ANTEP Needs and Matching Program Possibilities 2007/2008

No.	ANTEP Needs in 2007/2008	Specification	Type of Training	Duration (Months)	MEXT Exchange Program	MEXT Programs (Ex. Exchange Program)	FNCA Countries Programs (Ex. Japan)
A. Radiation Safety and Radioactive Waste							
1	Emergency preparedness (Bangladesh)	To acquire knowledge which will help to implement NSRC Act and Rules-1997 properly through licensing, inspection and enforcement	Lecture, Research, OJT	—		J-6(EP) J-1(AM) J-3(PS)	
2	Advanced technology of radioactive waste management (Bangladesh)	To develop the management capabilities of radioactive waste and to build an adequate system to conduct the decommissioning of nuclear facility by using an advanced technology	Research, OJT	6-9 or more	UR1-2 UR1-3 UR1-5 UR1-6	J-1(AM)	
3	Planning for establishment of radioactive waste repository (design, concept, safety assessment, QA, safety analysis using AMBER) (Bangladesh)	To develop the capabilities for the assessment of various safety parameters by using different safety codes (AMBER) for the safety analysis of newly established a Center Radioactive Waste Processing & Storage Facility in Bangladesh and to gain knowledge for planning and design concept for the establishment of under ground repository for Low and Intermediate level waste	Research, OJT	6-9 or more	UR1-2 UR1-5	J-1(AM)	
4	Decommissioning of research reactors (Bangladesh)	Including topics on Thermohydrautical analysis of the core, irraduatuib devices, reactor waste	OJT operation	6	XT1-7 XT1-8		
5	Electron accelerator technology (Bangladesh)	To obtain knowledge & techniques needed for operation & maintenance of electron accelerator	OJT operation	3	UR2②-5		
6	Decommissioning of research reactor (Indonesia)	The trainee will be able to involve in program on preparing reactor research decommissioning in Indonesia.	OJT	3	XT1-6 XT1-7		

7	Development of Criticality Accident Alarm System (CAAS) in nuclear fuel fabrication (Indonesia)	To provide and to enhance the capability of HRD though comprehensive knowledge and skill. So they may conduct qualified knowledge and develop reliable radiation detection system	Lecture, OJT	6			
8	Radiation control in working environment for PIE facility (Indonesia)	To provide and to enhance the capability of HRD though comprehensive knowledge and skill. So they may conduct qualified knowledge and develop radiation protection.	Lecture, OJT	4	XT1-5 XT3-3		A-2 M-7 P-1
9	Emphasizing knowledge for licensees, regulators, public responders and retrieval teams in radiological emergency preparedness and response (Thailand)	Knowledge gained from train-the trainer training course for : -radiological assessor (inspector) -first responders (fire fighter civilian, military unit and related personnel) -medical responders	Lecture Hand-on experience , OJT	3-4weeks/3-6personsfrom each field		J-6(EP) J-1(AM) J-3(PS)	
10	Advance technology on radioactive waste management (RWM) (Thailand)	To obtain knowledge and experience in appropriate/ advanced technologies on RWM and decommissioning of nuclear facilities.	OJT, TC research	3-6	UR1-2 UR1-3 UR1-4 UR1-5	J-1(AM)	
11	Development of registration and inventory control of radioactive source and radiation machines (Thailand)	Registration and inventory control of radioactive source and radiation machines	OJT, TC	3-6	UR1-4	J-1(AM)	
12	Radiation safety for cyclotron and PET center (Thailand)	General knowledge, radiation protection, cyclotron-PET/CT operation and maintenance skill	OJT, TC	2	UR2②-5		

13	Advanced technology of radioactive waste management (Vietnam)	To develop the management capabilities of radioactive waste and to build an adequate system to conduct the decommissioning of nuclear facility by using an advanced technology	Research, OJT	6-12 or more	XT1-7 XT1-8 XT1-9 UR1-2 UR1-3 UR1-5	J-1(AM)	B-1
14	Radiation safety and radioactive waste (Vietnam)	To train researchers, who work in the field of radioactive waste processing technology, treatment and management of radioactive wastes from NPPs. safety assessment of radioactive waste storage facilities, calculation of dissemination of radioactivity from nuclear facilities into environment such as soil, water, air (including studying theory, doing experiments, calculation code etc)	OJT, Lecture, Research	2-4persons/2weeks-2years	XT1-8 XT1-9 XT1-10 UR1-2 UR1-3 UR1-5 UR1-6	J-1(AM)	A-2
B. Radiation and Isotope Application							
15	PZC based 99mTc-generator using (n, g) 99Mo (Bangladesh)	Enhancement of Research Reactor Utilization. Production of (n,gamma) Molybdenum-99. Production of PZC based Tc-99m generator. Equipment: Research Reactor, Isotope Handling Hot cell, Ancillary instruments.	Research, Experiment	6 or more			
16	188W-188Re generator (Bangladesh)	Preparation of target, chemical processing, column preparation, column loading, calibration of generator, quality control tests, etc. and production of therapeutic RI (166Ho, 177Lu, etc.) and their labeled compounds. Equipment: hot cell facility, dose calibrator, HPGe detector, autoclave, and Anciliary equipments	Research, Experiment	12	UR2①-5		

