KINGS

2026 ADMISSION GUIDELINES

KINGS KEPCO INTERNATIONAL NUCLEAR GRADUATE SCHOOL

CONTENTS

ADMISSION GUIDELINES

ADMISSION POLICY

- KINGS desires future-oriented and experienced applicants who are working in energy related fields.
- Motivated and open-minded individuals are invited to apply.
- An ability to study in cross cultural environments is an essential asset for KINGS admission.
- KINGS is an accredited institution by the Ministry of Education of Korea.

ADMISSION CRITERIA

Eligibility criteria such as academic background, work experience, letter of recommendation, and language requirement is described in table below.

Requirement	Details
Academic Background	Bachelor's Degree or Higher
Work Experience	+1 Year Preferred
Letter of Recommendations	Company, Government or Academic Supervisor
Language Requirement	Certified English Test Score or Equivalent Language Proficiency for applicant from non-English speaking countries

TIMELINES

1 >>> Online Application	2 >>> Documents Review	3 >>> Online Personal Inventory test	4 >>> Interview	5 >>> Announcement of Final Decision
				
From Sep. 15 to Oct. 26	From Nov. 3 to Nov. 7	~ Nov. 28	From Dec. 8 to Dec. 12	Dec. 31

*Timeline is subject to change.

How to Apply

- To access the on-line application, find the "**Apply Now**" banner on the KINGS website(www.kings.ac.kr), under the "**Admission**" menu.
- Create your own account and fill in all the required information for each page of them.
- The on-line application page will be available only during the official application period. Please refer to the notice on KINGS website for the 2026 application period.

Required Documents [1]

1	**Application for admission**	Form 1
2	**Statement of purpose**	Form 2
3	**Study & career plan**	Form 3
4	**Certificate of employment**	Form 4
5	**Two letters of Recommendation**	Form 5
6	**Original diploma and transcripts of undergraduate degree** [2]	
7	**Proof of proficiency in English**	
8	**Verification and Consent to the integrity of the documents**	On-line system

[1] All forms(1~5, 8) are provided at the application system (www.kings.ac.kr).
Identification photo taken within 3 months (black and white, snapshot photo will not be accepted).

[2] For academic credentials, an overseas degree should be approved either by apostille or consular confirmation by local Korean Embassy it may be replaced as a PDF document of the original as you consent to verify yourself at the application system.

Proof of English Proficiency

- An applicant whose native language is not English MUST demonstrate his/her English language proficiency by submitting any certificates from authorized institutions.

※ Exemption from submission of English Test Report

1. Applicants from U.S.A, Canada, U.K, Australia, New Zealand, Ireland(Native English Speaker).
2. Applicants from a country that uses English as an official language.
3. Applicants who have completed their entire university courses in English
   (It is required to submit certificates verifying that courses are fully taught in English.)

Important Notice

- For the applicants who pass the documents review are required to take Personal Inventory Test through on-line. Internet access link will be sent individually.
- All application documents must be typed(not hand-written) in English.
- Non-English documents are not accepted, but it is possible when attaching a notarized English translation.
- All submitted documents will NOT be returned.
- If an applicant has gained admission in an illegal manner(through forgery, alteration of documents, of document translation errors) then the admission will be nullified. Furthermore, if a criminal case is suspected, the candidate/student will be reported to the authorities of the Republic of Korea and of the applicant's home country in compliance with the law.

Application Fee

- KINGS does not charge an application fee for international students.

Mailing Address

- Room #510 main building
  658-91 Haemaji-ro, Seosaeng-myeon, Ulju-gun, Ulsan 45014 Republic of Korea
  admission@kings.ac.kr

EDUCATION PROGRAM

Department of Nuclear Power Plant Engineering

Introduction

The Department of NPP (Nuclear Power Plant Engineering) offers a comprehensive graduate-level program that encompasses all aspects of a nuclear power plant project, starting from the design and certification phase, and continuing through the operation, management, and ultimately the decommissioning phase. Our program provides students with both theoretical and practical training, equipping them with the necessary skills to lead nuclear power plant projects in their respective countries.

The majority of our students are employed professionals with prior work experience in nuclear power-related corporations or companies, either in the Republic of Korea or other countries. Upon completion of the two-year (four-semester) program at KINGS, students are awarded a Master's Degree in Nuclear Power Plant Engineering. They have the option to pursue either a Master of Engineering (ME) or a Master of Science (MS) degree.

During their first year, students undertake various courses that cover different areas of NPP Engineering, such as design, project management, construction, safety analysis, radiation protection, decommissioning, and waste management. In their second year, students specialize in a specific study area through a team project or conducting research that intergrates engineering and management aspects of an NPP project. This prepares our students for global leadership positions within the energy organizations of their respective countries.

