

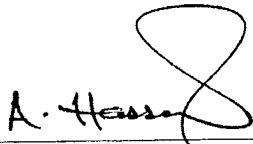
TO: The Faculty of the College of Engineering
FROM: The Faculty of the School of Nuclear Engineering
RE: Changes in Undergraduate Program Degree Requirements for the Bachelor of Science in Nuclear Engineering

The Faculty of the School of Nuclear Engineering has approved the following changes to the curriculum for the B.S. degree in Nuclear Engineering effective for the students entering the School of Nuclear Engineering for the Spring 2014 semester. This action is now submitted to the Engineering Faculty with a recommendation for approval. A revised Suggested Plan of Study is attached. New courses and changes in required courses are shown in bold.

The proposed change is as follows:

- A. **Require NUCL 42000: Radiation Interaction with Materials and Applications.** SNE Faculty indicated a need to have an intermediate step to the upper level NUCL 52000 course. Other reasons to follow.
- B. **Remove the required NUCL 52000 course from the undergraduate program degree requirements** – This change is a modification that allows for the change in graduation requirements without increasing the total number of credits required for the degree.

Reason: The proposed program change to degree requirements for the Bachelor of Science in Nuclear Engineering is to update the graduation requirement to take NUCL 51000 or NUCL 52000. The proposed program change provides students with the necessary basic understanding of the mechanisms of ion solid interactions and the primary damage state in nuclear materials. The proposed change to our degree program is intended to continue to satisfy ABET requirements for Nuclear Engineering. The revised suggested plan of study provides students with an integrated and efficient pathway of course selection, allowing for diversification before the final year depending on student interest.



Ahmed Hassanein, Professor and Head
School of Nuclear Engineering

APPROVED BY THE BOARD OF THE SCHOOL OF ENGINEERING BY THE ENGINEERING CURRICULUM COMMITTEE

ECC Minutes 1-21-14

Date 2/4/14

APPROVED BY ECC Jeffrey L. Gray

[Current] B.S. NE Degree Program Requirements**Minimum Degree Requirements for Bachelor of Science in Nuclear Engineering (BSNE)**

Credit Hours Required for Graduation: 134

All required First-Year Engineering courses must be completed with an EAI of 2.0 or above for entry into the NE undergraduate program = 34 credits

Core Nuclear Engineering (NUCL) Courses (37 credit hours);

NUCL 200, 205, 273, 300, 305, 310, 320, 325, 350, 351, 355, 402, 510 or 520,

NE Breadth Requirement (53 credit hours):

Core Engineering Requirement: ECE 201, ME 200, 270, 274 = 12 credits

NE Technical Engineering Electives: Five [5] additional NUCL or other Engineering courses†. All courses must be 30000 level or above. = 15 credits

Senior Design Capstone Requirements: NUCL 449, 450 = 4 credits

Advanced Physics and Math (14 credit hours):

PHYS 241, MA 261, MA 262 (or MA 265 and MA 266), and MA 300 level and above

General Education Electives (18 credit hours): Course selections must meet the General Education Program requirements. Refer to "General Education Program" maintained by the College of Engineering. Electives must have a sequence within Social Science courses and Humanities. The sequence must have an upper (300 and above) and lower (200 and lower) in one discipline and one course outside of the sequence but under the Social Science or Humanities heading.

GPA Requirement: A minimum Graduation Index of at least 2.0 is required to qualify for graduation with a BSNE.

†Selected from a list of courses approved by the Nuclear Engineering faculty and maintained by the undergraduate advising office.

[Current] Suggested Plan of Study – Effective Spring 2014

Credit hours required for graduation: 134

Freshman Year

First Semester

- (4) CHM 115 General Chemistry I
- (3) COM 114 Fundamentals of Speech Comm
- (2) ENGL 106 First-Year Composition
- (3) ENGR 131 Transforming Ideas to Innov I
- (4) MA 165 Analytical Geom. & Calc I

Sophomore Year

Third Semester

- (4) MA 261 Multivariate Calculus
- (3) ME 200 Thermodynamics I
- (3) ME 270 Basic Mechanics I
- (3) NUCL 200 Intro to Nuclear Engr
- (0) NUCL 298 Sophomore Seminar
- (3) GE*

Junior Year

Fifth Semester

- (3) MA 266 Ordinary Differential Equations
- (3) NUCL 300 NUCL Structure & Radiation
- (3) NUCL 320 Intro to Materials
- (3) NUCL 350 Thermal-Hydraulics I
- (0) NUCL 398 Junior Seminar
- (3) NUCL 325 NUCL Materials Lab
- (3) GE

Senior Year

Seventh Semester

- (2) NUCL 305 NUCL Undergraduate Lab
- (3) NUCL 402 Engr of Nucl Power Systems
- (1) NUCL 449 Senior Design
- (0) NUCL 498 Senior Seminar
- (3) NUCL 510 NUCL Reactor Theory#
- (3) TE
- (3) TE
- (3) GE

Second Semester

- (4) CHM 116 General Chemistry II
- (3) CS 159 Programming Apps for ENGRS
- (4) PHYS 172 Modern Mechanics
- (2) ENGR 132 Transforming Ideas to Innov II
- (4) MA 166 Analytical Geom & Calc. II