17	Research and development of Lutetium-177 radio-pharmaceuticals for therapeutic use (Bangladesh)	The candidate is directly involved in the production and quality control of the radioisotopes (I-131 and Tc-99m generator). The demand of the Lu-177 therapeutic radio-pharmaceuticals is increasing day by day but it is totally depending on import from other countries. The aims of the training program are mainly (i) to achieve sound knowledge & operational skill for smooth production of Lu-177 radiopharmaceuticals. (ii) QA and QC of Lu-177 radiopharmaceuticals. (iii) research and development of Lu-177 labelled compounds. The proposed training course is, therefore, expected to provide the applicant with an opportunity to acquire knowledge on production and quality control of Lutetium-177 radiopharmaceuticals used at nuclear medicine centers for therapeutic purposes.	Research	1yr			
18	Research and development of 188Re and 99mTc kits (Bangladesh)	Research and Development of 188Re and 99mTc kits. Kit preparation, clinical test, and biological test of the final product.	Research	12	UR2②-7		
19	Research and development of 99mTc kits (Bangladesh)	Research and Development of 199mTc kits. Kit preparation, clinical test, and biological test of the final product.	Research	12			
20	Cyclotron based isotope production (Bangladesh)	To obtain knowledge & techniques in radioisotope production using cyclotron	Lecture, Exp. research, Expert service	—			

21	Application of NAA in industry, environment and human health (Bangladesh)	The NAA Group of BAEC is using reactor based instrumental neutron activation analysis method followed by relative standardization approach. In order to perform both qualitative and quantitative multi-elemental analysis of major, minor and trace elements in various samples with wide range, the NEE method is required to be explored. To implement the neutron activation analysis, the followings are needed: research reactor, gamma-ray counting systems, sample preparation equipments and software for data acquisition, gamma peak analysis and concentration calculation, etc.	Research	18(6mo/ person			T-1
22	Application of neutron radiography in material science and industrial products (Bangladesh)	Neutron radiography (NR) facility has been installed at the tangential beam port of the 3 MW TRIGA MARK-II research reactors. In the existing NR facility only direct film NR time NR system in the existing NR facility. This facility will be utilized for research and industrial applications.	Research	12 (6mo /person)			K-2 T-1
23	Application of neutron beam for material characterization using neutron scattering (Bangladesh)	Neutron diffraction study of different functional materials to understand the structural and magnetic properties of materials, study of texture and internal stress of different metals and alloys using four circle goniometer and adaptation of SANS facilities in the TAS for determining the structure of colloidal system and polymer sample.	Research	18 (6mo /person)			A-1
24	Analysis of radionuclides in marine ecosystem (Bangladesh)	Sampling, separation and analysis of natural radionuclides in marine based samples e.g. seawater, fish, sediment, algae and phytoplankton to study marine pollution level. Flame and Graphite Atomic Absorption Spectro (AAS), Inductively Coupled Plasma- Atomic Emission Spectrometry(ICP-AES), Inductively Coupled Plasma-Mass Spectrometry(ICP-MS), High Performance Liquid Chromatography(HPLC)etc.	Research, Expert services	4yrs.		J-6(RS)	

25	Accelerator technology (Bangladesh)	One 3 MV Van de Graaff electrostatic Accelerator with 2 operational beam line, 2 scattering chamber with associated nuclear electronics and data acquisition system and software. One 3 MV Tandem electrostatic Accelerator with Accelerator Mass Spectroscopy and Ion beam experimental facilities, to be installed in near future.	Experiment, Others	3mo/ training & 2w/ scientific visit	UR2②-6		M-2
26	Medial applications (Bangladesh)	Analysis, Clinical analysis, Quality Assurance, Quality Control of Nuclear images and Instruments. Radiation safety, Dosimetry, Therapy calculation etc. Instruments to be used PET, SPECT, Linear Accelerator, Cyclotron, etc.	Lecture, Exp. research, Expert services	—	UR2②-5	J-1(AM)	C-2 M-3
27	Nuclear medicine for physicists (Bangladesh)	Hands on experience in the practice of nuclear medicine	OJT operation	3-6	UR2②-5 UR2②-7		
28	Accelerator technology & medical application (Bangladesh)	To obtain the advanced technology of PET&SPECT, accelerator technology (EB & cyclotron) and facility	OJT operation	2weeks	UR2②-6 UR2②-7		