Graduation Requirements

Degree Type

- Master of Engineering (ME) in Nuclear Power Plant Engineering
- Master of Science (MS) in Nuclear Power Plant Engineering

Common Requirements

- Minimum of 36 credits, Minimum GPA of B- (2.7/4.3)
- Study Period: 2 years (March 2026 - February 2028) at KINGS
- Thesis (MS) or Project Report (ME) approved by the Examining Committee

Additional Requirements for MS Degree

- Satisfy one of the following requirements:
  - An oral presentation at a domestic or international academic conference organized by a society that publishes journals listed as Korea Citation Index (KCI) candidate or higher (including SSCI, SCIE, SCOPUS, KCI, KCI candidate journals)
  - Thesis Submission (in whole or in part) to a journal listed as KCI candidate or higher (including SSCI, SCIE, SCOPUS, KCI, KCI candidate journals), accompanied by positive feedback from the journal (e.g. acceptance, acceptance with revision, a request for revision and resubmission, or similar)

EDUCATION PROGRAM

Department of Energy Policy and Engineering

Introduction

Energy is the backbone of national industry and an essential resource in our daily lives. Energy policy is inherently complex, involving a delicate balance between economic efficiency, environmental stewardship, and long-term sustainability. As the importance of strategic public investment and budget planning continues to grow, effective national energy planning and management has never been more critical.

The Department of Energy Policy and Engineering at KINGS offers a graduate curriculum designed to equip students with the knowledge and skills needed to address challenges within this multifaceted system. Our program fosters global energy leaders capable of integrated problem-solving through a combination of academic theory, hands-on training, and peer learning with professionals from electric utilities and international public institutions.

The department offers a two-year master's program, leading to either a Master of Engineering (ME) or a Master of Science (MS) in Energy Policy and Engineering.

Graduation Requirements

Degree Type

- Master of Engineering (ME) in Energy Policy and Engineering
- Master of Science (MS) in Energy Policy and Engineering

Common Requirements

- Minimum of 36 credits, Minimum GPA of B- (2.7/4.3)
- Study Period: 2 years (March 2026 - February 2028) at KINGS
- Thesis (MS) or Project Report (ME) approved by the Examining Committee

Additional Requirements for MS Degree

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FINANCIAL DETAILS

Tuition & Fees [1)]

Tuition	Tuition is 48.4 million KRW per academic year. Tuition covers lectures, lecture materials, access to the library, and access to other facilities relevant to academic activities.
Matriculation Fee	Matriculation fee is 1 million KRW.
Living Cost	Total rate of room and board is 12.8 million KRW per year including three meals a day.

[1)] All fees and costs are based on the 2025 academic year and are subject to change for the 2025 academic year.

Financial Aid & Service

Scholarship

The KINGS Global Scholarship covers a maximum of two years of full-time study.
All new eligible international students are awarded the global scholarship. To maintain the KINGS global scholarship, recipients must have satisfied the requirements(mimimun GPA of B-, 2.7/4.3) as outlined in KINGS regulations. The scholarship covers the above mentioned tuition, matriculation fee, and room & board fee.

IAEA(International Atomic Energy Agency) supports the participation of fellow to KINGS Master's Degree Program in Nuclear Power Plant Engineering based on IAEA's policy.
Please contact the IAEA liason office in your country.

RCA provides sponsorship for the KINGS Master's Degree Program in either Nuclear power plant engineering or Energy Policy and Engineering based on RCA policy. Please visit the website (http://www.rcaro.org/) and contact the RCA Regional Office for detailed information.

— Regional Cooperative Agreement for research, development and training related to nuclear science and technology for Asia and the Pacific.

Assistantship

Administrative Assistantships(AA) are available to international students through a selection process. Selected students will be working on tasks designated by their assigned department. Students can work up to 20 hours per month and will receive a stipend of up to 300,000 KRW, based on the actual hours worked.

Medical & Insurance

The Korean government requires mandatory health insurance. Any foreigner who has stayed for more than six months must subscribe to the Public National Health Insurance since 1 March 2021. The amount of health insurance fee is approximately 75,000 KRW per month.

KINGS provides basic health check-ups and care at the health office. For international students who need medical treatment at a hospital, KINGS health office refers the hospital information to the students.

CAMPUS LIFE

Facilities

- KINGS dormitory has 200 single occupancy rooms, a cafeteria, and an Islamic prayer room.
- Each dormitory room is equipped with a bathroom, a study desk, a single bed, and a refrigerator.
- KINGS cafeteria provides regular Korean and Western meals.
- A fully furnished common kitchen is also available for student use.
- Residential facilities including tennis and basketball courts, a futsal field, a ping-pong room, and a gym are available.
- KINGS has a high-speed internet connection which students can access on campus, free of cost.
- A Kookmin Bank(KB) ATM is also available on campus.

Monthly Events for Students

February, 2026	March	April
Orientation	Matriculation 1st Semester Open	Spring Event
May	**June**	**July**
Student council election Teacher's Day	1st Culture Trip	Summer Session
August	**September**	**October**
Summer Vacation	2nd Semester Open	Fall Event
November	**December**	
Photo Shoot	Winter Vacation Commencement	

※ The schedule is subject to change.

