Mechanical Engineering Course Sequence for Students Entering the Program in Fall 2023 - Spring 2025

Freshman Fall

- MATH 200 Calculus I 4 hrs.
- CHEZ 101 General Chemistry Lab 1hr.
- CHEM 101 General Chemistry I 3 hrs.
- EGMN 190 Introduction to Mechanical & Nuclear Engr. 1 hr. Fall
- EGMN 110 Engineering Visualization 2 hr. Fall
- Gen. Ed. Diversity or Creativity AOI 3 hrs.
- UNIV 111 Focused Inquiry I 3 hrs.

Freshman Spring

- MATH 201 Calculus II 4 hrs.
- PHYS 207 Physics I 5 hrs.
- EGMN 102 Statics 3 hrs.
- EGMN 203 Mechanical & Nuclear Engr. Practicum 1 hr. Spring
- UNIV 112 Focused Inquiry II 3 hrs

Sophomore Fall

- MATH 301 Differential Equations 3 hrs.
- PHYS 208 Physics II 5 hrs.
- ENGR 395 Professional Development 1 hr.
- EGMN 202 Mechanics of Deformables 3 hrs.
- EGMN 309 Material Science 3 hrs. Fall
- UNIV 200 Advanced Focused Inquiry 3 hrs.

Sophomore Spring

- MATH 307 Multivariate Calculus 4 hrs.
- EGMN 204 Thermo 3 hrs. Spring
- EGMN 201 Dynamics and Kinematics 3hrs
- EGMN 210 Computational Methods 2 hrs. Spring
- EGRE 206 Electric Circuits 4 hrs. Spring

Junior Fall

- STAT 441 Applied Statistics 3 hrs.
- EGMN 321 Numerical Methods 3 hrs. Fall
- EGMN 421 CAE Analysis 3 hrs. Fall
- EGMN 301 Fluid Mechanics 3 hrs. Fall
- EGMN 311 Solid Mech. Lab 1.5 hrs. Fall
- EGMN 300 Mechanical Sys. Design 3 hrs. Fall

Junior Spring

- ECON 205 Economics of Product Dev. 3 hrs.
- EGMN 420 CAE Design 3 hrs. Spring
- EGMN 302 Heat Transfer 3 hrs. Spring
- EGMN 303 Thermal Sys. Design 3 hrs. Spring
- EGMN 312 Thermal Sciences Lab 1.5 hrs. Spring
- EGMN 315 Process and System Dyn. 3 hrs. Spring

Summer

- ENGR 396 Internship Experience or ENGR 398 Co-Op Experience 0 hrs.

Required 300+ hour Internship (typically in summer after junior yr.) or Co-Op (2-3 full-time work terms between freshman & senior years)

Senior Fall

- ENGR 496 Internship Review or ENGR 498 Review of Co-Op Exp. 0 hrs.
- EGMN 416 Mechatronics 3 hrs. Fall Senior
- ENGR 402 Senior Design Studio I 1 hr. Fall
- EGMN 402 Senior Design Lab I 2 hrs. Fall
- Engineering Elective 3 hrs.
- Engineering or Professional Elective 3 hrs.
- Gen. Ed Diversity or Creativity AOI (Humanities BOK too if not satisfied yet) 3 hrs.

Senior Spring

130 credits required to graduate

- MGMT 310 or SCMA 350 Managing People in Orgs or Project Management 3 hrs. Junior
- ENGR 403 Senior Design Studio II 1 hr. Spring
- EGMN 403 Senior Design Lab II 2 hrs Spring
- Engineering Elective 3 hrs.
- Engineering or Professional Elective 3 hrs.
- Free Elective or Gen. Ed. Humanities BOK if not satisfied yet 3 hrs.