29	Improvement of NAA laboratory by implementing ko-method and preparation of software development (Indonesia)	Instrumental Neutron Activation Analysis (INAA) based on ko method is very useful technique to determine an element in trace quantity on vary samples. Recently this technique is one of the most reliable techniques to be used on the monitoring of environmental pollution, food safety analysis, as well as, human health and nutrition application. Three research reactors located at Serpong, Bandung and Yogyakarta provide a thermal neutron source for NAA utilization. Research reactor at Serpong has a high flux of neutron thermal that very importance for trace elements analysis, meanwhile Triga Mark II and Kartini reactor has an ideal flux for most NAA application. Some irradiations facilities have been used to irradiate a number of samples. The spectrometry-g coupled to high-resolution detector is main equipment provided to analyze the gamma ray emitted by irradiated sample. The INAA lab is also supported by a number of software such as GENIE2000, Hyperlab, ko-IAEA and ko-DSM to enhance the performance of analyze.	Lecture, Experiment, Expert services	2weeks			T-1 K-2
30	Study on radiation effect for modification of carbon based nano composite materials (Indonesia)	Irradiation devices (gamma ray, electron beam, ion implantation, and neutron scattering)	Lecture, OJT, Experiment, Others	6			
31	Effect of g-ray irradiation to Ionic conductivity in the solid state (Indonesia)	Gamma-irradiation effect to composite materials will increase ionic conductivity because of material defect, and will influence the enthalpy of materials depending on irradiation dose. Facility to be used are x-ray diffraction or neutron, DTA and DSC (differential thermal analysis and differential scanning calorimetry), and LCR-metre (inductance capacitance resistance).	Lecture, OJT, Experiment	6			
32	Operation and maintenance of cyclotron (Indonesia)	Operation and maintenance of cyclotron to support national program in development of short life radionuclide especially in the F-18 production which is used to preparing FDG radiopharmaceutical for health.	Lecture, OJT, Experiment	3			

33	Maintenance and refurbishment of gamma camera (Indonesia)	Since gamma cameras have been operated for 20 years in some hospitals in Indonesia, there is a need for well maintenance and repair in order to support continuous operation. Due to lack of availability of spare parts and components, the comprehensive knowledge and skill to do proper maintenance and refurbishment of gamma cameras are necessary for engineers and technicians.	Lecture, OJT, Experiment	3			B-3
34	Neutron radiography technique and its applications (Indonesia)	To give the participants a perspective on the use of neutron radiography technique as for non-destructive tests of industrial material	Expert services	2weeks			M-6
35	Small-angle neutron scattering (SANS) for biomacromolecule structure studies (Indonesia)	This program is aimed to provide and develop the comprehensive knowledge and skill to the researcher who is working in crystallography from biomacromolecules. so that they will able to conduct in doing the experiment, data reduction and data analysis from.	OJT	4	XR1-10 XR2①-5 XR2①-11		A-1
36	Implementation of the NAA method for food safety analysis (Indonesia)	This program is aimed to provide the human resources who have a capability and skill in the utilization of NAA for human health control exceed the food quality. By coordinating with the health management authorities, the researcher or engineers can conduct a program to control and manage the food quality by NAA as strategy for health protection.	Expert services	2weeks	XR2②-18 XT3-2		T-1 K-2
37	Produce biomedical engineering products for clinical and related applications through the radiation processing application (Indonesia)	To improve the knowledge and skill of staffs to understand biomedical engineering and the instrument used.	Lecture, Research	3	XR1-10 XR2②-17 UR2②-2		B-3 C-2

38	Application of radiation technique on modification of chitin graft with hidrophilic monomers for adsorbent of industrial waste (Indonesia)	The purpose of the project: will contribute to find out a new material, combination of natural and synthetic polymer, which are compatible, cheap and useful for removing heavy metal ion from industrial wastewater	Lecture,Research	6	XR2②-20 XR2②-21		
39	Studies on analytical detection methods for irradiation treatment of foods (Indonesia)	To provide comprehensive knowledge and skill to conduct research and development on the above subjects comply with international safety standards both for the researchers and technicians. It is desirable if such methods must be implemented and done by Indonesian authorities who concern with control of labelling of irradiated food as sanitary and phytosanitary purposes moving in global market.	Research, OJT	6	XR2②-18		
40	Study on development of polymer materials for electrolyte membranes by gamma/electron beam irradiation (Indonesia)	To improve knowledge and skill to conduct research and development on modified of polymer by gamma irradiation and electron beam for electorlyte membranes in fuel cell application	Research, OJT	6	XR2②-12		
41	Biodistribution study of labelled-natural product compound for anticancer agent in animal models (Indonesia)	To provide comprehensive knowledge and skill to conduct research and development on the use of isotope on the study of biodistribution of natural product compound in animal models. As a biodiversity country, Indonesia must be consider to the development of herbal for medicine, especially for anticancer agent. The use of isotope tracer for labelling of active compounds will get the beneficial effect in detection of biodistribution on active compound in animal models.	Lecture, Research, OJT, Others	1-3	XR2②-21 XR2②-23		

