R1
5/17/21

NRE Undergraduate Curriculum (Catalog: 2021 - 2022)

1st Year	Fall	**CHEM 1310** General Chemistry (See Note 2) 3-3-4	**MATH 1551** Differential Calculus (Minimum Grade C) 2-0-2	**MATH 1553** Intro to Linear Algebra (Minimum Grade C) 2-0-2	**ENGL 1101** English Composition 1 3-0-3	**Legislative** HIST 2111, HIST 2112, POL 1101, INTA 1200, or PUBP 3000 [Social Science] 3-0-3	**Wellness** APPH 1040, 1050 or 1060 2-0-2
	Spring	**PHYS 2211** Physics 1 3-3-4 MATH 1551, MATH 1552*	**MATH 1552** Integral Calculus (Minimum Grade C) 4-0-4 MATH 1551	**CS 1371** Computing for Engineers 3-0-3	**ENGL 1102** English Composition 2 3-0-3	**Social Science Elective** (See Note 6) 3-0-3	= 16 hours = 17 hours
2nd Year	Fall	**PHYS 2212** Physics 2 3-3-4 PHYS 2211	**MATH 2551** Multivariable Calculus (Minimum Grade C) 4-0-4 MATH 1552, MATH 1553	**NRE 2120** Elements of Nuclear & Rad. Engineering 3-0-3 MATH 1551, PHYS 2211*	**COE 2001** Statics 2-0-2 MATH 1552, PHYS 2211	**Economics** ECON 2100, 2101, 2105, or 2106 (See Note 4) 3-0-3	= 16 hours
	Spring	**ECE 3710** Circuits & Electronics 2-0-2 PHYS 2212	**MATH 2552** Differential Equations (Minimum Grade C) 4-0-4 MATH 1552, MATH 1553	**NRE 3301** Radiation Physics 3-0-3 MATH 1552*, NRE 2120*, PHYS 2211	**MSE 2001** Engineering Materials 3-0-3 CHEM 1310	**Humanities Elective** (See Note 6) 3-0-3	= 15 hours = 16 hours
3rd Year	Fall	**NRE 3112** Radiation Detection (See Note 1, No W's) 2-3-3 NRE 3301	**NRE 3208** Nuclear Reactor Physics 3-0-3 CS 1371, MATH 2552, (NRE 2120 or NRE 3301)	**ME 3340** Fluid Mechanics (See Note 7) 3-0-3 COE 2001, ME 3322* MATH 2551, MATH 2552, ME 2202 (See Note 7)	**ME 3322** Thermo-dynamics 3-0-3 PHYS 2211, MATH 2552	**ECE 3741** Instrument & Electronics Lab 0-3-1 ECE 3710	**Humanities Elective** (See Note 6) 3-0-3
	Spring	**NRE 3026** Experimental Nucl. Reactor Physics (See Note 1, No W's) 2-3-3 NRE 3112, NRE 3208	**NRE 3316** Radiation Protection Engineering 3-0-3 NRE 3301, MATH 2552	**Concentration** NE: ME 3345 RSE: Con. Elect. (See Note 5) 3-0-3	**MATH 3670** Statistics & Applications 3-0-3 MATH 2551	**ISYE 3025** Engineering Economics 1-0-1 ECON 2100, 2101, 2105 or 2106	**Math/Science Elective** 2000 Level or Above (See Note 3) 3-0-3
4th Year	Fall	**Concentration** NE: NRE 4210 RSE: Con. Elect. (See Note 5) 3-0-3	**Concentration** NE: NRE 4214 RSE: NRE 4328 (See Note 5) 3-0-3	**NRE 4350** NRE Design Methods & Tools 3-0-3 NRE 3208, NRE 3112, NRE 3316, NRE 3026, (NRE 4238* or 4214*)	**Free Elective** 1000 Level or Above (See Note 3) 3-0-3	**Engineering Elective** 2000 Level or Above (See Note 3) 3-0-3	= 16 hours = 15 hours
	Spring	**NRE 4351** Design of NRE Systems (See Note 1, No W's) 1-6-3 NRE 4350, NRE 3208, (NRE 4214 or 4328)	**Social Science Elective** (See Note 6) 3-0-3	**Free Elective** 2000 Level or Above (See Note 3) 3-0-3	**Free Elective** 2000 Level or Above (See Note 3) 3-0-3	**Free Elective** 2000 Level or Above (See Note 3) 3-0-3	= 15 hours

