

## Table of Curriculum (Undergraduate Program)

Classification	Subject No.	Code	Subject Name	Lecture:Lab.: Credit (Homework)	Semester	Remark
Elective Basic	NQE101	33.101	Nuclear and Quantum World	3:0:3(3)	Fall	
Mandatory Major	NQE201	33.201	Fundamentals of Nuclear and Quantum Science	3:0:3(4)	Spring	
	NQE202	33.202	Introduction to Nuclear Engineering I	3:0:3(4)	Spring	
	NQE203	33.203	Introduction to Nuclear Engineering II	3:0:3(4)	Fall	
	NQE204	33.204	Interaction of Radiation with Matters	3:0:3(4)	Fall	
	NQE301	33.301	Nuclear Reactor Theory	3:0:3(4)	Fall	
	NQE303	33.303	Radiation Measurement Experiments	2:3:3(6)	Fall	
	NQE401	33.401	System Engineering of Nuclear Power Plants and Experiments	3:3:4(6)	Spring	
	NQE402	33.402	Nuclear and Quantum Engineering Design Project	1:6:3(4)	Fall	
Elective Major	NQE211	33.211	Engineering Mathematics for Nuclear Engineers	3:0:3(4)	Fall	
	NQE272	33.272	Introduction to Medical Physics	3:0:3(4)	Fall	
	NQE281	33.281	Energy, Environment and Water	3:0:3(4)	Spring	
	NQE311	33.311	Numerical Methods and Computer Simulation	3:0:3(4)	Spring	
	NQE322	33.322	Introduction to Nuclear Thermal Hydraulics	3:0:3(4)	Fall	
	NQE331	33.331	Nuclear I&C and Experiments	2:3:3(4)	Spring	
	NQE341	33.341	Nuclear Chemistry	3:0:3(4)	Spring	
	NQE342	33.342	Nuclear Fuel Cycle	3:0:3(4)	Spring-Fall	
	NQE351	33.351	Introduction to Nuclear and Quantum Engineering Materials	3:0:3(4)	Fall	
	NQE363	33.363	Fundamentals of Neutron and X-ray Science	3:0:3(4)	Fall	
	NQE373	33.373	Interaction to Radiation Biology	3:0:3(4)	Spring	
	NQE382	33.382	Engineering Physics for Nuclear Engineers	3:0:3(4)	Spring-Fall	
	NQE434	33.434	Nuclear Power Systems Control	3:1:3(6)	Spring-Fall	
	NQE441	33.441	Environmental Engineering of Nuclear Power	3:0:3(4)	Fall	
	NQE452	33.452	Application of Nuclear and Quantum Engineering Materials	3:0:3(4)	Spring	
	NQE471	33.471	Experiments in Quantum Engineering	2:3:3(4)	Spring	
	NQE481	33.481	Introduction to Nuclear Fusion Engineering	3:0:3(4)	Spring-Fall	
	NQE484	33.484	Writing English Essays for Engineers	3:0:3(4)	Spring	
NQE485	33.485	Special Topics and Nuclear and Quantum Engineering III	1:0:1(4)	Spring-Summer-Fall		
NQE488	33.488	Special Topics and Nuclear and Quantum Engineering I	2:0:2(4)	Spring-Summer-Fall		
NQE489	33.489	Special Topics in Nuclear and Quantum Engineering II	3:0:3(4)	Spring-Summer-Fall		
Research	NQE490	33.490	B.S. Thesis Research	0:6:3	Spring-Fall	
	NQE495	33.495	Independent Research	0:6:1	Spring-Fall	
	NQE496	33.496	Seminar	1:0:1	Spring-Fall	

※ The classification, subject name, and mutual recognition of courses may change depending on the year of attendance.

