

Development of Capacity Building Training Programs for Nuclear R&D Personnel

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1. Introduction

The Nuclear Training and Education Center of the Korea Atomic Energy Research Institute has been operating technical training courses on nuclear engineering, engineering mathematics, management leadership training, outsourced practical training, legal education, etc. Strengthening nuclear R&D capacity is essential for the long-term mission and goals of the institute. Therefore, it requires a comprehensive training program to strengthen the unique capability of the institute that reflects diversity and differentiation. In this regard, the capacity building training program has developed on a modular basis, and the developed training program should be tailored to operate according to the institute needs.

2. Methods and Results

This training program has been developed for new employees to promote the early adoption of their research and development. It also reflects the strengths of the institute for nuclear R&D capacity building required by each individual. In addition, we developed a training program aimed at branding KAERI's R&D technical capabilities.

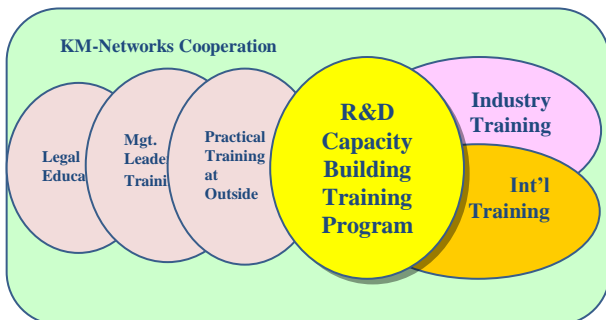


Figure 1 R&D Capacity Building Training Program

2.1 Approach

The following is the development approach for the R&D capacity building training program. (1) For the development on a modular basis, a comprehensive nuclear energy promotion plan, a 5 year nuclear R&D plan, and 19 issues of the IAEA nuclear power infrastructure have been reflected. (2) Internal and external experts of the institute were utilized for the development of training program. (3) The developed

training program should be operated on a regular basis according to the institute needs. (4) the developed training program should be adopted for R&D personnel and should be extended to industry training and international training.

2.2 Nuclear R&D Capacity Analyze

The 4th comprehensive nuclear energy promotion plan for ensuring nuclear safety, export competitiveness, and radiation source technology development was reflected in the capacity analysis. Also, the 5 year nuclear R&D plan ensuring nuclear safety technology competence, core technology development of the future nuclear systems, and the development of fuel cycle technology was reflected in the capacity analysis. The 19 issues of IAEA nuclear power infrastructure, such as national position, nuclear safety, regulatory frameworks, and environmental protection were also reflected in the capacity analysis.

2.3 Principles for the Development of Capacity Building Training Program

For the development of the capacity building training program, 4 major principles were set as follows. The course contents were developed on the basis of intensive nuclear R&D projects. Capacity building training courses must be differentiated from the curriculum of nuclear engineering at universities. The training courses are oriented forward strengthening the institute technology such as radiation utilization and source technology, research reactor design, SMART design, and pyro-process technology. The capacity building training program is associated with a global nuclear core human resource development of the institute.

2.4 Development of Capacity Building Training Program

All training courses have been constructed in modular form and detailed curriculum contents were developed. Each course has been composed of around 30 hours of curriculum content. The developed training courses have been tailored to operate according to the institute needs and have been operated for the internal R&D personnel, and will be extended in the field of industry training and international training. The developed training courses are as follows:

- Course (Module) 1. Fundamental of nuclear engineering
- Course (Module) 2. Thermal and fluid engineering
- Course (Module) 3. Reactor safety and integrated safety assessment
- Course (Module) 4. Reactor design(research reactor and SMART)
- Course (Module) 5. Instrumentation and control of nuclear power plant
- Course (Module) 6. Structure and system of nuclear power plant
- Course (Module) 7. Core design and nuclear fuel cycle
- Course (Module) 8. Decontamination and decommissioning of nuclear facilities
- Course (Module) 9. Pyro-processing and SFR
- Course (Module) 10. VHTR and hydrogen production technology
- Course (Module) 11. Nuclear material technology
- Course (Module) 12. Radiation fusion technology (accelerator, etc.)
- Course (Module) 13. Radiation utilization technology
- Course (Module) 14. Nuclear quality assurance
- Course (Module) 15. Nuclear regulatory and licensing
- Course (Module) 16. Nuclear business management and outreach.

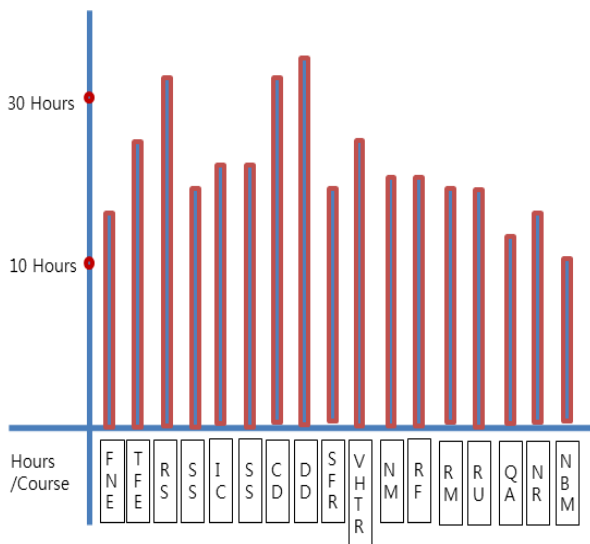


Figure 2. Capacity Building Training Program

2.5 Improvement and Follow-Up System

For the effective operation of the capacity building training program for nuclear R&D personnel, it is necessary to improve the existing training system as follows: linkage of core human resource development with its' training foundation, reflection of the training to the personnel evaluation, utilization of retired experts to

the lectures, payment of lecture fees to the internal lecturers, and ensuring the budget for training.

3. Conclusions

The capacity building training program for nuclear R&D personnel was developed to reflect the technology strengths of the institute. The developed training program will be developed into a leading branded education of the institute in the future. Figure 3 shows the leading branded education of the Institute

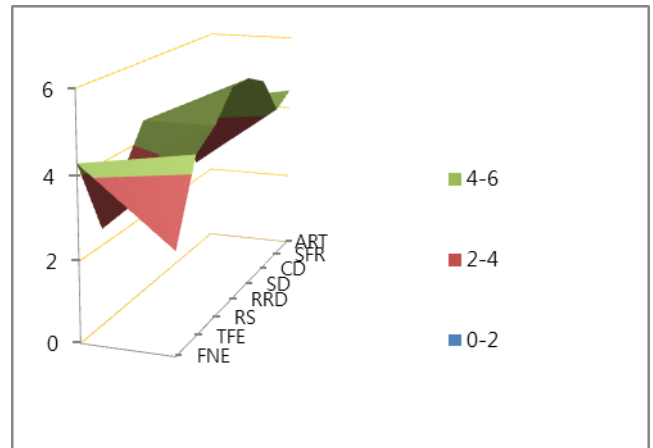


Figure 3. A Leading Branded Education of the Institute

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