126 Total Hours

NOTES: * Class co-requisites have an asterisk (*) after it. These classes can be taken prior to or at the same time.

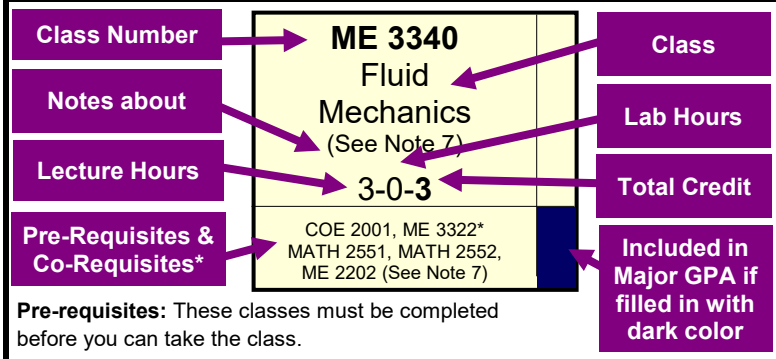
1. NRE 3026, 3112 & 4351 cannot be dropped after registration ends without documented medical reasons.
2. **CHEM 1310**: CHEM 1211K can substitute for CHEM 1310. CHEM 1211K & 1212K are recommended for pre-health students.
3. **Engineering Elective, Free Electives and Math/Science Elective:** See page 2 for details.
4. **Economics**: Students can receive credit for only one of ECON 2100, ECON 2101, ECON 2105 & ECON 2106. The only exception is that students can receive 6 hours credit for both ECON 2105 and ECON 2106.
5. **Concentration:** Students must complete either the Nuclear Engineering (NE) or Radiological Systems Engineering (RSE) concentration. See page 2 for details and required classes.
6. **Humanities Electives, Social Science Electives and Ethics Overlay**: See page 2 for a link to the list of classes.
7. **ME 3340:** NRE students do not take ME 2202, so NRE 3301 or NRE 2120 will satisfy the pre-req for registration.

Overlay Area

Ethics
(See Note 6)
3-0-3

Undergraduate Curriculum Sheet Explained

Understanding the Curriculum Guide



Pre-requisites: These classes must be completed before you can take the class.

***Co-requisites:** These classes can be taken at the same time or before the class. You must register for the co-req first to avoid registration errors.

GPA & Grade Requirements

1. All classes taken for the BSNRE degree must be taken LETTER GRADE. This includes all electives.
2. **Overall GPA**: Must be 2.00 or above (truncated) at graduation.
3. **Required Grades:**
   - Minimum grade of a D or better is required except as noted.
   - C or better is required for MATH 1551, MATH 1552, MATH 1553, MATH 2551 and MATH 2552.
4. **Major GPA:**
   - Must be 2.00 or above (truncated) at graduation.
   - All required NRE classes, ME 3322, ME 3340 & concentration classes are used to calculate the major GPA.
   - Among the courses used to compute this, all courses must be completed with a C-or-better with the exception up to 9 credit hours, that can be satisfied with a grade of D.

Humanities, Social Sciences and Ethics Overlay

1. **Humanities Electives:** See http://catalog.gatech.edu/academics/undergraduate/core-curriculum/core-area-c/
2. **Social Science Electives:** See http://catalog.gatech.edu/academics/undergraduate/core-curriculum/core-area-e/
3. **Ethics Overlay**: A 3 hour class selected from http://catalog.gatech.edu/academics/undergraduate/core-curriculum/ethics/
4. Ethics overlay is taken as part of the curriculum satisfying a free elective, humanities or social science elective.