42	Application of ion beam in life sciences / agriculture (Malaysia)	· Molecular applications of charged particle beams · DNA irradiation using micro focused ions · Ion beam analysis of DNA · DNA Damage Signaling and Biological Dosimetry/Sensor · Cell Irradiation and mutation induction using ion beam · Radiation-Induced DNA Damage · Cellular Imaging Approaches for Targeted Microirradiation of Biological Materials. · Molecular marker assisted selection, reverse genetics, microarray technology and single molecule analysis.	Research, OJT	3-6	UR2②-6		
43	Applications of nuclear techniques in nanotechnology (Philippines)	To gain knowledge and practical experience in the applications of nuclear techniques to nanotechnology, in order to carry out R&D in this field	OJT	3	XR2①-4 XR2②-13 XR2②-15		
44	Training of high school teachers in nuclear S&T (Information Dissemination) (Philippines)	To train high school science teachers in how to effectively teach nuclear science topics	Seminar, Training course	1-2weeks	XT4-1		
45	Training on Non-Destructive Testing level-3 for industrial applications (Philippines)	To provide hands-on and practical experience in Non-Destructive Testing Level-3 techniques for industrial applications	OJT	3		J-6(IE)	M-6
46	Application of nuclear techniques in industry and hydrology (Thailand)	To obtain the advanced technology of nucleonic instrumentation and the techniques of imaging, gauging, tracer, etc.	OJT	3		J-1(AM) J-6(IE)	
47	Non-Destructive Testing level 3 training for industrial applications (Thailand)	To acquire practical training and experience in Non-Destructive Testing techniques, level 3 in radiographic testing, ultrasonic detection and surface methods.	OJT	3		J-6(IE)	
48	Computed radiography (Thailand)	CRT, image plate industrial application	OJT	2weeks			

49	Semiconductor detector repairing and maintenance (Thailand)	To train electronic engineer for repairing the HPGe Si (Li) detector and its cryogenic system	OJT	1-2			
50	Development of dose planning program for LINAC therapy (Thailand)	Research on program development for modern dose planning of LINAC therapy & QA (Ph.D. Program)	—	3-6			
51	Advance technology of diagnostic imaging (Thailand)	To obtain the advance technology on diagnostic imaging safety assessment and QA/QC program	OJT	3-6		J-1(AM)	
52	Medical application in nuclear medicine (Thailand)	Experience and practice on PET, SPECT, CT, Cyclotron, Synthesizer, QA&QC instruments, radiopharmaceuticals development, image processing and its maintenance	OJT, TC, Research, Expert services	3-6	UR2②-7	J-1(AM)	
53	Neutron beam and electron beam applications (Vietnam)	To obtain experience and knowledge for application of neutron and electron beams in various fields such as nuclear physics, medicine, agriculture, and industry and material science. Facilities: Neutron beams at research reactors, EB facilities.	Research, OJT, Experiment	6-12			A-1 I-2 M-1
54	Medial applications (Vietnam)	Analysis, Clinical analysis, Quality Assurance, Quality Control of Nuclear images and Instruments. Radiation safety, Dosimetry, Therapy calculation etc. Instruments to be used PET, SPECT, Linear Accelerator, Cyclotron etc	Lecture, Exp., research, Expert services	—	UR2②-5	J-1(AM)	B-3 M-3
C. Research Reactor							
55	OJT on operation & maintenance of digital control console and I&C system of the research reactor (Bangladesh)	To obtain training on operation and maintenance of digital control console and I&C system of research reactor.	OJT	3-6/each trainee			I-1 I-3

