

NUCLEAR ENGINEERING UNDERGRADUATE MAJOR (BS, HBS)

The Bachelor of Science and Honors Bachelor of Science degrees in Nuclear Engineering are accredited by the Engineering Accreditation Commission of ABET, <http://www.ABET.org> (<http://www.abet.org/>).

The goals of the nuclear engineering curriculum are to prepare students for careers related to the many beneficial uses of nuclear technology and energy. Nuclear engineers apply engineering principles to the research, design, and operation of a wide variety of nuclear technology applications including power generation, medicine, and radioactive waste management.

Program Educational Objectives – Nuclear Engineering

The OSU Nuclear Engineering Program effectively prepares students for careers and professional accomplishments in the nuclear engineering industry through its established Program Educational Objectives.

The Program Educational Objectives for the Nuclear Engineering Program may be found at the following link (<https://ne.oregonstate.edu/accreditation/>).

Major Code: 327

- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- Communicate effectively with a range of audiences.
- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- Acquire and apply new knowledge as needed, using appropriate learning strategies.
- Apply knowledge of atomic and nuclear physics to nuclear and radiological systems and processes.
- Apply knowledge of transport and interaction of radiation with matter to nuclear and radiation processes.
- Measure nuclear and radiation processes.
- Work professionally in one or more of the nuclear or radiological fields of specialization.

First Year		Credits
CH 201	CHEMISTRY FOR ENGINEERING MAJORS	3
CH 202	CHEMISTRY FOR ENGINEERING MAJORS	3
COMM 111 or COMM 114	*PUBLIC SPEAKING or *ARGUMENT AND CRITICAL DISCOURSE	3
HHS 231	*LIFETIME FITNESS FOR HEALTH	2
HHS 241	*LIFETIME FITNESS (or any PAC course)	1
MTH 251	*DIFFERENTIAL CALCULUS	4

MTH 252	INTEGRAL CALCULUS	4
MTH 254	VECTOR CALCULUS I	4
NSE 114	INTRO TO NUCLEAR ENGINEERING AND RADIATION HEALTH PHYSICS I	3
NSE 115	INTRO TO NUCLEAR ENGINEERING AND RADIATION HEALTH PHYSICS II	3
PH 211	*GENERAL PHYSICS WITH CALCULUS	4
PHL 205	*ETHICS	4
WR 121	*ENGLISH COMPOSITION	3
*Perspectives Courses ¹		3
Credits		44

Second Year		
ENGR 201	ELECTRICAL FUNDAMENTALS I	3
ENGR 211	STATICS	3
ENGR 212	DYNAMICS	3
ENGR 213	STRENGTH OF MATERIALS	3
MTH 256	APPLIED DIFFERENTIAL EQUATIONS	4
MTH 306 or MTH 264 and MTH 265	MATRIX AND POWER SERIES METHODS or INTRODUCTION TO MATRIX ALGEBRA and INTRODUCTION TO SERIES	4
NSE 233	MATHEMATICAL METHODS FOR NSE	3
NSE 234	NUCLEAR AND RADIATION PHYSICS I	3
NSE 235	NUCLEAR AND RADIATION PHYSICS II	3
NSE 236	NUCLEAR RADIATION DETECTION AND INSTRUMENTATION	4
PH 212 & PH 213	*GENERAL PHYSICS WITH CALCULUS and *GENERAL PHYSICS WITH CALCULUS	8
*Perspectives Courses ¹		3
Credits		44

Third Year		
Biological Science Elective ¹		
ENGR 248	ENGINEERING GRAPHICS AND 3-D MODELING	3
ENGR 390	ENGINEERING ECONOMY	3
MATS 321	INTRODUCTION TO MATERIALS SCIENCE	4
NSE 311/ME 311	INTRODUCTION TO THERMAL-FLUID SCIENCES	4
NSE 312/ME 312	THERMODYNAMICS	4
NSE 331/ME 331	INTRODUCTORY FLUID MECHANICS	4
NSE 332/ME 332	HEAT TRANSFER	4
NSE 451 & NSE 452	NEUTRONIC ANALYSIS I and NEUTRONIC ANALYSIS II	6
WR 327	*TECHNICAL WRITING ¹	3
*Perspectives Course ¹		6
*Synthesis Course ¹		3
Credits		48

Fourth Year		
NSE 407	SEMINAR (in Nuclear Engineering - 3 terms)	3
NSE 415	NUCLEAR RULES AND REGULATIONS	2
NSE 435	RADIATION SHIELDING AND EXTERNAL DOSIMETRY	4
NSE 457	NUCLEAR REACTOR LABORATORY	2
NSE 467	NUCLEAR REACTOR THERMAL HYDRAULICS	4
NSE 473	NUCLEAR REACTOR SYSTEMS ANALYSIS	3
NSE 474	*NUCLEAR SYSTEMS DESIGN I	4
NSE 475	*NUCLEAR SYSTEMS DESIGN II	4
NSE 481	RADIATION PROTECTION	4
Restricted Electives ²		8
*Synthesis Courses ¹		3
Free Elective		3
Credits		44
Total Credits		180

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Baccalaureate Core Course (BCC)

2 Nuclear Engineering Undergraduate Major (BS, HBS)

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Writing Intensive Course (WIC)

1

Must be selected to satisfy baccalaureate core requirements

2

Approved technical electives from departmental list

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