An engineering elective must meet all of these 4 criteria: 1) engineering course (CLSE, CMSC, EGMN, EGRB, EGRE, or ENGR), 2) ≥ 300 level, 3) ≥ 3 credits & 4) not otherwise required for the major. A professional elective must meet the same 4 criteria except the ACCT, ANAT, BIOC, BIOL, BIOS, BNFO, BUSN, CHEM, ECON, ENVS, FIRE, HSEP, INFO,INNO, INSC, LFSC, MATH, MGMT, MILS, MKTG, NANO, OPER, PHIS, PHYS, STAT, SCMA & VNTR rubrics are allowed.

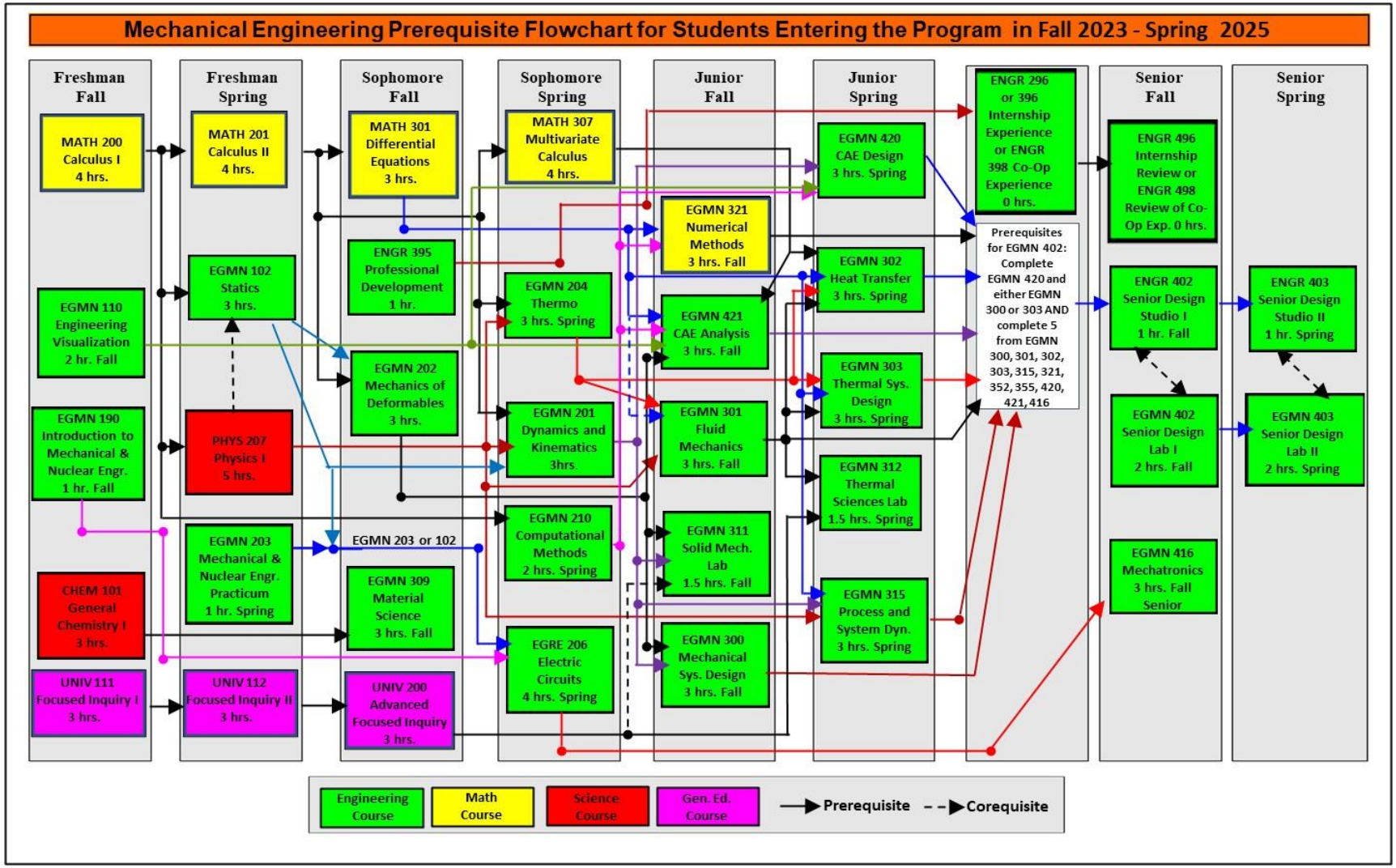
***Please refer to VCU Undergraduate Bulletin for the official list of required courses.