56	Implementation of quality management system (QMS) in the research reactor facility (Bangladesh)	To obtain OJT on QMS for research reactor facility.	OJT	3-6/each trainee		J-1 (AM) J-3 (PS)	
57	Evaluation of the safety of the reactor and target materials loaded into the reactor core for neutron irradiations (Bangladesh)	Develop capability to calculate various safety parameters such as, heat generation rates, temperature rise, pressure rise, etc. for the targets irradiated in the reactor for radioisotope production and other material irradiation services like gemstone coloration, silicon doping, etc.	OJT	6/each trainee			K-2 T-1
58	Nuclear data and physics (Bangladesh)	It is very important to generate customized cross-section data library which is used for the cell and whole core calculation. Appropriate data processing code (such as NJOY) and adequate computation facility must be provided. Evaluation of the nuclear data is also very important. Evaluation assessment and selection of the experimental data and their statistical and systematic errors, followed by the derivation of internally consistent sets of preferred values by appropriate averaging procedure. Benchmark calculation using different sets of nuclear data libraries is also very important.	Research, OJT	6-12	UR2①-5		
59	Reactor safety (Bangladesh)	Safety analysis of reactors (research and power reactor) using appropriate computer codes e.g., RELAP.	Research, OJT	6-12	UR5-1 UR5-3 UR5-8	J-3 (PS)	
60	The Methods to evaluate the integrity of reactor structural components (Indonesia)	Exploring the mechanical methods to evaluate the integrity of reactor (power and research reactors) structural component due to ageing. The instrument to be used are mechanical testing equipment, such as tensile machine, impact, creep machine etc.	Lecture, Expert services, Experiment	1week expert dispatch			
61	Development in material for research reactor nuclear fuel (Indonesia)	To provide and to enhance the capability of HRD through comprehensive knowledge and skill, so they may conduct more qualified research and produce reliable material for nuclear fuel research reactor	Lecture, OJT	6-12	UR3-2 UR5-5	J-6 (RE)	

62	Operation and maintenance technology in Post Irradiation Examination (PIE) facility (Indonesia)	To provide and to enhance the capability of HRD though comprehensive knowledge and skill. So they may perform the operation and maintenance technology in Post Irradiation Examination (PIE) Facility	Lecture, OJT	3	XT3-3		
63	Ageing management of research reactors (Malaysia)	Ageing management of research reactor systems, structures and components (SSC). Methods for verifying condition of SSC and strategies for implementing at the PUSPATI TRIGA reactor.	Lecture, OJT	3-6			K-2
64	Nuclear data and physics, Reactor physics, Reactor design and engineering (Malaysia)	The researchers involved in the reactor utilization program generally lack the basic skill and theoretical knowledge to undertake engineering design of the neutron beamports and thermal column of the Reactor TRIGA PUSPATI (RTP) for use in neutron beam application e.g. Prompt Gamma Neutron Activation Analysis (PGNAA), neutron diffractometer, Boron Neutron Capture irradiation facility for medical & industrial research. The need for training is especially critical to implement the projects currently being planned.	Research, OJT	3-6	UR2①-5	J-3 (PS) J-6 (RE)	B-4 K-2
65	Decommissioning of research reactor (Thailand)	Decommissioning plan, thermohydraulical analysis, irradiation devices, reactor waste	OJT	3-6			
66	In-core irradiation facility design (Thailand)	To enhance the utilization of research reactor (design and validation)	Research	3-6			
67	Research reactor experiment (Thailand)	To train instructor for student teaching in research reactor experiment	OJT	3		J-1 (AM)	
68	Nuclear instrument refurbishment/research/ development (Thailand)	To obtain the experience and knowledge for nuclear instrument refurbishment	OJT, Research	1			
69	Research reactor design and engineering (Vietnam)	To obtain the advanced technologies needed for design, engineering and safety analysis of the new research reactor	Lecture, Research, OJT	12-24		J-6 (RE) J-1 (AM)	B-4 K-2 T-1

70	Nuclear data experiment of research reactor (Vietnam)	To train researchers, who work in the field of Nuclear Data Experiment (including studying theory, studying Nuclear Data Experiment using neutron beam of Dalat Research Reactor)	OJT, Lecture, Research	2persons/4weeks-1year	XR3-2 XR3-4 UR2①-5		B-4
D. Nuclear Power Reactor							
71	Reactor physics and nuclear engineering (Bangladesh)	The MS program with emphasis on reactor physics, reactor design and engineering, nuclear safety, plant design. Appropriate candidate is expected to go for PhD degree. The researcher/scientist is expected to work on a power plant to solve a specific problem as an essential part of the MS program. Advanced and appropriate computer codes (deterministic as well as Monte carlo codes), up to date nuclear data libraries with modern computation facility must be provided for the power plant safety analysis. At least 3/4 months hands on training/internship in a power plant will provide essential knowledge about the environment and safety culture of NPP site.	Lecture, Research	3-12	UR3-3 UR5-1	J-3(PS)	
72	Nuclear Safety (Bangladesh)	Nuclear safety review & analysis required for NPP's introduction to Bangladesh, including regulation, computer code for licensing	OJT operation	1-2years			
73	Nuclear Engineering, M.S. Program (Bangladesh)	—	Univ.ed.	1year	UR3-3		
74	Nuclear Engineering (Bangladesh)	To train young engineers in nuclear engineering(MS/PhD program) in preparation for the re-introduction of nuclear energy in the country about 2020	Univ.ed.	1year	UR3-3 UR5-1		
75	Plant design (Bangladesh)	To obtain knowledge & techniques needed for design of NPP. NPP design engineering involving basic skill, general description, design skill, etc. operation & maintenance of electron accelerator	OJT operation, Expert service	3-6			

