

University of Idaho

College of Engineering

Nuclear Engineering Program

Course of Study Guide for the M.S.N.E. Degree Thesis Option (30 Credits)

Core – 12 credits Selected from the following list. (*All classes are 3 credit hours unless noted*)

NE 450	Principles of Nuclear Engineering
NE 501	Seminar (1 cr., 2 cr. are required)
NE 544	Reactor Analysis (statics and kinetics)
NE 554/Phys 506	Radiation Detection and Shielding
NE 565	Reactor Engineering
NE 585	Nuclear Fuel Cycles
NSEN 447	Nuclear Systems Laboratory (ISU)

Focus Areas – 12 Credits Selected from the following list.

- **Reactor Engineering, Control & Safety Focus**
 - CHE/ME 527 Thermodynamics
 - CE/ME 519 Fluid Transients
 - CE 541/ME 583 Reliability of Engineering Systems
 - ChE/ME 541 Advanced Engineering Analysis
 - CS 430 System Modeling and Simulation
 - ECE 470/ME 481 Control Systems
 - MATH 480 Partial Differential Equations
 - ME 435 Thermal Energy System Design
 - ME 477/577 Design for Manufacture Assembly
 - ME 520/CHE 537 Fluid Dynamics
 - ME 546 Convective Heat Transfer
 - ME/ChE 525 Advanced Heat Transfer
 - NE 462 Nuclear Reactor Codes and Standards
 - NE 525 Transport Theory
 - NE 530 Two Phase Flow
 - NE 575 Advanced Nuclear Power Engineering

- **Reactor Fuels, Chemical Engineering & Chemistry, and Materials Focus**
 - ChE 423 (Chemical) Reactor Kinetics and Design
 - ChE 480/580 Engineering Risk Assessment Hazardous/Radioactive Waste
 - ChE 529 Chemical Engineering Kinetics
 - ChE/ME 515 Transport Phenomena
 - ChE/Me 528 Advanced Thermodynamics
 - MSE 415 Materials Selection and Design
 - MSE 423/523 Corrosion
 - MSE 428/528 Advanced Engineering Ceramics
 - MSE 534 Radiation Effects in Materials
 - MSE/ME 535 Failure of Structural Materials
 - MSE 550 Nuclear Reactor Fuels
 - NE 570 Nuclear Chemical Engineering
 - NE 580 Waste Management and Nuclear Fuel Reprocessing
 - NE 581 Treatment of Radioactive Wastes
 - NE 582 Spent Nuclear Fuel Management and Disposition

- **Individualized Option** – custom develop your own (*15 credit hours of approved study*)

- **Thesis Research** - NE 500 Masters Research & Thesis (6 credit hours)

Advanced Math, Science, or Engineering courses may be used as technical electives with approval of the student's committee. This degree is a minimum of 30 semester hours. Students may transfer in up to 12 graduate credits completed at other accredited universities, subject to university regulations and the approval of the student's graduate committee members. Students must have at least 3 courses (9 credits) in a single focus area to demonstrate depth in study.