For more information, visit the KINGS website(**www.kings.ac.kr**) or contact Admission and Student Affairs Team at **admission@kings.ac.kr**

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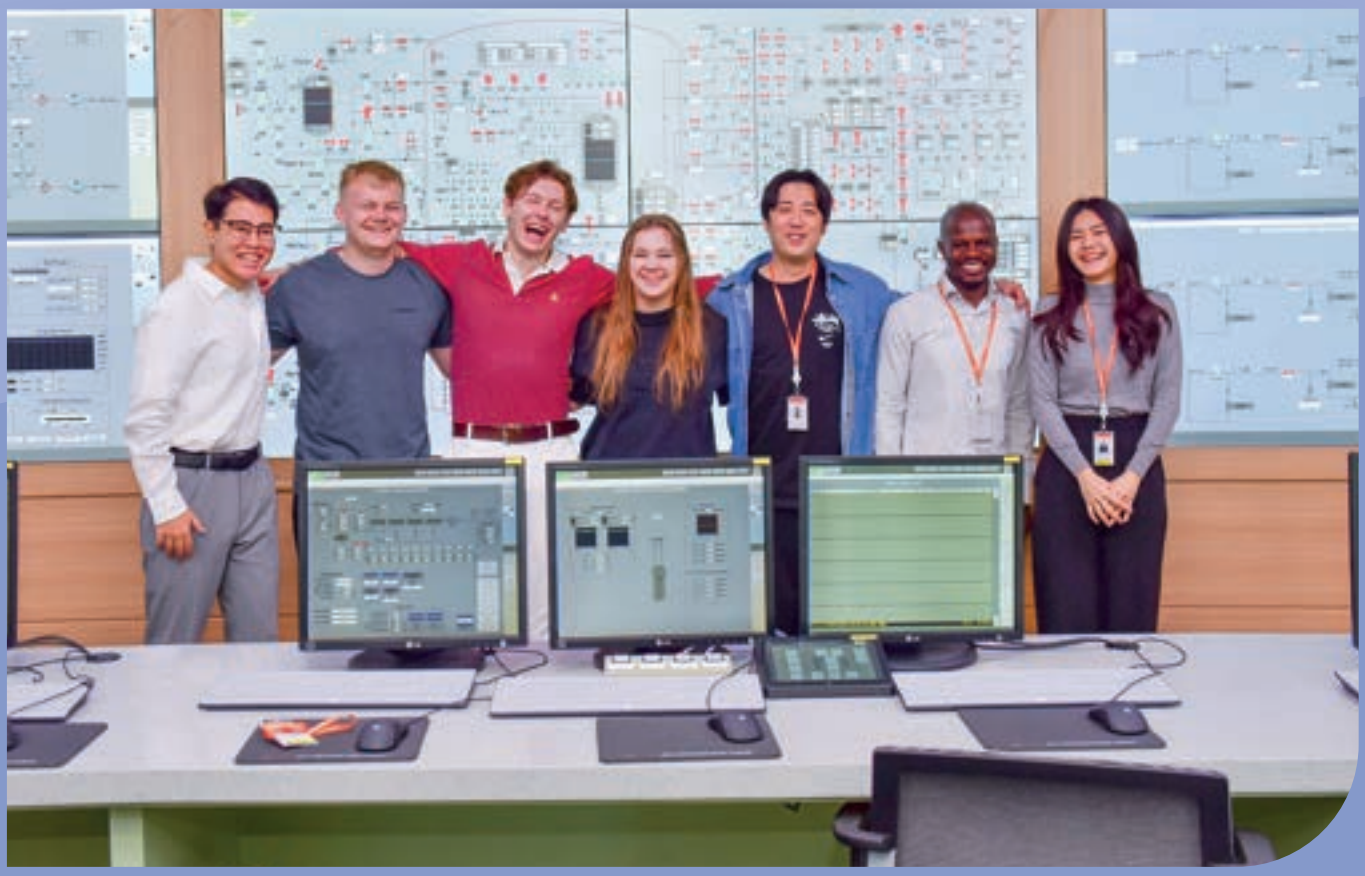
Course Description

Department of Nuclear Power Plant Engineering



Curriculum & Study Areas

Common Compulsory Courses for All Tracks*

- Nuclear Power Plant Engineering
- Advanced Power Reactor and Small Modular Reactor
- Leadership and Communication, Safety Culture and Communication, Technical Writing, Speech and Debate, Cross Cultural Program
- Thesis and Individual Project Report

NPP Design and Nuclear Safety Track

The NPP Design and Nuclear Safety Track offers a comprehensive curriculum focused on nuclear reactor design, simulation, and safety assessment. Students will explore core design methodologies, safety aspects, and neutron behavior analysis using advanced nuclear design codes. They will develop proficiency in numerical methods for reactor physics, including Monte Carlo simulations, and gain insights into probabilistic risk assessment for managing uncertainties in nuclear plant operations. Practical experience includes thermal hydraulics analysis using industry-standard codes and learning safety philosophies and methods through case studies of major nuclear accidents. This track prepares students for roles in nuclear engineering with a strong emphasis on safety, design optimization, and risk management.

Study Areas

Nuclear Fuel Design, Small Modular Reactor, Probabilistic Risk Assessment and Management, Thermal Hydraulics and Safety Analysis

Elective Courses*

- **Introduction to Nuclear Reactor Analysis**
- **Equilibrium Core Nuclear Design**
- **Nuclear Reactor Simulation using Nuclear Design Codes**
- **Numerical Methods for Reactor Physics**
- **Application of Neutron Transport Theory**
- **Basic Probabilistic Risk Assessment**
- **Intermediate Probabilistic Risk Assessment**
- **Numerical Method for Nuclear Thermal Hydraulics**
- **Multi-dimensional Two-phase Flow Analysis for Nuclear Reactors**

Curriculum & Study Areas

NPP Decommissioning and Spent Fuel Management Track

The NPP Decommissioning and Spent Fuel Management Track offers a specialized curriculum covering essential aspects of nuclear decommissioning and spent fuel management. Students will study radioactive waste management, including waste classification, treatment methods, and disposal techniques, along with the decontamination and decommissioning processes of nuclear facilities. The curriculum covers the entire nuclear fuel cycle, from initial stages such as fuel handling to concluding stages involving spent fuel management options like reprocessing and long-term storage. Students will gain practical skills in radiation shielding analysis using Monte Carlo simulations, focusing on radiation protection for nuclear facilities.
Additionally, the track includes training in environmental impact assessment, covering radiological risk assessment, environmental analysis, and emergency planning and response for nuclear incidents. This comprehensive program prepares students for roles in managing nuclear waste, decommissioning nuclear facilities, and ensuring environmental safety and regulatory compliance in the nuclear sector.