76	Preparation, construction, operation & maintenance of NPP (Bangladesh)	Including topics on. Preparation of construction of NPP, construction of NPP. Reactor operation & maintenance. Reactor instrumentation & control, reactor safety, nuclear fuel & waste management	OJT operation	6			
77	Basic HRD for nuclear power (Bangladesh)	Basic nuclear power technology & computer codes for Reactor modeling	OJT operation	3-6			
78	Nuclear power planning (Bangladesh)	To obtain knowledge & techniques needed for nuclear power planning. Lectures & visits to NPP, exercises using. To train policy makers, who would be capable of analyzing the feasibility of nuclear power.	TC	1			
79	Nuclear administration (Bangladesh)	To study energy strategy which include the feasibility Study of nuclear energy. To study the process of law & Regulation, safety regulation & licensing process of NPP.	OJT operation	1			
80	Rapid build & commissioning of NPP (Bangladesh)	Expose young engineer to the processes involved in timely construction and commissioning of a power reactor	OJT	6			
81	NPP design (Bangladesh)	Expose young engineer to current design processes for NPP	OJT	6			
82	Reactor safety (Bangladesh)	Expose young engineer to current design processes for NPP	—	—	UR3-3		
83	Nuclear power planning (Bangladesh)	Computer-based energy & NPP planning & financial analysis	Expert services	1-4weeks			
84	Implementation of quality management system(QMS) in nuclear facilities/ installations/laboratories (Bangladesh)	—	—	—			
85	Safety analysis of reactor and target materials loaded in the reactor core for neutron irradiations (Bangladesh)	—	—	—			

86	Reactor physics and nuclear engineering (neutronics, thermal hydraulics design basis accident analysis, etc.) (Bangladesh)	—	—	—	XR5-3 UR3-3 UR5-1 UR5-4		
87	Nuclear date processing and customization (Bangladesh)	—	—	—			
88	Regulatory and legislative framework (Bangladesh)	—	—	—			
89	Funding, financial analysis And economics of NPP (Bangladesh)	—	—	—			
90	Overall nuclear power project Management (Bangladesh)	—	—	—			
91	Safety regulation (Bangladesh)	—	—	—			
92	Safeguards, security and physical projection (Bangladesh)	—	—	—	XR5-5 UR5-7		
93	Electrical and studies to support commissioning and operation of NPP (Bangladesh)	—	—	—			
94	Preparation of site safety report (Bangladesh)	—	—	—			

95	Site and supporting facilities for NPP (Bangladesh)	—	—	—			
96	Bid invitation document specification (Bangladesh)	—	—	—			
97	Emergency preparedness and response (Bangladesh)	—	—	—			
98	NPP instrumentation and control design and performance analysis (Indonesia)	Design, simulation and analyzing the performance of the instrumentation and control of NPP, including analog and digital equipments. It will cover the safety criteria, operation and maintenance	Lecture, OJT	3		J-3(PS)	
99	Thermohydraulical and nuclear analysis of core at low power (Indonesia)	・Thermohydraulical and nuclear analysis of core at low power ・Calculation methods and codes that can support the analysis ・Device for experimental verification of the basic input data	Lecture, Experiment, Others	6	UR5-1 UR5-3	J-3(PS)	
100	Human factors in the nuclear power (Indonesia)	Aspect of human factors and its consideration in the process design and operation of nuclear power will be explored in the training. Facility/instruments to be used includes: control room simulation, operation design, procedure and documentation	Lecture, OJT, Experiment	4		J-1(AM) J-3(PS)	
101	Safety analysis for nuclear power plant (Indonesia)	In safety analysis of NPP, several transient conditions, both for DBA and BDBA, shall be analyzed in order to know the plant capability to cope with such conditions and to assure the safety of people. Analysis should include both analysis using computer codes (including Computational Fluid Dynamic) and experimental methods	OJT, Experiment, Others	6	UR4-1 UR5-1 UR5-3 UR5-4 UR5-8	J-3(PS)	
102	Development in material for nuclear fuel structure (Indonesia)	To provide and to enhance the capability of HRD through comprehensive knowledge and skill, so they may conduct more qualified research and produce reliable material for nuclear fuel structure	Expert services	2weeks	UR3-2 UR5-2 UR5-6	J-6(RE)	

