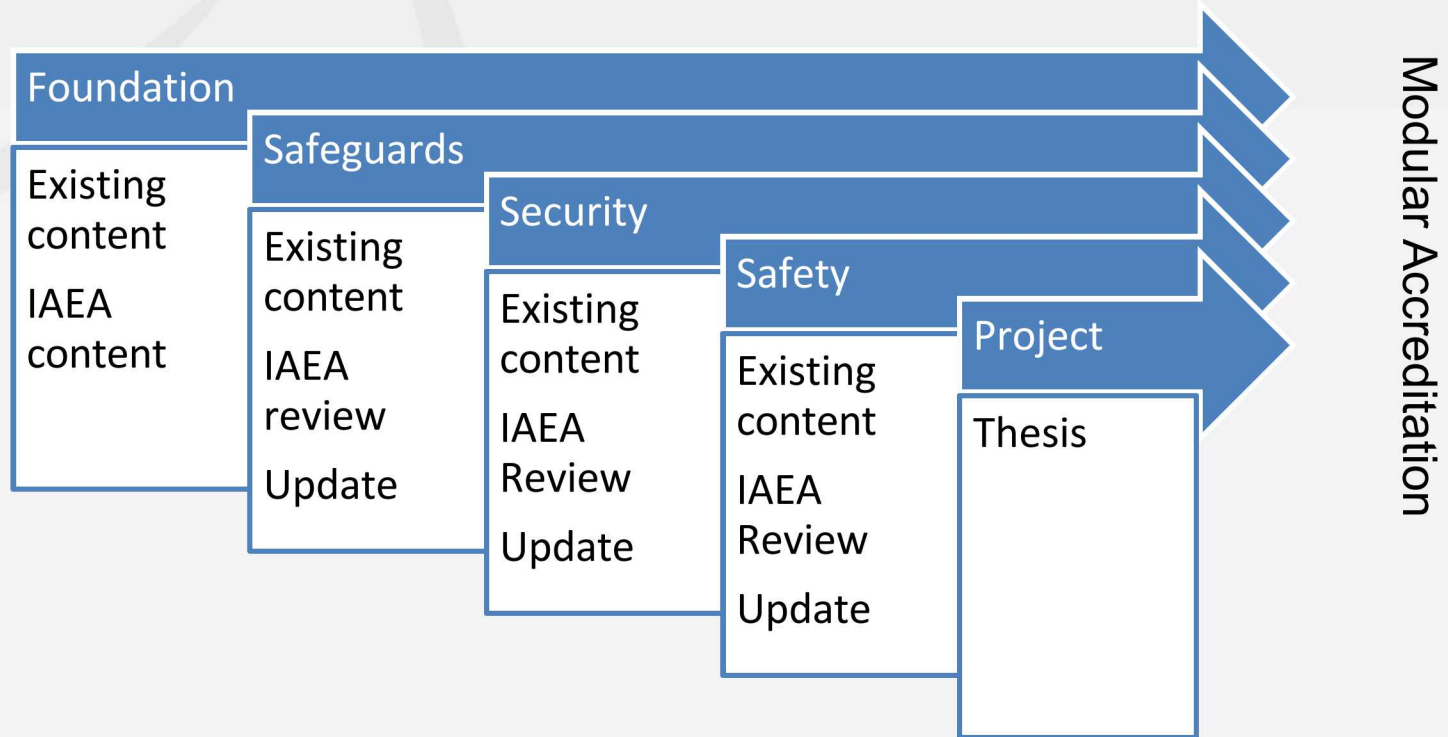
- Sustainability Planning:
 - The 2015 GSC meeting accepted the recommendations to have:
 - A financial plan fully supported by all local/regional stakeholders
 - A human capacity plan resourced from all local stakeholders\
 - A 'Finance & Sustainability Subcommittee'
- Transition:
 - Formal GNEII handover at the **2016 Symposium** with **MOU 2.0** between GNEII/KU, SNL, & TAMU/NSSPI
 - MOU Goal: provide framework for USG stakeholders continued engagement with GNEII
 - Emphasizes collaborative research
 - Mechanism for SNL & NSSPI to support GNEII's technological development
 - Current focus → Develop a more structured degree-based curriculum

Sustainability & Transition (2/2)