Study Areas

NPP Decommissioning, Spent Fuel & Waste Management, Radiation Safety & Environmental Protection

Elective Courses*

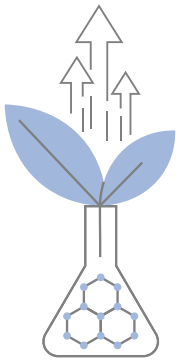
- **Radioactive Waste Management**
- **Nuclear Materials**
- **Nuclear Fuel Cycle**
- **Radiation Shielding Analysis**
- **Environmental Impact Assessment**

NPP Engineering and Project Management Track (INMA-NTM Program)

The NPP Engineering and Project Management Track offers a specialized curriculum designed to equip students with comprehensive knowledge and practical skills in managing international nuclear power plant (NPP) projects. This track covers essential aspects of project development, construction management, financial analysis, environmental impact assessment, and regulatory compliance within the nuclear sector. The NPP Engineering and Project Management Track Program of the Department of NPP was granted membership within the INMA-NTM (International Nuclear Management Academy Master's Programmes in Nuclear Technology Management) program on 27 September 2023 by the IAEA. Consequently, students in this Track must complete the following nine INMA core courses and fulfill INMA elective requirements. Upon graduation, they will be awarded both a KINGS master's degree certificate and a Certification of Recognition for the INMA endorsed Programme.

Study Areas

Project Management, Civil & Earthquake Engineering



Elective Courses*

- **NPP Project Development and Contract**
- **Advanced Topics for Nuclear Project Management**
- **Special Issues in NPP Natural Hazards Analysis**
- **NPP Site Hazard Analysis and Evaluation**
- **NPP Financial Management**
- **Licensing Process and Codes Comparison**

INMA Compulsory Courses*

- **Nuclear Power Plant Engineering**
- **Advanced Power Reactor and Small Modular Reactor**
- **NPP Project Deployment**
- **NPP Construction Project Management**
- **Energy Business Environment**
- **Leadership and Communication I**
- **Leadership and Communication II**
- **Safety Culture and Communication**
- **Speech and Debate**

※ The Common Compulsory Courses for All Tracks, Elective Courses, and INMA Compulsory Courses are based on the 2025 academic year curriculum and are subject to change.

Common Compulsory Courses

Nuclear Power Plant Engineering

This course covers an introduction to nuclear engineering and 20 topics in accordance with the IAEA's International Nuclear Management Academy (INMA) standards, including national energy policy, safety regulations and licensing, nuclear security and safety protocols, project contracts and management, financial management, safety culture, and strategic leadership. It features special lectures by KINGS professors with extensive field experience, along with field trips to nuclear power plants and advanced simulators. The curriculum further enhances practical skills by offering hands-on experience with VR technology.

Advanced Power Reactor and Small Modular Reactor

Students learn about the safety design, licensing requirements, and components of the Advanced Pressurized Reactor (APR1400) and receive hands-on training using PC-based simulators. The course also covers small modular reactor (SMR) design, focusing on cutting-edge technology and passive safety systems. Through this course, students gain a deeper understanding of nuclear power plant system characteristics and the design features of SMRs under development around the world.

Leadership and Communication

Based on Harvard's Leadership and Negotiation Program, this course series trains current and future leaders of energy or nuclear/radiological organizations to become adept and internal and external communication. It involves understanding oneself and others, learning the "principled negotiation" model, and engaging in interactive class activities and reflection assignments. The advanced fall semester course further develops these skills through complex cases and individualized coaching, requiring active participation and reflection assignments to build on the foundational skills from the initial course.

Safety Culture and Communication

This course explores the essential principles underlying nuclear safety, emphasizing the pivotal role of safety culture in protecting people and the environment. Lectures by leading safety experts and seasoned industry executives guide students through the development of safety culture and effective communication systems within nuclear organizations. Through systematic and practical instruction, students will gain the knowledge and skills necessary for fostering a robust safety culture and making sound, safety-based decisions in professional settings.

Technical Writing

These courses systematically develop students' technical writing skills for academic and professional contexts in engineering and science. Beginning with an introduction to the structure and conventions of academic papers, students progress through hands-on drafting, literature review, and the iterative process of receiving and applying feedback. Each course emphasizes clarity, coherence, and adherence to ethical standards in technical English writing. Students independently prepare and revise a conference paper, culminating in a polished, finalized manuscript by the end of each semester. Through ongoing guidance and detailed feedback from professors, students gain the practical expertise needed for successful technical communication.

Speech and Debate

This course enhances students' public speaking, group discussion, oral presentation, written communication, and critical thinking skills through the use of debating techniques to analyze social, political, and economic issues. Students engage in discussions and formal debates on key issues affecting businesses and the global community. After learning the basics of argumentation, refutation, case construction, and presentation techniques, students produce a video recording of their own presentation as a term project.