103	Design criteria of NPP (Indonesia)	This program is proposed to deliver knowledge on design criteria of NPP to whom will be involved in the national NPP program	Lecture, OJT	2weeks		J-1 (AM) J-3 (PS)	
104	Plant design for nuclear fuel fabrication (Indonesia)	To train the participants to prepare feasibility study, plant design and economic evaluation for fabrication nuclear fuel for NPP	Lecture, OJT	2			
105	Siting of NPP (Indonesia)	This program is proposed to deliver knowledge and practice on siting process of NPP to whom will be involved in the national NPP program, especially for NPP siting filed.	Lecture, OJT	2weeks		J-3 (PS)	
106	Utilization of NPP for co-generation purposes (Indonesia)	This program is proposed to deliver knowledge on the utilization of nuclear power plant for co-generation purposes.	Lecture	2weeks			
107	Public communication (Korea)	A public information program aimed at both the general public and the population around the site of the nuclear power plant should be carefully planned and implemented and start as early as possible. With regard to the risk, the following topics seem to be especially valuable for the public communication. (1) General comparison of the risk of nuclear power with other risks already accepted by society, (2) Comparisons of risks of energy systems, (3) Safety policy, (4) Approach to the public communications.	Lecture	1-2weeks	UR4-1	J-1 (AM)	
108	Training course on safety and related design requirement for nuclear power plants (Malaysia)	The objective of the course is to understand the safety and related design methodology and requirements so that trainees are able to comprehend the complexity of a nuclear power plant. It covers basic concepts and principles in the areas of reactor kinetics & control requirements, accidents and fission product release, design analysis for reactor safety features, engineered safety features, safety assurance, nuclear criticality safety, nuclear power plants system engineering design approaches and review and analysis of design approach. The target audiences are engineers and researchers in related field.	Lecture, Expert assistance to conduct training course	2weeks		J-1 (AM)	C-1 K-1

109	Training course on technology assessment of nuclear power plants (Malaysia)	The objective of the course is to understand the different nuclear power plant designs so that trainee is able to evaluate its advantages and disadvantages. This in turn will help in the decision making process. It covers basic concepts and principles in the areas of (1) Design of nuclear power plant: PWR, BWR, FBR, Heavy Water Reactor, High Temperature Reactors etc. and (2) Technology Assessment of different Designs. The target audiences are engineers and researchers in related field.	Lecture, Expert assistance to conduct training course	2weeks	UR5-9 UR5-10	J-3(PS)	
110	Basic national course on nuclear power (Malaysia)	The objective of the course is to develop common understanding and basic knowledge on nuclear power pre-project, project, programme and policy planning and preparation among multi disciplinary personnel in all responsible government and industrial organizations, which form national nuclear power programme implementation team. It covers in the areas of Nuclear reactor characteristic and safety; Nuclear power plant (NPP) design, siting, construction and installation, commissioning, operation, maintenance and decommissioning; Nuclear fuel cycle; Nuclear and radioactive waste management and disposal; Public acceptance; Human resource development; Industrial and technological support infrastructure; Occupational and public health and safety, and emergency preparedness; Environmental impacts and safety; Legal and regulatory infrastructure; International treaties and conventions on nuclear safety, security and safeguards; Nuclear power policies and programme planning; Nuclear power project planning, financing, implementation and management; and Country experience in 1st NPP project implementation. The target audience are engineers, researchers, economists, lawyers, financial analyst, public health and emergency preparedness planners, regulators and policy planners.	Lecture, Expert assistance to conduct training course	2weeks-3courses per year	XR1-7 XR1-9 XT1-7 XT1-8 XT1-9 XT4-1 XT5-2 UR1-2 UR3-3 UR5-1 UR5-3 UR5-9	J-1(AM) J-3(PS)	K-1

