

## Curriculum

### □ Undergraduate Course

| Classification         | Subject No.  | Subject Name   | Lecture:Lab.:<br>Credit<br>(Homework) | Professor                                       | Semester               |
|------------------------|--|--|---------------------------------------|---|------------------------|
| <b>Elective Basic</b>  | NQE101   | Nuclear and Quantum World                                  | 3:0:3(3)                              | Professor                                       | Fall                   |
| <b>Mandatory Major</b> | NQE201   | Fundamentals of Nuclear and Quantum Science                | 3:0:3(4)                              | Seungryong Cho,<br>Sung Min Choi                | Spring                 |
|                        | NQE202   | Introduction to Nuclear Engineering I                      | 3:0:3(4)                              | Hyun Gook Kang,<br>Yonghee Kim                  | Spring                 |
|                        | NQE203   | Introduction to Nuclear Engineering II                     | 3:0:3(4)                              | Jon-gil Yun,<br>Jeong Ik Lee                    | Fall                   |
|                        | NQE204   | Interaction of Radiation with Matters                      | 3:0:3(4)                              | Gyuseong Cho<br>Sung Oh Cho                     | Fall                   |
|                        | NQE301   | Nuclear Reactor Theory                                     | 3:0:3(4)                              | Nam Zin Cho                                     | Fall                   |
|                        | NQE303   | Radiation Measurement Experiments                          | 2:3:3(6)                              | Gyuseong Cho                                    | Spring                 |
|                        | NQE401   | System Engineering of Nuclear Power Plants and Experiments | 3:3:4(6)                              | Hee Cheon No                                    | Spring                 |
|                        | NQE402   | Nuclear and Quantum Engineering Design Project             | 1:6:3(4)                              | Soon Heung Chang,<br>Yong Hoon Jeong            | Fall                   |
| <b>Elective Major</b>  | NQE211   | Engineering Mathematics for Nuclear Engineers              | 3:0:3(4)                              | Young Chul Kim,<br>Jeong Ik Lee                 | Fall                   |
|                        | NQE272   | Introduction to Medical Physics                            | 3:0:3(4)                              | Seungryong Cho                                  | Fall                   |
|                        | NQE281   | Energy, Environment and Water                              | 3:0:3(4)                              | Yong Hoon Jeong                                 | Spring                 |
|                        | NQE311   | Numerical Methods and Computer Simulation                  | 3:0:3(4)                              | Nam Zin Cho                                     | Spring                 |
|                        | NQE322   | Introduction to Nuclear Thermal Hydraulics                 | 3:0:3(4)                              | Jong Hyun Kim                                   | Spring                 |
|                        | NQE331   | Nuclear I&C and Experiments                                | 2:3:3(4)                              | Chun-Taek Rim                                   | Fall                   |
|                        | NQE341   | Nuclear Chemistry  | 3:0:3(4)                              | Jon-gil Yun                                     | Spring                 |
|                        | NQE351   | Introduction to Nuclear and Quantum Engineering Materials  | 3:0:3(4)                              | Ho Jin Ryu,<br>Dongchan Jang,<br>Changheui Jang | Fall                   |
|                        | NQE363   | Fundamentals of Neutron and X-ray Science                  | 3:0:3(4)                              | Sung Min Choi                                   | Fall                   |
|                        | NQE373   | Interaction to Radiation Biology                           | 3:0:3(4)                              | Man Sung Yim                                    | Spring                 |
|                        | NQE413   | Monte Carlo Methods and Applications                       | 3:0:3(4)                              | Nam Zin Cho,<br>Yonghee Kim                     | Spring,Fall            |
|                        | NQE434   | Nuclear Power Systems Control                              | 3:1:3(6)                              | Poong Hyun Seong                                | Spring,Fall            |
|                        | NQE441   | Environmental Engineering of Nuclear Power                 | 3:0:3(4)                              | Kun Jai Lee                                     | Fall                   |
|                        | NQE452   | Application of Nuclear and Quantum Engineering Materials   | 3:0:3(4)                              | Professor                                       | Spring                 |
|                        | NQE481   | Introduction to Nuclear Fusion Engineering                 | 3:0:3(4)                              | Young Chul Kim                                  | Spring                 |
|                        | NQE484   | Writing English Essays for Engineers                       | 3:0:3(4)                              | Professor                                       | Spring                 |
|                        | NQE485   | Special Topics and Nuclear and Quantum Engineering III     | 1:0:1(4)                              | Professor                                       | Spring,<br>Summer,Fall |
|                        | NQE488   | Special Topics and Nuclear and Quantum Engineering I       | 2:0:2(4)                              | Professor                                       | Spring,<br>Summer,Fall |
| NQE489                 | Special Topics in Nuclear and Quantum Engineering II | 3:0:3(4)   | Professor                             | Spring<br>Summer,Fall                           |                        |
| <b>Research</b>        | NQE490   | B.S. Thesis Research                                       | 0:6:3                                 | Professor                                       | Spring,Fall            |
|                        | NQE495   | Independent Research                                       | 0:6:1                                 | Professor                                       | Spring,Fall            |
|                        | NQE496   | Seminar  | 1:0:1                                 | Professor                                       | Spring,Fall            |

