

Master of Science in Nuclear Engineering

The Master of Science degree in Nuclear Engineering (M.S.N.E.) has both thesis and non-thesis options. In addition, students have the option of adding a concentration in Nuclear Enterprise Management (NEM). Depending upon the track chosen, the M.S.N.E. requires completion of 30 or 36 credit hours. No more than six semester hours at the 4000 level can be counted toward the degree requirement.

The M.S.N.E. degree (non-NEM) has the following minimum course credit-hour requirements.

	With Thesis	Without Thesis
Major Area	12	15
Mathematics	3	3
Electives	6	12
Thesis (NRE 7000)	9	0
Total for Degree	30	30

The required courses for this degree are:

- NRE 6101 Transport Fundamentals
- NRE 6102 Plasma Physics
- NRE 6201 Reactor Physics
- NRE 6401 Advanced Nuclear Engineering Design (required for the nonthesis option)
- NRE 6756 Radiation Physics

NRE6102 (Plasma Physics), NRE6201 (Reactor Physics), and NRE6756 (Radiation Physics) are each the second course in a two-course sequence; knowledge of the material covered in the first course in each sequence is assumed. The following are also recommended:

- Students who have not had an undergraduate course covering the material in NRE4610 (Introduction to Fusion) are advised to take that course prior to taking NRE6102
- Students who have not had an undergraduate course covering the material in NRE4204 (Nuclear Reactor Physics) are advised to take that course as a make-up prior to taking NRE6201

- Students who have not had an undergraduate course covering the material in NRE 3301 (Radiation Physics) are advised to take that course as a make-up prior to taking NRE6756
- Knowledge of mathematics at or above the level found in advanced engineering mathematics courses is required. This includes but is not limited to familiarity with: 1) solutions of PDE boundary value problems by separation of variables and eigenfunction expansion, 2) Fourier and LaPlace transforms, and 3) orthogonal polynomial expansions. Knowledge of vectors, tensors and complex analysis is desirable. MATH 4581 or the equivalent is recommended.

The M.S.N.E. degree with Nuclear Enterprise Management concentration (M.S.N.E. w/NEM) has the following minimum course credit-hour requirements.

	With Thesis¹	Without Thesis
Required	12	15
Math ²	3	3
Electives	0	0
Thesis	9	0
NEM Core courses		
NRE8803	3	3
MGT/ISYE	9	9
Total for Degree	36	30

¹ NEM Concentration must take NRE 6103 or NRE/ME 6758 as math requirements.

² Math Substitute - NRE 6103 or NRE/MP 6758.

In addition to the required core courses for the M.S degree, the NEM Concentration has the following required courses:

Category	Identifier	Credits	Title
Core	NRE 8803	3	Management of the Nuclear Enterprise
	ME/MGT 6753	3	Principles of Management for Engineers
	MGT 6000	3	Financial Management and Accounting
Electives (choose one)	ISYE 6673	3	Financial Optimization
	ISYE 6230	3	Economic Decision Analysis
	MGT 6100	3	Leadership and Organizational Behavior
	ISYE 6101	3	Organizational Behavior
	ISYE 6229	3	Productivity Analysis
	ISYE 6673	3	High-Tech Ventures
	ISYE 6674	3	Management of Technology Projects
	ISYE 6777	3	Analysis of Emerging Technologies

Courses from the School of Mathematics as well as ISyE 6401, ISyE 6739, and NRE 6103 fulfill the mathematics requirement for the standard track; the NEM requirement allows only NRE6103 or NRE/ME6758 to fulfill the math requirement.

Any course in which you do not receive a C or higher, or any course taken for a non-letter grade (except the thesis, transfer credit, or advanced standing) **do not** meet these course requirements. All courses must be at the 4000 level and above. No more than six semester hours at the 4000 level can be counted toward the degree requirements.

The items listed below cannot be used to meet the course requirements for the M.S.N.E. degree:

- Any course in which you do not receive a grade of C or higher
- Any course taken for a non-letter grade (except thesis, transfer credit, or advanced standing)
- Any course required for the B.S.N.E. degree
- CETL course work