111	Radiation safety and nuclear power public information and dissemination (Philippines)	To gain knowledge in effective public information and communication programs/strategies to counteract negative public perception.	Seminar, Training course	1-2weeks	XT4-1 UR4-1		
112	Nuclear power plant design (Thailand)	To obtain knowledge, techniques needed, NPP design engineering, basic skill, general description, design skill and etc for NPP	OJT, TC, Expert services	12		J-1(AM) J-3(PS) J-6(RE)	
113	Nuclear engineering for NPP (Thailand)	To train young nuclear engineers in preparation for introducing nuclear energy as an electrical power in the country	OJT, TC, Expert services	6-12	UR5-1	J-6(IE) J-1(AM)	
114	NPP-Environmental impact and assessment, safety analysis and control (Thailand)	NPP Environmental impact and assessment, nuclear safety planning, reactor analysis of the being introduced NPP, regulation and computer code for licensing	OJT, TC	6		J-6(RE) J-3(PS)	
115	NPP management (Thailand)	Pre-project activities, pre-construction stage, construction stage, commissioning stage, plant operation and plant maintenance stage	TC	1-2	UR5-7		
116	Preparation, construction, operation and maintenance of NPP (Thailand)	To train nuclear engineers for NPP program planning in infrastructure, NPP construction, reactor instrumentation, reactor safety, nuclear fuel and waste management	OJT, TC, Expert services	3-6		J-3(PS)	
117	Strategic planning for establishment of new NPP (Thailand)	To obtain knowledge and master experience in strategic planning for establishment of a new NPP	OJT, TC, Research, Expert services	3	UR5-7	J-1(AM) J-3(PS)	
118	Basic HRD for nuclear power program (Thailand)	To obtain knowledge, experience and techniques needed for nuclear power planning, human resources, basic nuclear power technology, manpower and computer codes for reactor modeling in NPP	OJT	3-6	UR5-7	J-1(AM)	
119	Public information, public acceptance and public relations for NPP (Thailand)	To gain experience and knowledge for conducting public information survey required for NPP introduction, public relations and public acceptance before the decision of the cabinet	OJT	6-12	UR4-1	J-1(AM)	

120	Safe operation and maintenance of NPP-PWR (Thailand)	Safe operation of NPP-PWR, instrumentation, control, core management and its maintenance	OJT, TC, Expert services	3-6		J-3 (PS)	
121	Nuclear safety (Vietnam)	Nuclear safety review and analyses required for NPPs introduction to Vietnam, including regulation, computer codes for licensing	Lecture, Research, OJT	12-24		J-1 (AM) J-3 (PS)	A-2 M-7 P-1 B-4
122	Nuclear safety (Vietnam)	To train researchers in the field of design of thermal-hydraulic safety analysis, probability safety assessment (PSA), reactor physics using computer codes	OJT, Lecture, Research	4persons /3months-2year	XR5-1 XR5-2 XR5-3 XT5-2 UR4-1 UR5-1 UR5-3 UR5-4 UR5-8		
123	Nuclear fuel (Vietnam)	To train researchers in the field of nuclear fuel fabrication technology, UO2 powder, UO2 ceramic pellets, fuel quality testing/assurance (including studying theory , and doing experiments on equipment)	OJT, Lecture, Research	4persons/3months-2year		J-6 (RE)	
E. Nuclear Administration							
124	Financing related training (Bangladesh)	Financing related training to improvise the quality of personnel to look for the appropriate financing mode of the first nuclear power project and to evaluate the proposals of different suppliers/consortiums/financiers.	OJT	3-6			
125	Overall nuclear power project management (Bangladesh)	Project management of nuclear power plants that will be required to implement the nuclear power program. Project management related training is required to improvise the quality of personnel to look for the appropriate financing mode as well as managing the first nuclear power project.	OJT	3-6			K-1
126	Safety regulation and licensing (Bangladesh)	Safety and regulatory aspects of nuclear power plants that will be required to implement the nuclear power program as well as to operate the plant.	OJT	3		J-1 (AM)	

127	Enhancing public communication skill (Indonesia)	This Program is proposed to enhance skill in public communication.	Lecture	2weeks	XT4-1 UR4-1	J-1 (AM)	
128	Nuclear administration (Indonesia)	To provide wide knowledge for nuclear administration such as safety concepts in design, construction and operation of NPP, radioactive waste management, radiation application, public acceptance, emergency preparedness and safety training of employees	Lecture, OJT	2weeks		J-1 (AM)	K-1
129	Nuclear power planning (Philippines)	To obtain knowledge & techniques needed for nuclear power planning. Lectures & visits to NPP, exercises using computer codes. To train policy makers, who would be capable of analyzing the feasibility of nuclear power	Seminar, Training course	1-2weeks		J-1 (AM) J-3 (PS)	K-1
130	Training on nuclear safety, licensing and regulations (Philippines)	To provide training in nuclear power reactor safety, licensing and regulations	OJT	3		J-1 (AM)	
131	Public information for NPPs (Vietnam)	Experience and knowledge for conducting public information activities required for NPP introduction, especially for public acceptance before the decision of the parliament (with emphasis on public targets of scientists and decision-makers)	Lecture, OJT	3-12	UR4-1	J-1 (AM)	