

BASIC PROFESSIONAL TRAINING COURSE

WEEK: 1

Timetable for 1-month (4 weeks) course

Day	Monday	Tuesday	Wednesday	Thursday	Friday
Hour					
9 ⁰⁰ – 9 ⁴⁵	Course opening (welcome, review of training course)	Module I Nuclear physics and reactor theory Nuclear fission	Module I Nuclear physics and reactor theory Reactivity changes	Module II Radiation protection in nuclear facilities Interaction of radiation with matter	TEST 1 (Module I, Module II from Introduction to radiation to External radiation exposure)
9 ⁴⁵ – 10 ³⁰	Module I Nuclear physics and reactor theory Atomic structure of matter	Module I Nuclear physics and reactor theory Neutron cycle	Module I Nuclear physics and reactor theory Subcritical multiplication	Module II Radiation protection in nuclear facilities Radiation detection	Module II Radiation protection in nuclear facilities Internal radiation exposure
10 ³⁰ – 11 ⁰⁰	BREAK				
11 ⁰⁰ – 11 ⁴⁵	Module I Nuclear physics and reactor theory Structure of atom	Module I Nuclear physics and reactor theory Neutron cycle	Module I Nuclear physics and reactor theory Heat removal from nuclear reactors	Module II Radiation protection in nuclear facilities Dosimetric quantities	Module II Radiation protection in nuclear facilities Radiation protection regulations
11 ⁴⁵ – 12 ³⁰	Module I Nuclear physics and reactor theory Atomic nucleus	Module I Nuclear physics and reactor theory Reactor kinetics	Module I Nuclear physics and reactor theory Heat removal from nuclear reactors	Module II Radiation protection in nuclear facilities Biological effects of radiation	Module II Radiation protection in nuclear facilities Radiation protection in nuclear installations
12 ³⁰ – 13 ³⁰	LUNCH				
13 ³⁰ – 14 ¹⁵	Module I Nuclear physics and reactor theory Radioactivity	Exercises Nuclear reactions	Module II Radiation protection in nuclear facilities Introduction to radiation	Module II Radiation protection in nuclear facilities External radiation exposure	Exercises Internal radiation exposure; Radiation protection regulations
14 ¹⁵ – 15 ⁰⁰	Module I Nuclear physics and reactor theory Nuclear reactions	Exercises Nuclear fission; Neutron cycle	Module II Radiation protection in nuclear facilities Interaction of radiation with matter	Exercises Radiation detection	Discussion feedback
15 ⁰⁰ – 15 ³⁰	BREAK				
15 ³⁰ – 16 ¹⁵ 16 ¹⁵ – 17 ⁰⁰	Exercises Atomic structure of matter; Radioactivity	Exercises Neutron cycle; Reactor kinetics	Exercises Reactivity changes; Subcritical multiplication	Exercises Dosimetric quantities; Biological effects of radiation	

BASIC PROFESSIONAL TRAINING COURSE

WEEK: 2

Timetable for 1-month (4 weeks) course

Day	Monday	Tuesday	Wednesday	Thursday	Friday
Hour					
9 ⁰⁰ – 9 ⁴⁵	Analysis of TEST 1	Module III Basic principles of nuclear safety The international nuclear safety regime	Module V Safety classification of structures, systems and components Safety classification	Module VII Probabilistic safety assessment Full power PSA level 1 for internal initiators	TEST 2 (Module II from Internal radiation exposure forward, Module III, IV, V, VI, VII, VIII)
9 ⁴⁵ – 10 ³⁰	Module II Radiation protection in nuclear facilities Environmental monitoring	Module III Basic principles of nuclear safety History of accidents in nuclear industry	Module VI Deterministic safety assessment DSA; Plant states	Module VII Probabilistic safety assessment PSA level 2	Module IX Siting considerations and environmental impact assessment Site selection
10 ³⁰ – 11 ⁰⁰	BREAK				
11 ⁰⁰ – 11 ⁴⁵	Module II Radiation protection in nuclear facilities Environmental monitoring	Module IV Design of a nuclear reactor Types of nuclear reactors	Module VI Deterministic safety assessment Initiating events; Acceptance criteria	Module VII Probabilistic safety assessment PSA level 3	Module IX Siting considerations and environmental impact assessment Site evaluation
11 ⁴⁵ – 12 ³⁰	Module III Basic principles of nuclear safety Safety fundamentals	Module IV Design of a nuclear reactor Safety concepts in the design of nuclear reactors	Module VI Deterministic safety assessment Best estimate plus uncertainty (bepu) analysis	Module VII Probabilistic safety assessment PSA applications	Module IX Siting considerations and environmental impact assessment Environmental impact assessment
12 ³⁰ – 13 ³⁰	LUNCH				
13 ³⁰ – 14 ¹⁵	Module III Basic principles of nuclear safety Fundamental safety functions	Module IV Design of a nuclear reactor Basic safety features of the design	Module VI Deterministic safety assessment Application of deterministic safety analysis	Module VIII Integrated risk informed decision making Introduction	Case studies Module IX
14 ¹⁵ – 15 ⁰⁰	Module III Basic principles of nuclear safety Defence-in-depth	Module IV Design of a nuclear reactor Basic safety features of the design	Module VII Probabilistic safety assessment PSA scope and levels	Module VIII Integrated risk informed decision making Integrated risk informed decision making	Discussion feedback
15 ⁰⁰ – 15 ³⁰	BREAK				
15 ³⁰ – 16 ¹⁵ 16 ¹⁵ – 17 ⁰⁰	Case studies Module III Environmental monitoring; Fundamental safety functions	Case studies Module III Safety culture impact assessment Case studies Module IV	Case Studies Module V Case studies Module VI	Case studies Module VII Case studies Module VIII	