□ Graduate Course

| Classification       |   | Subject No.   | Subject Name                                    | Lecture:Lab.:<br>Credit<br>(Homework) | Professor    | Semester     |
|----------------------|---|---|---|---------------------------------------|--------------|--------------|
| Mandatory<br>General | required                                    | CC010   | Special Lecture on Leadership                   | 1:0:0                                 |              | Fall         |
|                      |   | CC020   | Ethics, Safety I                                | 1AU                                   |              | Spring, Fall |
|                      | choose<br>1                                 | CC500   | Scientific Writing                              | 3:0:3(4)                              |              | Spring, Fall |
|                      |   | CC510   | Introduction to Computer Applications           | 2:3:3(10)                             |              | Spring, Fall |
|                      |   | CC511   | Probability Statistics                          | 2:3:3(6)                              |              | Spring, Fall |
|                      |   | CC512   | Introduction to Materials Science & Engineering | 3:0:3(3)                              |              | Spring, Fall |
|                      |   | CC513   | Engineering Economics and Cost Analysis         | 3:0:3(6)                              |              | Fall         |
|                      |   | CC522   | Introduction to Instruments                     | 2:3:3(8)                              |              | Fall         |
|                      |   | CC530   | Entrepreneurship and Business Strategies        | 3:0:3(6)                              |              | Fall         |
|                      |   | CC531   | Patent Analysis and Invention Disclosure        | 3:0:3(6)                              |              | Spring, Fall |
| CC532                | Collaborative System Design and Engineering | 4:0:4   |   | Fall                                  |              |              |
| Elective             | NQE502                                      | Principles and Applications of Nuclear Engineering      | 3:0:3(4)  | Poong Hyun Seong,<br>Changheui Jang   | Fall         |              |
|                      | NQE503                                      | Radiation Science, Technology and Applications          | 3:0:3(4)  | Professor                             | Spring, Fall |              |
|                      | NQE510                                      | Nuclear Reactor Kinetics                                | 3:0:3(4)  | Yonghee Kim                           | Fall         |              |
|                      | NQE512                                      | Nuclear Reactor Analysis and Design                     | 3:0:3(4)  | Yonghee Kim                           | Spring       |              |
|                      | NQE513                                      | Neutron/Radiation Transport Theory and Computation      | 3:0:3(4)  | Nam Zin Cho                           | Spring       |              |
|                      | NQE517                                      | Fast Reactor Design and Analysis                        | 3:0:3(4)  | Yonghee Kim                           | Fall         |              |
|                      | NQE521                                      | Reactor Thermal -Hydraulics                             | 3:0:3(4)  | Hee Cheon No                          | Fall         |              |
|                      | NQE522                                      | Nuclear Power Plant Design Project                      | 3:0:3(4)  | Soon Heung Chang                      | Spring, Fall |              |