Cross Cultural Program

This program consists of three sub-programs: Culture Korean (CK), Cross Culture (CC), and Culture Trip (CT). CK aids international students in developing basic spoken and written Korean, focusing on communicative language skills. CC fosters stronger cultural understanding and respect for cultural diversity by enhancing communication skills and promoting cultural exchanges between Korean and international students. Additionally, CT is offered at the end of each semester to encourage social and cultural interactions among students.

Elective Courses

Introduction to Nuclear Reactor Analysis

This course introduces the theories and methodologies of nuclear core design and analysis. It covers basic concepts of nuclear physics, diffusion theory, reactor kinetics, core design method and reactor analysis procedure including safety aspects. This course emphasizes PWR reactor core design and corresponding reactor engineering problems.

Equilibrium Core Nuclear Design

This course aims to determine the optimal fuel batch enrichment and the number of fuel assemblies (FAs) in each batch that satisfy utility energy requirements, using FMNG and optimization techniques such as the simplex method, generalized gradient reduction method, evolutionary algorithms, and the simulated annealing method. After establishing batch-specific data, the initial core loading pattern will be searched for using the simulated annealing and evolutionary methods. For subsequent cycles, reload core and equilibrium core loading patterns will be optimized with a focus on economic efficiency.

APR1400 Nuclear Reactor Simulation using Nuclear Design Codes

This course introduces nuclear design computer codes like CASMO and MASTER for analyzing neutron behavior and nuclear fuel assemblies. It covers methodologies such as homogenization and energy group condensation, including hands-on projects to optimize fuel rod diameters and loading patterns.

Numerical Methods for Reactor Physics

This course equips students with fundamental numerical methods and Python programming skills essential for reactor core analysis. Topics include numerical solutions for integration, differentiation, linear algebra, and eigenvalue problems, alongside the application of these techniques to the neutron diffusion equation. Through practical exercises, students develop and implement simplified one- or two-dimensional neutronics codes, gaining hands-on experience in computational reactor physics.

Application of Neutron Transport Theory

This course focuses on neutron transport theory, a key component of nuclear engineering for understanding neutron behavior in reactor cores. Students will derive and explore the neutron transport equation and its physical meanings, and learn both deterministic and probabilistic methods to solve it. The course includes practical applications using the Method of Characteristics and Monte Carlo methods, with hands-on experience in Python programming.

Basic Probabilistic Risk Assessment

This course covers Probabilistic Safety Assessment (PSA) and reliability analysis, which integrate and evaluate all aspects of a nuclear power plant's safety and reliability. It focuses on understanding how uncertainty impacts plant behavior and assessment outcomes. Essential to the course is a strong grasp of probabilistic concepts and methods to perform accurate analyses.

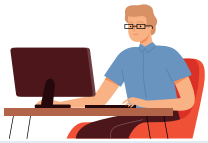
Intermediate Probabilistic Risk Assessment

This course addresses the growing need for engineers skilled in risk and reliability analysis within the nuclear industry. It is essential for those involved in Probabilistic Risk Assessment (PRA) and serves as a foundation for further PRA-related courses. The course covers the technical aspects of PRA for risk assessment, includes practical exercises, and discusses the development of PRA to address key issues in nuclear power engineering, comparing deterministic and probabilistic approaches.

Numerical Method for Nuclear Thermal Hydraulics

This course provides foundational knowledge of mathematical and numerical models used in nuclear reactor safety and performance analyses, with a focus on thermal hydraulics. Students learn the governing partial differential equations and their discretization using finite difference and finite volume methods. Both semi-implicit and implicit schemes, as well as phase coupling techniques for two-phase flow, are covered. Through hands-on numerical experiments, students develop and apply pilot codes to practical problems using Fortran. The course emphasizes practical skills in implementing and solving nuclear thermal hydraulics problems with modern computational tools.

Elective Courses



Multi-dimensional Two-phase Flow Analysis for Nuclear Reactors

This course provides foundational knowledge of mathematical and numerical models used in nuclear reactor safety and performance analyses, with a focus on thermal hydraulics. Students learn the governing partial differential equations and their discretization using finite difference and finite volume methods. Both semi-implicit and implicit schemes, as well as phase coupling techniques for two-phase flow, are covered. Through hands-on numerical experiments, students develop and apply pilot codes to practical problems using Fortran. The course emphasizes practical skills in implementing and solving nuclear thermal hydraulics problems with modern computational tools.

Radioactive Waste Management

Covering the entire scope of radioactive waste management, this course includes waste generation, classification, treatment, and disposal, as well as decontamination and decommissioning of nuclear installations. It introduces principles, objectives, and technologies related to radioactive waste management.

Nuclear Materials

This course explores the thermodynamic and materials engineering principles underlying the properties and in-core performance of key reactor materials, including nuclear fuel and core structural components. Students will examine the thermal and mechanical behavior of these materials under operational conditions and assess the effects of neutron irradiation, such as material damage and its implications. The curriculum features hands-on training with the TRIM Monte Carlo simulation code to evaluate particle-material interactions. By integrating theoretical knowledge with practical experience, students gain a comprehensive understanding of reactor materials' performance and reliability.