Fourth Semester

- (3) MA 265 Linear Algebra
- (3) ME 274 Basic Mechanics II
- (3) NUCL 273 Mechanics and Materials
- (2) NUCL 205 NE Undergrad Lab
- (0) NUCL 298 Sophomore Seminar
- (3) PHYS 241 Electricity and Optics

Sixth Semester

- (3) MA Elective
- (3) NUCL 310 Intro to Neutron Physics
- (3) NUCL 351 Thermal-Hydraulics II
- (3) NUCL 355 NUCL Thermohydraulics Lab
- (0) NUCL 398 Junior Seminar
- (3) GE
- (3) TE~

Eighth Semester

- (3) ECE 201 Linear Circuit Analysis I
- (3) NUCL 450 Senior Design
- (3) NUCL 498 Senior Seminar
- (3) TE
- (0) TE
- (3) GE

*Taken from the College of Engineering General Elective class list

~Taken from the suggested list of NE approved technical electives

#Students have the option to take NUCL 510 **OR** NUCL 520

[Revised] B.S. NE Degree Program Requirements

Minimum Degree Requirements for Bachelor of Science in Nuclear Engineering (BSNE)

Credit Hours Required for Graduation: 134

All required First-Year Engineering courses must be completed with an EAI of 2.0 or above for entry into the NE undergraduate program = 34 credits

Core Nuclear Engineering (NUCL) Courses (37 credit hours);

NUCL 200, 205, 273, 300,305, 310, 320, 325, 350, 351, 355, 402, 510 or 420,

NE Breadth Requirement (53 credit hours):

Core Engineering Requirement: ECE 201, ME 200, 270, 274 = 12 credits

NE Technical Engineering Electives: Five [5] additional NUCL or other Engineering courses†. All courses must be 30000 level or above. = 15 credits

Senior Design Capstone Requirements: NUCL 449, 450 = 4 credits

Advanced Physics and Math (14 credit hours):

PHYS 241, MA 261, MA 262 (or MA 265 and MA 266), and MA 300 level and above

General Education Electives (18 credit hours): Course selections must meet the General Education Program requirements. Refer to “General Education Program” maintained by the College of Engineering. Electives must have a sequence within Social Science courses and Humanities. The sequence must have an upper (300 and above) and lower (200 and lower) in one discipline and one course outside of the sequence but under the Social Science or Humanities heading.

GPA Requirement: A minimum Graduation Index of at least 2.0 is required to qualify for graduation with a BSNE.

†Selected from a list of courses approved by the Nuclear Engineering faculty and maintained by the undergraduate advising office.

[Revised] Suggested Plan of Study – Effective Spring 2014

Credit hours required for graduation: 134

Freshman Year

First Semester

- (4) CHM 115 General Chemistry I
- (3) COM 114 Fundamentals of Speech Comm
- (2) ENGL 106 First-Year Composition
- (3) ENGR 131 Transforming Ideas to Innov I
- (4) MA 165 Analytical Geom. & Calc I

Second Semester

- (4) CHM 116 General Chemistry II
- (3) CS 159 Programming Apps for ENGRS
- (4) PHYS 172 Modern Mechanics
- (2) ENGR 132 Transforming Ideas to Innov II
- (4) MA 166 Analytical Geom & Calc. II

Sophomore Year

Third Semester

- (4) MA 261 Multivariate Calculus
- (3) ME 200 Thermodynamics I
- (3) ME 270 Basic Mechanics I
- (3) NUCL 200 Intro to Nuclear Engr
- (0) NUCL 298 Sophomore Seminar
- (3) GE*

Fourth Semester

- (3) MA 265 Linear Algebra
- (3) ME 274 Basic Mechanics II
- (3) NUCL 273 Mechanics and Materials
- (2) NUCL 205 NE Undergrad Lab
- (0) NUCL 298 Sophomore Seminar
- (3) PHYS 241 Electricity and Optics

Junior Year

Fifth Semester

- (3) MA 266 Ordinary Differential Equations
- (3) NUCL 300 NUCL Structure & Radiation
- (3) NUCL 320 Intro to Materials
- (3) NUCL 350 Thermal-Hydraulics I
- (0) NUCL 398 Junior Seminar
- (3) NUCL 325 NUCL Materials Lab
- (3) GE

Sixth Semester

- (3) MA Elective
- (3) NUCL 310 Intro to Neutron Physics
- (3) NUCL 351 Thermal-Hydraulics II
- (3) NUCL 355 NUCL Thermohydraulics Lab
- (0) NUCL 398 Junior Seminar
- (3) GE
- (3) TE~

Senior Year

Seventh Semester

- (2) NUCL 305 NUCL Undergraduate Lab
- (3) NUCL 402 Engr of Nucl Power Systems
- (1) NUCL 449 Senior Design
- (0) NUCL 498 Senior Seminar
- (3) NUCL 510 NUCL Reactor Theory#
- (3) TE
- (3) TE
- (3) GE

Eighth Semester

- (3) ECE 201 Linear Circuit Analysis I
- (3) NUCL 450 Senior Design
- (3) NUCL 498 Senior Seminar
- (3) TE
- (0) TE
- (3) GE

*Taken from the College of Engineering General Elective class list

~Taken from the suggested list of NE approved technical electives

#Students have the option to take NUCL 51000 **OR** NUCL 42000