|                      | NQE523                                      | Nuclear Reactor Safety                                  | 3:0:3(4)  | Soon Heung Chang                      | Spring, Fall |              |
|                      | NQE524                                      | Simulation of Nuclear and Quantum System                | 3:0:3(4)  | Soon Heung Chang                      | Spring, Fall |              |
|                      | NQE526                                      | Quantum and Micro Energy Transport                      | 3:0:3(4)  | Soon Heung Chang                      | Fall         |              |
|                      | NQE527                                      | Gas-cooled Reactors and Hydrogen                        | 3:0:3(4)  | Hee Cheon No                          | Fall         |              |
|                      | NQE528                                      | Introduction to Risk and Reliability Engineering        | 3:0:3(4)  | Jong Hyun Kim                         | Fall         |              |
|                      | NQE529                                      | Nuclear System Design Course                            | 3:0:3(4)  | Professor                             | Spring       |              |
|                      | NQE533                                      | Nuclear Power Plant Instrumentation and Control Systems | 3:1:3(6)  | Poong Hyun Seong                      | Spring, Fall |              |
|                      | NQE535                                      | Human Factors Engineering in Nuclear Power Plants       | 3:0:3(4)  | Poong Hyun Seong                      | Spring, Fall |              |
|                      | NQE537                                      | Wireless Power Electronics                              | 3:0:3(4)  | Chun-Taek Rim                         | Spring       |              |
|                      | NQE538                                      | Smart Grid and Power Electronics                        | 3:0:3(4)  | Chun-Taek Rim                         | Spring       |              |
|                      | NQE540                                      | Nuclear Chemical Engineering                            | 3:0:3(4)  | Kun Jai Lee                           | Spring       |              |
|                      | NQE541                                      | Radioactive Waste Management                            | 3:0:3(4)  | Kun Jai Lee                           | Fall         |              |
|                      | NQE542                                      | Chemistry of Actinides                                  | 3:0:3(4)  | Jon-gil Yun                           | Fall         |              |
|                      | NQE543                                      | Nuclear Power Plant Water Chemistry                     | 3:0:3(4)  | Jon-gil Yun                           | Fall         |              |
|                      | NQE545                                      | Radiation Chemistry                                     | 3:0:3(4)  | Sung Oh Cho                           | Spring       |              |
| NQE551               | Nuclear Reactor Materials                   | 3:0:3(4)  | Ho Jin Ryu,<br>Changheui Jang                   | Spring, Fall                          |              |              |
| NQE552               | Integrity of Nuclear Structural Materials   | 3:0:3(4)  | Changheui Jang                                  | Spring                                |              |              |
| NQE553               | Nuclear Fuel Engineering                    | 3:0:3(4)  | Ho Jin Ryu                                      | Spring, Fall                          |              |              |
| NQE555               | Mechanics of Irradiated Materials           | 3:0:3(4)  | Dongchan Jang                                   | Spring, Fall                          |              |              |