## Table of Curriculum (Graduate Program)

Classification	Subject No.	Code	Subject Name	Lecture:Lab.: Credit (Homework)	Semester	Remark
<b>Elective</b>	NQE502	33.502	Principles and Applications of Nuclear Engineering	3:0:3(4)	Fall	◎
	NQE503	33.503	Radiation Science, Technology and Applications	3:0:3(4)	Spring-Fall	◎
	NQE510	33.510	Nuclear Reactor Kinetics	3:0:3(4)	Fall	◎
	NQE512	33.512	Nuclear Reactor Analysis and Design	3:0:3(4)	Spring	◎
	NQE513	33.513	Neutron/Radiation Transport Theory and Computation	3:0:3(4)	Spring	◎
	NQE514	33.514	Monte Carlo Methods and Applications	3:0:3(4)	Spring	◎
	NQE517	33.517	Fast Reactor Design and Analysis	3:0:3(4)	Fall	◎
	NQE521	33.521	Reactor Thermal -Hydraulics	3:0:3(4)	Fall	◎
	NQE522	33.522	Nuclear Power Plant Design Project	3:0:3(4)	Spring-Fall	◎
	NQE523	33.523	Nuclear Reactor Safety	3:0:3(4)	Spring-Fall	◎
	NQE524	33.524	Simulation of Nuclear and Quantum System	3:0:3(4)	Spring-Fall	◎
	NQE526	33.526	Quantum and Micro Energy Transport	3:0:3(4)	Fall	◎
	NQE527	33.527	Gas-cooled Reactors and Hydrogen	3:0:3(4)	Fall	◎
	NQE528	33.528	Introduction to Risk and Reliability Engineering	3:0:3(4)	Fall	◎
	NQE529	33.529	Nuclear System Design Course	3:0:3(4)	Spring	◎
	NQE533	33.533	Nuclear Power Plant Instrumentation and Control Systems	3:1:3(6)	Spring-Fall	◎
	NQE535	33.535	Human Factors Engineering in Nuclear Power Plants	3:0:3(4)	Spring-Fall	◎
	NQE537	33.537	Wireless Power Electronics	3:0:3(4)	Spring	◎
	NQE538	33.538	Smart Grid and Power Electronics	3:0:3(4)	Spring	◎
	NQE539	33.539	Techno-economic evaluation of green power generation system	3:0:3(4)	Spring	
	NQE540	33.540	Nuclear Chemical Engineering	3:0:3(4)	Spring	◎
	NQE541	33.541	Nuclear Waste Management	3:0:3(4)	Fall	◎
	NQE542	33.542	Chemistry of Actinides	3:0:3(4)	Fall	◎
	NQE543	33.543	Nuclear Power Plant Water Chemistry	3:0:3(4)	Fall	◎
	NQE545	33.545	Radiation Chemistry	3:0:3(4)	Spring	◎
	NQE551	33.551	Nuclear Reactor Metallurgy	3:0:3(4)	Spring-Fall	◎
	NQE552	33.552	Integrity of Nuclear Structural Materials	3:0:3(4)	Spring	◎
	NQE553	33.553	Nuclear Fuel Engineering	3:0:3(4)	Spring-Fall	◎
	NQE555	33.555	Mechanics of Irradiated Material	3:0:3(4)	Spring-Fall	◎
	NQE561	33.561	Radiation Measurement Systems	3:0:3(4)	Spring-Fall	◎
	NQE562	33.562	Radiation Imaging Instrumentation	3:0:3(4)	Spring	◎
	NQE563	33.563	Radiation Biology	3:0:3(4)	Spring-Fall	◎
	NQE564	33.564	Physics of Medical Imaging	3:0:3(4)	Spring	◎
	NQE571	33.571	NMR Engineering	3:1:3(6)	Spring-Fall	◎
	NQE572	33.572	Neutron Nano-Characterization	3:0:3(4)	Spring-Fall	◎
NQE575	33.575	Nuclear Energy Policy	3:0:3(4)	Fall	◎	