Nuclear Fuel Cycle

The course covers both the front end and back end of the nuclear fuel cycle, including spent fuel management options like reprocessing, recycling, storage, and disposal. It aims to develop understanding and insight into the economic, social, and policy issues of spent fuel management.

Radiation Shielding Analysis

This course provides foundational knowledge on radiation, including its exposure, health effects, and concepts of radiological protection, as well as radiation shielding analysis for nuclear facilities. Students will engage in practical demonstrations using the Monte Carlo radiation transport simulation code, specifically the Particle and Heavy Ion Transport code System (PHITS).

Environmental Impact Assessment

This course covers radiological risk assessment and environmental analysis, including source-term, atmospheric dispersion, exposure pathways, and dose assessment during normal operations, design basis accidents, and severe accidents. It also addresses radiological and nuclear emergency planning and response (EPR). Students will understand safety fundamentals and practice radiological environmental impact assessment (R-EIA) using a PC simulator of the APR1400 and the RASCAL emergency response code developed by the US NRC.

NPP Project Development and Contract

This course covers the planning, development, evaluation, funding, and contracting of international nuclear power plant (NPP) projects, as well as other international mega-projects. It examines various delivery methods such as DBB, EPC turnkey, DBF, and BOO, and addresses factors like financing, resources, and project risk. Students will learn about preparing bids and proposals while considering marketing, construction, operation, and financial risks. The course is particularly useful for those interested in exporting or importing nuclear power plants, offering valuable insights into managing NPP project risks through contract approaches.

Advanced Topics for Nuclear Project Management

This course explores advanced project management topics in nuclear power plant (NPP) operations. Based on students' interests, selected subjects such as contract management, risk management, advanced work packages, BIM, configuration management, SMR construction, deep geological repositories, and generative AI will be covered. Students will conduct in-depth research and analysis on the chosen topics.

NPP Construction Project Management

This course develops practical skills and core knowledge in schedule, cost, and quality control for international construction projects, with a focus on NPPs and global mega-projects. Through case studies and software practice, students gain insights into project management from both owner and contractor perspectives. Technical and operational aspects are not covered.

NPP Project Deployment

This course addresses concerns and activities for implementing a national civil nuclear energy program, following the IAEA milestones approach. It covers diverse concepts related to pre-project activities and project development, with a focus on milestones 1 and 2.

Special Issues in NPP Natural Hazards Analysis

This project course is intended to help students understand and apply the tools and techniques used in first year courses to conduct a specific type of natural hazard analysis for a nuclear power plant project. Students will undergo the basic life cycle of probabilistic hazard analysis through characterization, model selection, hazard calculations, tool development, and verification.

NPP Site Hazard Analysis and Evaluation

Students learn modern site-specific analysis techniques for evaluating natural hazards like meteorological, flood, and earthquake risks for nuclear power plants and related infrastructure. The course includes statistical techniques and special review processes for site evaluation and safety analysis.

NPP Financial Management

This course offers a foundational understanding of nuclear finance, building on general finance theories and decision-making tools. Students will develop basic financial analysis skills using Excel and explore key topics such as capital budgeting, risk and return, LCOE estimation, and project valuation. The course is particularly recommended for engineers seeking to strengthen their financial literacy and advance toward mid-level management roles. The course will use EXCEL for basic financial analysis as well as STATA for data analysis.

Energy Business Environment

The course covers aspects of the energy business environment, including market, political, legal, regulatory, and societal factors. It uses energy planning tools for country-specific energy plans and addresses environmental effects on project delays and cost overruns.

Introduction to Data Analysis and Machine Learning

An introduction to Python programming and statistics, this course covers measurement principles, probability distributions, correlation, and regression. It includes an overview of artificial intelligence and machine learning applications.

Data Analysis and Application

This course explores the application of AI techniques—such as machine learning and neural networks—in optimizing power system operations. Through practical exercises, students gain hands-on experience in load forecasting and energy management, developing key skills for real-world power systems and nuclear energy applications.

NPP O&M Management, NPP Management and Leadership Traits

These courses provide a comprehensive foundation in nuclear power plant (NPP) operation and maintenance management, as well as the leadership traits essential for future industry leaders. Students gain strategic insights into global O&M practices, nuclear management principles, and executive-level leadership development, all aligned with international standards such as those from the IAEA the U.S nuclear industry. Together, the courses equip participants with the technical knowledge, problem-solving abilities, and leadership skills necessary to excel in the global nuclear sector.

NPT, Nuclear Disarmament & Non-Proliferation

This course explores the Nuclear Non-Proliferation Treaty (NPT) with a focus on its three pillars: non-proliferation, disarmament, and peaceful uses of nuclear energy. Students examine key issues such as the dual-use nature of nuclear technology, the North Korean nuclear crisis, and the role of nuclear energy in global security and climate change.

NPT, Verification & Peaceful Nuclear Uses

As a continuation of the first-semester course, this course delves deeper into nuclear non-proliferation, with emphasis on safeguards, verification, and sanctions. It also explores legal frameworks for peaceful nuclear cooperation, the role of the IAEA, and the contribution of nuclear energy to climate goals and the UN SDGs. Emerging technologies like AI and cybersecurity in peaceful nuclear use are also addressed.

Course Description

Department of Energy Policy and Engineering

Energy Policy and Management Track

The Energy Policy and Engineering Track offers a comprehensive curriculum designed to provide students with an in-depth understanding of the technical, economic, and policy dimensions of the energy sector.
This program integrates foundational knowledge with advanced analytical skills, preparing students for various roles in energy management, policy-making, and technical operations.