Engineering Elective

1. A 2000 level or higher class from the College of Engineering excluding ME 3141, 3700, 3720, 3743, 3744, 4741, 4742, 4753 and project-type courses such as VIP, research & special problems (2699, 2903, 4699, 4903).
2. The Engineering Elective cannot duplicate any material taken in other classes used for your BSNRE degree.

Math/Science Elective

1. A 2000 level or higher class plus BIOS 1107/1107L, 1108/1108L, 1207/1207L, 1208/1208L, BIOL 1510, 1520 or CHEM 1212K from the College of Science. It excludes Psychology, Applied Physiology and project courses such as VIP, research & special problems.
2. The Math/Science Elective cannot duplicate any material taken in other classes used for your BSNRE degree.

Free Electives

1. Students can use either a max of 6 credits of VIP courses or a max of 6 credits of research / special problems courses (2699, 4699 & 4903) as free electives. If doing both types of courses, a total of 9 credits is allowed.
2. At least 9 hours of free electives must be at the 2000 level or above with the exception of 4 hours that may be satisfied with the following: BIOS 1107/1107L, BIOS 1108/1108L, BIOS 1207/1207L, BIOS 1208/1208L, BIOL 1510, BIOL 1520 or CHEM 1212K.
3. Free electives may not duplicate any material taken in other classes used for the BSNRE degree.

Concentrations (Required)

Students must select and complete the Nuclear Engineering (NE) or the Radiological Systems Engineering (RSE) concentration.

Nuclear Engineering (NE) Concentration

Required Classes		Semester(s) Offered	Pre-reqs and Co-Reqs*
ME 3345	Heat Transfer	Fall, Spring, Summer	ME 3322, ME 3340, MATH 2552
NRE 4214	Reactor Engineering	Fall Only	ME 3345, NRE 3208
NRE 4210	Nuclear Reactor Physics II	Fall Only	NRE 3208, MATH 2552

Radiological Systems Engineering (RSE) Concentration

Required Class		Semester(s) Offered	Pre-reqs and Co-Reqs*
NRE 4328	Radiation Sources and Applications	Fall Only	NRE 3112, NRE 3316
Concentration Elective Classes (Select 2)			
NRE 4750	Diagnostic Imaging	Spring Only	NRE 3112
NRE 4803	Nuclear Safeguards	Spring (usually)	NRE 3301
NRE 4407	Radiation Biology & Oncology	Fall Only	NRE 3301, NRE 3316*

Transition Plan Summary

17-18 Catalog & Earlier	18-19 Catalog & Later
NRE 2110 (2 hours) [2]	NRE 2120 (3 hours) [1]
NRE 4206 (4 hours) [3]	NRE 3026 (3 hours) [2]
NRE 4208 (4 hours) [3]	NRE 4210 (3 hours) [2]
NRE 4232 (2 hours) [2]	NRE 4351 (3 hours) [1]

[1] Extra hour can be used towards technical elective

[2] 2000+ level free elective makes up the needed hour

[3] Extra hour can be used as 2000+ level free elective

NRE Class Offerings

Class	Semester Offered	Class	Semester Offered
NRE 2120	Fall, (Spring-sometimes)	**NRE 4214**	Fall Only
NRE 3026	Spring Only	**NRE 4328**	Fall Only
NRE 3112	Fall Only	**NRE 4350**	Fall Only
NRE 3208	Fall Only	**NRE 4351**	Spring Only
NRE 3301	Spring Only	**NRE 4407**	Fall Only
NRE 3316	Spring Only	**NRE 4750**	Spring Only
NRE 4210	Fall Only	**NRE 4803 - Nuc. Safe.**	Spring (usually)