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	NQE581	33.581	Nuclear Fusion Engineering	3:0:3(4)	Spring	◎
	NQE582	33.582	Applied Plasma Engineering	3:0:3(4)	Fall	◎
	NQE583	33.583	Engineering of Charged Particle Beams	3:0:3(4)	Fall	◎
	NQE584	33.584	Radiation Protection and Regulations	3:0:3(4)	Fall	◎
	NQE585	33.585	Introduction to Nuclear Safety Regulation	3:0:3(4)	Fall	◎
	NQE586	33.586	Safety Regulation for Nuclear Installations	3:0:3(4)	Spring	◎
	NQE587	33.587	Regulation for Nuclear Fuel Cycle and Emergency Preparedness	3:0:3(4)	Winter	◎
	NQE588	33.588	Advanced Design Project I for Nuclear and Quantum Engineering	0:9:3	Spring	◎
	NQE589	33.589	Advanced Design Project II for Nuclear and Quantum Engineering	0:9:3	Fall	◎
	NQE591	33.591	General Plasma Physics for Nuclear Fusion	3:0:3(4)	Spring-Fall	◎
	NQE592	33.592	Plasma electrodynamics	3:0:3(4)	Spring-Fall	◎
	NQE595	33.595	Technical Writing in Nuclear and Quantum Engineering	3:0:3(4)	Fall	◎
	NQE597	33.597	Special Topics in Nuclear and Quantum Engineering III	1:0:1(4)	Spring-Su mmer-Fall	◎
	NQE598	33.598	Special Topics in Nuclear and Quantum Engineering I	2:0:2(4)	Spring-Su mmer-Fall	◎
	NQE599	33.599	Special Topics in Nuclear and Quantum Engineering II	3:0:3(4)	Spring-Su mmer-Fall	◎
	NQE625	33.625	Computational Analysis in Nuclear System	3:0:3(4)	Spring	
	NQE628	33.628	Application of Probabilistic Safety Assessment	3:0:3(4)	Fall	
	NQE631	33.631	Nuclear and Quantum Instrumentation and Control Design	2:3:3(6)	Spring-Fall	
	NQE654	33.654	Materials for Nuclear Fuel Cycle	3:0:3(4)	Fall	
	NQE656	33.656	Advanced Nuclear Systems and Materials	3:0:3(4)	Spring-Fall	
	NQE675	33.675	Nuclear Nonproliferation, Safeguards, and Security	3:0:3(4)	Spring-Fall	
	NQE692	33.692	Plasma Kinetic theory	3:0:3(4)	Spring-Fall	
	NQE693	33.693	Magnetic Confinement for Fusion Energy	3:0:3(4)	Spring-Fall	
	NQE726	33.726	Special Topics in Nuclear Safety Analysis	2:3:3(6)	Fall	
<b>Research</b>	NQE960	33.960	M.S. Thesis Research		Spring-Fall	Spring- Fall
	NQE965	33.965	M.S. Independent Research		Spring-Fall	
	NQE966	33.966	M.S. Seminar	1:0:1	Spring-Fall	
	NQE980	33.980	Ph.D. Thesis Research		Spring-Fall	
	NQE986	33.986	Ph.D. Seminar	1:0:1	Spring-Fall	