※ Note: 500 level courses open to both undergraduate and graduate students

□ Graduate Course

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|-----------------|---|--|---------------------------------------|------------------|------------------------|
| <b>Elective</b> | NQE561                                    | Radiation Measurement Systems                                  | 3:0:3(4)                              | Gyuseong Cho     | Spring, Fall           |
|                 | NQE562                                    | Radiation Imaging Instrumentation                              | 3:0:3(4)                              | Gyuseong Cho     | Spring                 |
|                 | NQE563                                    | Radiation Biology  | 3:0:3(4)                              | Gyuseong Cho     | Spring, Fall           |
|                 | NQE564                                    | Physics of Medical Imaging                                     | 3:0:3(4)                              | Seungryong Cho   | Spring                 |
|                 | NQE571                                    | NMR Engineering  | 3:1:3(6)                              | Sung Min Choi    | Spring, Fall           |
|                 | NQE572                                    | Neutron Nano-Characterization                                  | 3:0:3(4)                              | Sung Min Choi    | Spring, Fall           |
|                 | NQE575                                    | Nuclear Energy Policy  | 3:0:3(4)                              | Professor        | Fall                   |
|                 | NQE581                                    | Nuclear Fusion Engineering                                     | 3:0:3(4)                              | Professor        | Spring                 |
|                 | NQE582                                    | Applied Plasma Engineering                                     | 3:0:3(4)                              | Professor        | Fall                   |
|                 | NQE583                                    | Engineering of Charged Particle Beams                          | 3:0:3(4)                              | Sung Oh Cho      | Fall                   |
|                 | NQE584                                    | Radiation Protection and Regulations                           | 3:0:3(4)                              | Professor        | Fall                   |
|                 | NQE585                                    | Introduction to Nuclear Safety Regulation                      | 3:0:3(4)                              | Professor        | Fall                   |
|                 | NQE586                                    | Safety Regulation for Nuclear Installations                    | 3:0:3(4)                              | Professor        | Spring                 |
|                 | NQE587                                    | Regulation for Nuclear Fuel Cycle and Emergency Preparedness   | 3:0:3(4)                              | Professor        | Winter                 |
|                 | NQE588                                    | Advanced Design Project I for Nuclear and Quantum Engineering  | 0:9:3                                 | Professor        | Spring                 |
|                 | NfQE589                                   | Advanced Design Project II for Nuclear and Quantum Engineering | 0:9:3                                 | Professor        | Fall                   |
|                 | NQE595                                    | Technical Writing in Nuclear and Quantum Engineering           | 3:0:3(4)                              | Professor        | Fall                   |
|                 | NQE597                                    | Special Topics in Nuclear and Quantum Engineering III          | 1:0:1(4)                              | Professor        | Spring<br>Summer, Fall |
|                 | NQE598                                    | Special Topics in Nuclear and Quantum Engineering I            | 2:0:2(4)                              | Professor        | Spring<br>Summer, Fall |
|                 | NQE599                                    | Special Topics in Nuclear and Quantum Engineering II           | 3:0:3(4)                              | Professor        | Spring<br>Summer, Fall |
|                 | NQE625                                    | Computational Analysis in Nuclear System                       | 3:0:3(4)                              | Jeong Ik Lee     | Spring                 |
|                 | NQE628                                    | Application of Probabilistic Safety Assessment                 | 3:0:3(4)                              | Hyun Gook Kang   | Fall                   |
|                 | NQE631                                    | Nuclear and Quantum Instrumentation and Control Design         | 2:3:3(6)                              | Poong Hyun Seong | Spring, Fall           |
|                 | NQE656                                    | Advanced Nuclear Systems and Materials                         | 3:0:3(4)                              | Changheui Jang   | Spring, Fall           |
| NQE675          | Special Topics in Nuclear Energy Policy   | 3:0:3(4)   | Professor                             | Fall             |                        |
| NQE726          | Special Topics in Nuclear Safety Analysis | 2:3:3(6)   | Hee Cheon No                          | Fall             |                        |
| <b>Research</b> | NQE960                                    | M.S. Thesis Research   |                                       | Professor        | Spring, Fall           |
|                 | NQE965                                    | M.S. Independent Research                                      |                                       | Professor        | Spring, Fall           |
|                 | NQE966                                    | M.S. Seminar   | 1:0:1                                 | Professor        | Spring, Fall           |
|                 | NQE980                                    | Ph.D. Thesis Research  |                                       | Professor        | Spring, Fall           |
|                 | NQE986                                    | Ph.D. Seminar  | 1:0:1                                 | Professor        | Spring, Fall           |

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