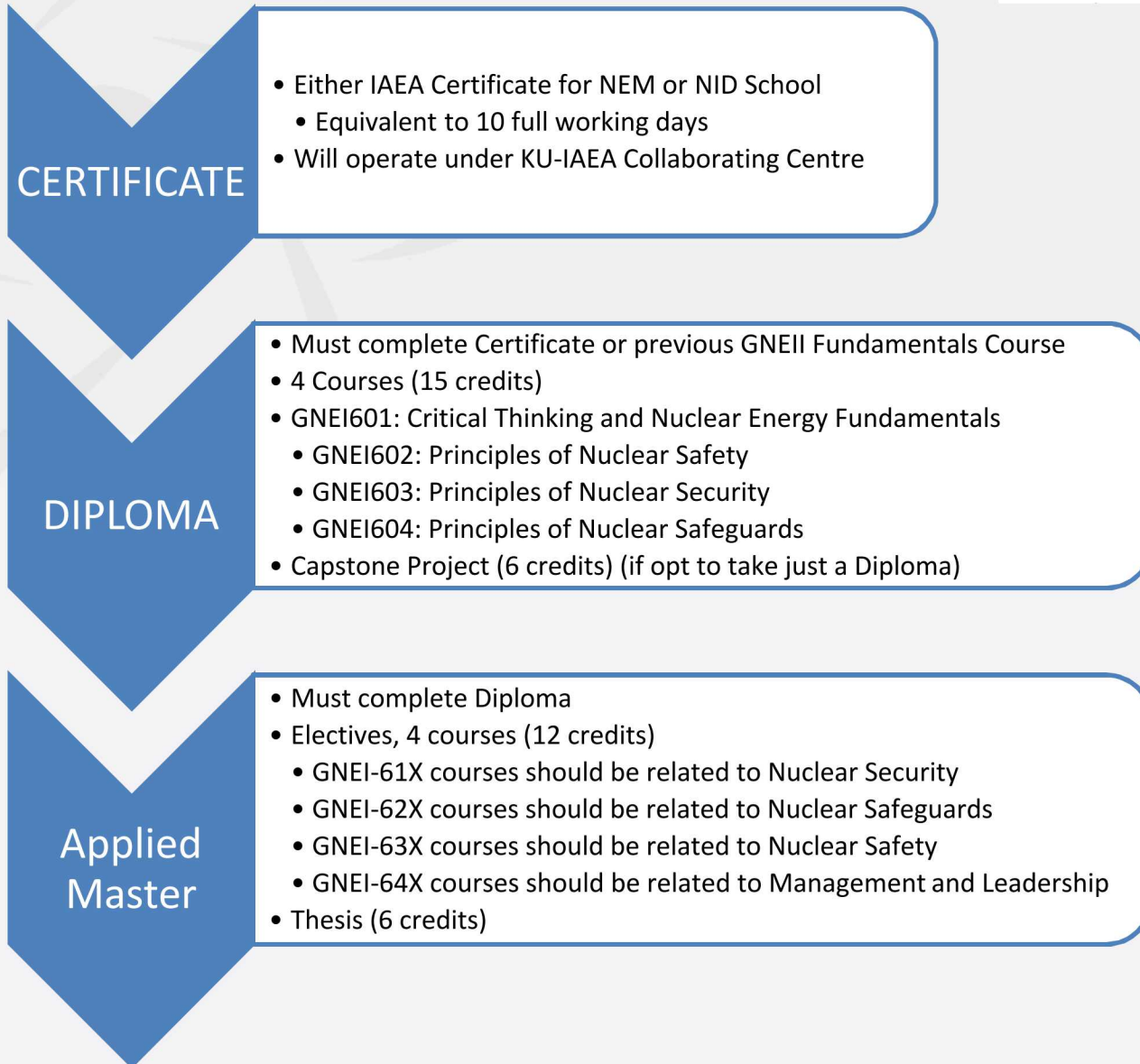
Transition of GNEII Education Program



GNEII → 2011 to 2016 → 14 Weeks



Proposed New MA Degree Model for GNEII



- November 2017: Khalifa University Named the IAEA's Collaboration Center for "Nuclear Infrastructure and Human Capacity Development"



Khalifa University of Science and Technology is honored to become an International Atomic Energy Agency (IAEA) Collaborating Centre. Under the chairmanship of Dr. Arif Sultan Al Hammadi, Executive Vice President of Khalifa University of Science and Technology, the University will partner with the IAEA to develop and implement specialized courses, including modules for the Gulf Nuclear Energy Infrastructure Institute (GNEII). The courses seek to educate and train UAE nuclear energy stakeholders and professionals across all IAEA Member States in critical areas of nuclear power infrastructure development, including nuclear safety, security, safeguards, stakeholder involvement, and the legal and regulatory framework

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- Current transition will support GNEII in providing a continual source of indigenous nuclear energy professionals
- MOU 2.0 established a framework for continuing collaboration & launched Phase II of GNEII operations
- GNEII is actively marching toward its mission of becoming a leading entity through which Gulf and Middle East voices can be introduced into global nuclear discourse

Questions?

Final thoughts?