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## Substitute Course List

Substitute courses in the department					
Category	Courses currently offered		Courses not currently offered		
	Course no.	Course title	Course no.	Course title	Remark
Undergraduate Course	NQE341	Nuclear Chemistry	NQE321	Design and Implementation of Nuclear Systems	Course Close
"	NQE281	Energy, Environment and Water	NQE371	Nuclear Energy Economics and Management	"
"	NQE363	Fundamentals of Neutron and X-ray Science	NQE381	Introduction to Neutron and NMR Spectroscopy	"
"	NQE363	Fundamentals of Neutron and X-ray Science	NQE383	Fundamentals of Quantum Beam Engineering	"
"	NQE488	Special Topics in Nuclear and Quantum Engineering I	NQE408	Reactor Experiments	"
"	NQE351	Introduction to Nuclear and Quantum Engineering Materials	NQE421	Nuclear Thermal Hydraulics and Experiments	"
"	NQE373	Interaction to Radiation Biology	NQE426	Introduction to Ultra-small Scale Engineering	"
"	NQE331	Nuclear I&C and Experiments	NQE435	Information Engineering for Nuclear and Quantum Applications and Experiments	"
"	NQE311	Neumerical Methods and Computer Simulation	NQE461	Monte Carlo Methods and Applications	"
"	NQE481	Introduction to Nuclear Fusion Engineering	NQE472	Quantum Computer and Quantum Information	"
"	NQE322	Introduction to Nuclear Thermal Hydraulics	NQE221	Introduction to Nuclear Thermal Hydraulics	Course Change
"	NQE351	Introduction to Nuclear and Quantum Engineering Materials	NQE351	Introduction to Nuclear and Quantum Engineering Materials	"
"	NQE510	Nuclear Reactor Kinetics	NQE411	Nuclear Reactor Kinetics	"
"	NQE311	Numerical Methods and Computer Simulation	NQE461	Monte Carlo Methods and Applications	"
Graduate Course	NQE521	Reactor Thermal -Hydraulics	NQE520	Nuclear Reactor Engineering	Course Close
"	NQE512	Nuclear Reactor Analysis and Design	NQE536	Compact Nuclear Simulator Operation Experiment	"
"	NQE527	Gas-cooled Reactors and Hydrogen	NQE621	Nuclear Thermal-Hydraulics II	"
"	NQE523	Nuclear Reactor Safety	NQE623	Nuclear Reactor Safety II	"
"	NQE512	Nuclear Reactor Analysis and Design	NQE624	Nuclear Fuel and Core Design	"
"	NQE553	Nuclear Fuel Engineering	NQE653	Nuclear Reactor Fuel Elements	"
"	NQE553	Nuclear Fuel Engineering	NQE651	Radiation Effects on Reactor Materials	"
"	NQE675	Special Topics in Nuclear Energy Policy	NQE743	Special Topics in Nuclear Chemical Engineering	"
"	NQE502	Principles and Applications of Nuclear Engineering	NQE202	Introduction to Nuclear Engineering I	Course New
"	NQE510	Nuclear Reactor Kinetics	NQE511	Nuclear Reactor Kinetics	Course Change
"	NQE510	Nuclear Reactor Kinetics	NQE411	Nuclear Reactor Kinetics	"
"	NQE513	Neutron/Radiation Transport Theory and Computation	NQE513	Neutron and Quantum Particle Transport Theory and Computation	"
"	NQE521	Reactor Thermal -Hydraulics	NQE521	Nuclear Thermal-Hydraulics I	"
"	NQE523	Nuclear Reactor Safety	NQE523	Nuclear Reactor Safety I	"

Substitute courses in the department					
Category	Courses currently offered		Courses not currently offered		
	Course no.	Course title	Course no.	Course title	Remark
"	NQE533	Nuclear Power Plant Instrumentation and Control Systems	NQE532	Nuclear and Quantum Instrumentation Systems	"
"	NQE434	Nuclear Power Systems Control	NQE534	Nuclear and Quantum Control Systems	"
"	NQE537	Wireless Power Electronics	NQE537	On-Line Electric Vehicles & Mobile Power Electronics	"
"	NQE625	Computational Analysis in Nuclear System	NQE625	Numerical Methods in Reactor Engineering Analysis	"
"	NQE553	Nuclear Fuel Engineering	NQE653	Nuclear Reactor Fuel Elements	"
"	NQE535	Human Factors Engineering in Nuclear Power Plants	NQE735	Special Topics in Information Engineering for Nuclear and Quantum Applications	"
"	NQE628	Application of Probabilistic Safety Assessment	NQE727	Special Topics in Probabilistic Risk Assessment	"

※Substitute courses may differ according to the effective year of the requirements.