Study Areas

Net-Zero Microgrid and Small Modular Reactor, Financial Management, Environment Policy and Utility Management, Net-Zero Technology and Project Development, Project Valuation and Risk Management, Grid Planning and Power System Development

Compulsory Courses*

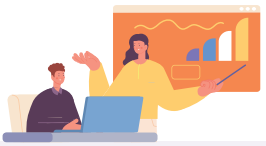
- **Electric Resource Planning and Optimization**
- **Electric Power System Economics**
- **Electricity Market Design and Operation**
- **Grid Planning and Power System Development**
- **Project Valuation and Risk Analysis**
- **Leadership and Communication, Technical Writing, Speech and Debate, Cross Cultural Program**
- **Thesis and Individual Project Report**

Elective Courses*

- **Net-Zero Technology and Grid Transformation**
- **Net-Zero Microgrid and Small Modular Reactor**
- **Corporate Finance and Accounting**
- **Environmental Policy and Utility Management**
- **Introduction to Data Analysis and Machine Learning**
- **Data Analysis and Application**

※ The Compulsory Courses and Elective Courses are based on the 2025 academic year curriculum and are subject to change.

Common Compulsory Courses



Electric Resource Planning and Optimization

This course explores how to optimally combine and operate diverse energy resources by considering various sustainability variables important to power companies. It frames this challenge as an optimization problem involving several policy variables. Students will quantitatively analyze optimal resource plans using professional tools and practical system data to derive the best alternatives. In this course, students will learn methods for energy resource planning for a given country or region using energy analysis models such as the WASP (Wien Automatic System Planning) model and EnergyPLAN.

Electric Power System Economics

This course examines the investment and operation of power systems in the context of competitive electricity markets. It covers fundamental microeconomic concepts, market organization, operational reliability, ancillary services, network congestion, and investments in transmission and generation. The instructor, drawing on extensive field experience, provides practical insights into these issues. Students will learn to develop innovative solutions to power system problems, tailored to varying conditions across different countries, markets, and companies. PLEXOS and PowerWorld simulations enhance students' understanding of economic principles.

Electricity Market Design and Operation

This course examines the dynamic evolution of electricity markets, focusing on the roles of policymakers, regulators, and stakeholders. It covers regulatory schemes, market design, operational processes, and risk management, with an emphasis on hands-on experimental market design. The instructor will share practical insights from extensive field experience. Students will gain a comprehensive understanding of the complexities of market design and operation, as well as investment and risk management in competitive electricity markets.

Grid Planning and Power System Development

This course delves into the technical and economic aspects of power systems, covering essential topics like load flow calculation, fault current calculation, and stability techniques crucial for power system design and operation. Real-world transmission network development cases will be highlighted to connect theory with practical application. Through hands-on experience with industry-standard simulators like PLEXOS and PowerWorld, students will develop a strong understanding of grid planning and power system operations.

Project Valuation and Risk Analysis

This course equips students with financial tools essential for making sound energy investment decisions, emphasizing the connection between corporate finance knowledge and project valuation and risk analysis. It focuses on how energy investors apply financial models to enhance project value and achieve financial flexibility for their core investment strategies. The course is divided into two main parts: Project Valuation and Risk Analysis. It applies EXCEL for cash flow modeling and STATA for data analysis. The PALISADE RISK ANALYSIS, a Monte Carlo Simulation tool, is also used for quantitative risk analysis.

Leadership and Communication

Based on Harvard's Leadership and Negotiation Program, this course series trains current and future leaders of energy or nuclear/radiological organizations to become adept and internal and external communication. It involves understanding oneself and others, learning the "principled negotiation" model, and engaging in interactive class activities and reflection assignments. The advanced fall semester course further develops these skills through complex cases and individualized coaching, requiring active participation and reflection assignments to build on the foundational skills from the initial course.

Technical Writing

These courses systematically develop students' technical writing skills for academic and professional contexts in engineering and science. Beginning with an introduction to the structure and conventions of academic papers, students progress through hands-on drafting, literature review, and the iterative process of receiving and applying feedback. Each course emphasizes clarity, coherence, and adherence to ethical standards in technical English writing. Students independently prepare and revise a conference paper, culminating in a polished, finalized manuscript by the end of each semester. Through ongoing guidance and detailed feedback from professors, students gain the practical expertise needed for successful technical communication.

Speech and Debate

This course enhances students' public speaking, group discussion, oral presentation, written communication, and critical thinking skills through the use of debating techniques to analyze social, political, and economic issues. Students engage in discussions and formal debates on key issues affecting businesses and the global community. After learning the basics of argumentation, refutation, case construction, and presentation techniques, students produce a video recording of their own presentation as a term project.

Cross Cultural Program

This program consists of three sub-programs: Culture Korean (CK), Cross Culture (CC), and Culture Trip (CT). CK aids international students in developing basic spoken and written Korean, focusing on communicative language skills. CC fosters stronger cultural understanding and respect for cultural diversity by enhancing communication skills and promoting cultural exchanges between Korean and international students. Additionally, CT is offered at the end of each semester to encourage social and cultural interactions among students.