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WEEK: 3

Timetable for 1-month (4 weeks) course

Day	Monday	Tuesday	Wednesday	Thursday	Friday
Hour					
9 ⁰⁰ – 9 ⁴⁵	Analysis of TEST 2	Module XI Operational limits and conditions Safety system	Module XIII Maintenance programme Facilities and equipment; Conduct and control of maintenance	Module XV In-plant accident management In-plant accident management programme	TEST 3 (Module IX, X, XI, XII, XIII, XIV, XV, XVI)
9 ⁴⁵ – 10 ³⁰	Module X Operational safety including operational feedback Safety of nuclear power plants: operation	Module XII Plant renewals, modifications and upgrades, ageing Introduction; Ageing management	Module XIV Surveillance programmes Introduction; Surveillance programme	Module XV In-plant accident management Accident management guidance	Module XVI Emergency preparedness and response The role of IAEA in emergency
10 ³⁰ – 11 ⁰⁰	BREAK				
11 ⁰⁰ – 11 ⁴⁵	Module X Operational safety including operational feedback Expectations for operational safety	Module XII Plant renewals, modifications and upgrades, ageing Long term operation (LTO)	Module XIV Surveillance programmes Surveillance programme	Module XVI Emergency preparedness and response Basic concepts	Module XVII Fuel cycle, spent fuel management and transport of radioactive materials Nuclear fuel cycle
11 ⁴⁵ – 12 ³⁰	Module X Operational safety including operational feedback Expectations for operational safety	Module XII Plant renewals, modifications and upgrades, ageing Modifications and upgrades	Module XIV Surveillance programmes In-service inspection	Module XVI Emergency preparedness and response Basic concepts; Past nuclear accidents	Module XVII Fuel cycle, spent fuel management and transport of radioactive materials Nuclear fuel cycle
12 ³⁰ – 13 ³⁰	LUNCH				
13 ³⁰ – 14 ¹⁵	Module XI Operational limits and conditions Safety limits	Module XIII Maintenance programme Introduction; Types of maintenance	Module XV In-plant accident management Severe accident phenomenology	Module XVI Emergency preparedness and response Establishing response capability	Case studies Module XVI
14 ¹⁵ – 15 ⁰⁰	Case studies Module X	Module XIII Maintenance programme Maintenance programmes; Organization and functions	Module XV In-plant accident management The source term associated with severe accidents	Module XVI Emergency preparedness and response Functional elements	Discussion feedback
15 ⁰⁰ – 15 ³⁰	BREAK				
15 ³⁰ – 16 ¹⁵	Case studies Module X	Case studies Module XI	Case studies Module XIII	Case studies Module XV	
16 ¹⁵ – 17 ⁰⁰		Case studies Module XII	Case studies Module XIV		

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WEEK: 4

Timetable for 1-month (4 weeks) course

Day	Monday	Tuesday	Wednesday	Thursday	Friday
Hour					
9 ⁰⁰ – 9 ⁴⁵	Analysis of TEST 3	Module XVIII Decommissioning Management; Completion of decommissioning	Module XX Regulatory control The authorization process	Module XXII Human performance Introduction; Error classification	TEST 4 (Module XVII, XVIII, XIX, XX, XXI, XXII and Module XXIII)
9 ⁴⁵ – 10 ³⁰	Module XVII Fuel cycle, spent fuel management and transport of radioactive materials Safety aspects of the nuclear fuel cycle	Module XIX Waste management Waste classification	Module XX Regulatory control The regulatory inspection and enforcement processes	Module XXII Human performance Cognitive engineering; Human error in the job	
10 ³⁰ – 11 ⁰⁰	BREAK				
11 ⁰⁰ – 11 ⁴⁵	Module XVII Fuel cycle, spent fuel management and transport of radioactive materials IAEA fuel cycle related programs	Module XIX Waste management Treatment	Module XXI Management system, leadership and safety culture Integrated management systems	Module XXII Human performance Event analysis with a human factor component in the IAEA/NEA IRS	Analysis of TEST 4
11 ⁴⁵ – 12 ³⁰	Module XVIII Decommissioning Decommissioning process	Module XIX Waste management Waste packaging; Storage and disposal	Module XXI Management system, leadership and safety culture Integrated management systems	Module XXIII Public communication General messages; Communication programmes	Course closure
12 ³⁰ – 13 ³⁰	LUNCH				
13 ³⁰ – 14 ¹⁵	Module XVIII Decommissioning Planning of decommissioning	Module XX Regulatory control The legislative and regulatory framework	Module XXI Management system, leadership and safety culture Leadership	Module XXIII Public communication Communication programmes; Good practices	
14 ¹⁵ – 15 ⁰⁰	Module XVIII Decommissioning Conduct of decommissioning actions	Module XX Regulatory control The authorization process	Module XXI Management system, leadership and safety culture Safety culture	Module XXIII Public communication Communications in emergencies; INES	
15 ⁰⁰ – 15 ³⁰	BREAK				
15 ³⁰ – 16 ¹⁵ 16 ¹⁵ – 17 ⁰⁰	Case studies Module XVII; Case studies Module XVIII	Case studies Module XVIII; Case studies Module XIX;	Case studies Module XX; Case studies Module XXI	Case studies Module XXII; Case studies Module XXIII	