Elective Courses

Net-Zero Technology and Grid Transformation

This course examines various net-zero technologies, including renewables, energy usage, and SMRs, and their integration into power grids. Through lectures and insights from industry experts, students will explore the technical requirements for these technologies from the perspectives of grid operators and renewable energy developers. The course provides both practical insights and a framework for evaluating energy technology systems and evolving power grids in engineering and economic contexts. Simulators like PLEXOS and PowerWorld will be used to deepen students' understanding of key concepts in grid transformation and decarbonization.

Net-Zero Microgrid and Small Modular Reactor

This course covers the components and operation of microgrids, which include small power supplies, batteries, and monitoring/control equipment, highlighting the role of SMR technology. Microgrids usually operate with the utility power system but can function independently during accidents, ensuring high reliability. The course focuses on the optimal combination and economic operation of power facilities and energy storage devices. In this course, students will learn optimal microgrid planning methods for a given region using microgrid analysis tools such as HOMER and Python-based modeling.

Corporate Finance and Accounting

This course provides a comprehensive overview of energy finance, integrating general finance theories with practical decision-making tools and Excel techniques for financial analysis. Key topics include capital budgeting under uncertainty, risk and return, capital structure, and power project valuation. The second part of the course focuses on regression analysis essential for data forecasting. The course will use EXCEL for basic financial analysis as well as STATA for data analysis.

Environmental Policy and Utility Management

This course offers an overview of key principles and current issues in energy and environmental economics, focusing on market dynamics, policy impacts, and sustainability. Students gain analytical tools to address real-world challenges in the energy and environmental sectors.

Introduction to Data Analysis and Machine Learning

An introduction to Python programming and statistics, this course covers measurement principles, probability distributions, correlation, and regression. It includes an overview of artificial intelligence and machine learning applications.

Data Analysis and Application

This course explores the application of AI techniques—such as machine learning and neural networks—in optimizing power system operations. Through practical exercises, students gain hands-on experience in load forecasting and energy management, developing key skills for real-world power systems and nuclear energy applications.

NPT, Nuclear Disarmament & Non-Proliferation

This course explores the Nuclear Non-Proliferation Treaty (NPT) with a focus on its three pillars: non-proliferation, disarmament, and peaceful uses of nuclear energy. Students examine key issues such as the dual-use nature of nuclear technology, the North Korean nuclear crisis, and the role of nuclear energy in global security and climate change.

NPT, Verification & Peaceful Nuclear Uses

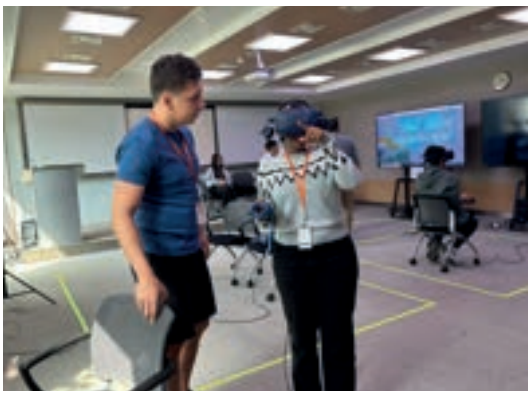
As a continuation of the first-semester course, this course delves deeper into nuclear non-proliferation, with emphasis on safeguards, verification, and sanctions. It also explores legal frameworks for peaceful nuclear cooperation, the role of the IAEA, and the contribution of nuclear energy to climate goals and the UN SDGs. Emerging technologies like AI and cybersecurity in peaceful nuclear use are also addressed.

Educational Facilities:
Department of Nuclear Power Plant Engineering

APR1400 NPA (Nuclear Plant Analyzer)

The Nuclear Plant Analyzer (NPA) performs real-time and high-speed simulations of APR1400 to represent scenarios in the main control room, which is designed to be identical to that of an actual nuclear power plant. Through the training, the students will gain a better understanding of the safety and key auxiliary systems of NPPs, enhance their safety analysis capabilities, and improve their ability to respond to emergencies. The NPA provides detailed representations of thermal-hydraulics and core behaviors in NPPs during various operational transients and accident conditions.

VR (Virtual Reality) Classroom



In collaboration with KHNP, our VR Classroom provides students with immersive experiences in the construction, operation, and maintenance of nuclear power plants developed by KHNP. Through virtual reality, students can engage in activities such as disassembling and assembling major components, as well as conducting walkdowns, offering a hands-on experience inside a nuclear power plant. These simulations move beyond traditional textbook learning, enabling students to develop a comprehensive understanding of NPP structures. Moreover, VR allows students to explore inaccessible areas within NPPs, providing valuable insights into otherwise restricted environments.

High-Performance Cluster Server

KINGS operates a high-performance cluster system composed of two nodes equipped with the latest AMD EPYC CPUs (256 cores in total) and 9 GPUs. This system provides a professional and structured educational environment by supporting high-reliability nuclear core and safety analysis code systems applicable to commercial settings. The cluster server is utilized for the following purposes:

- Core analysis code development and small modular reactor (SMR) core design training
- Programming practice using characteristic curve methods and Monte Carlo techniques
- Computational support for students working on numerical analysis software

For more information, visit the KINGS website(**www.kings.ac.kr**) or contact Admission and Student Affairs Team at **admission@kings.ac.kr**


KINGS
KEPCO INTERNATIONAL
NUCLEAR GRADUATE SCHOOL

2026 ADMISSION GUIDELINES

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