Engineering Course | Math Course | Business Course | Engineering or Professional Elective

Engineering Elective | Science Course | Gen. Ed. Course

Fall = Only Offered in Fall Semesters
Spring = Only Offered in Spring Semesters
Junior = Junior Standing to Enroll

Students must earn a minimum grade of C in UNIV 112 and 200; PHYS 207; all EGMN, ENGR, and MATH courses used to fulfill graduation requirements; and all courses used to fulfill engineering and professional elective requirements.


Mechanical Engineering Prerequisite Flowchart for Students Entering the Program in Fall 2023 - Spring 2025
Freshman Fall
Freshman Spring
Sophomore Fall
Sophomore Spring
Junior Fall
Junior Spring
Senior Fall
Senior Spring
MATH 200 Calculus I 4 hrs.
MATH 201 Calculus II 4 hrs.
MATH 301 Differential Equations 3 hrs.
MATH 307 Multivariate Calculus 4 hrs.
EGMN 110 Engineering Visualization 2 hr. Fall
EGMN 102 Statics 3 hrs.
ENGR 395 Professional Development 1 hr.
EGMN 204 Thermo 3 hrs. Spring
EGMN 321 Numerical Methods 3 hrs. Fall
EGMN 421 CAE Analysis 3 hrs. Fall
EGMN 420 CAE Design 3 hrs. Spring
EGMN 302 Heat Transfer 3 hrs. Spring
EGMN 190 Introduction to Mechanical & Nuclear Engr. 1 hr. Fall
PHYS 207 Physics I 5 hrs.
EGMN 202 Mechanics of Deformables 3 hrs.
EGMN 201 Dynamics and Kinematics 3hrs.
EGMN 301 Fluid Mechanics 3 hrs. Fall
EGMN 303 Thermal Sys. Design 3 hrs. Spring
EGMN 312 Thermal Sciences Lab 1.5 hrs. Spring
EGMN 203 Mechanical & Nuclear Engr. Practicum 1 hr. Spring
EGMN 203 or 102
EGMN 210 Computational Methods 2 hrs. Spring
EGMN 311 Solid Mech. Lab 1.5 hrs. Fall
EGMN 315 Process and System Dyn. 3 hrs. Spring
CHEM 101 General Chemistry I 3 hrs.
EGMN 309 Material Science 3 hrs. Fall
EGRE 206 Electric Circuits 4 hrs. Spring
EGMN 300 Mechanical Sys. Design 3 hrs. Fall
UNIV 111 Focused Inquiry I 3 hrs.
UNIV 112 Focused Inquiry II 3 hrs.
UNIV 200 Advanced Focused Inquiry 3 hrs.
ENGR 296 or 396 Internship Experience or ENGR 398 Co-Op Experience 0 hrs.
Prerequisites for EGMN 402: Complete EGMN 420 and either EGMN 300 or 303 AND complete 5 from EGMN 300, 301, 302, 303, 315, 321, 352, 355, 420, 421, 416
ENGR 496 Internship Review or ENGR 498 Review of Co-Op Exp. 0 hrs.
ENGR 402 Senior Design Studio I 1 hr. Fall
ENGR 403 Senior Design Studio II 1 hr. Spring
EGMN 402 Senior Design Lab I 2 hrs. Fall
EGMN 403 Senior Design Lab II 2 hrs. Spring
EGMN 416 Mechatronics 3 hrs. Fall Senior
Engineering Course
Math Course
Science Course
Gen. Ed. Course
Prerequisite
Corequisite

Mechanical Engineering with a Nuclear Concentration Course Sequence for Students Entering the Program in Fall 2023 - Spring 2025

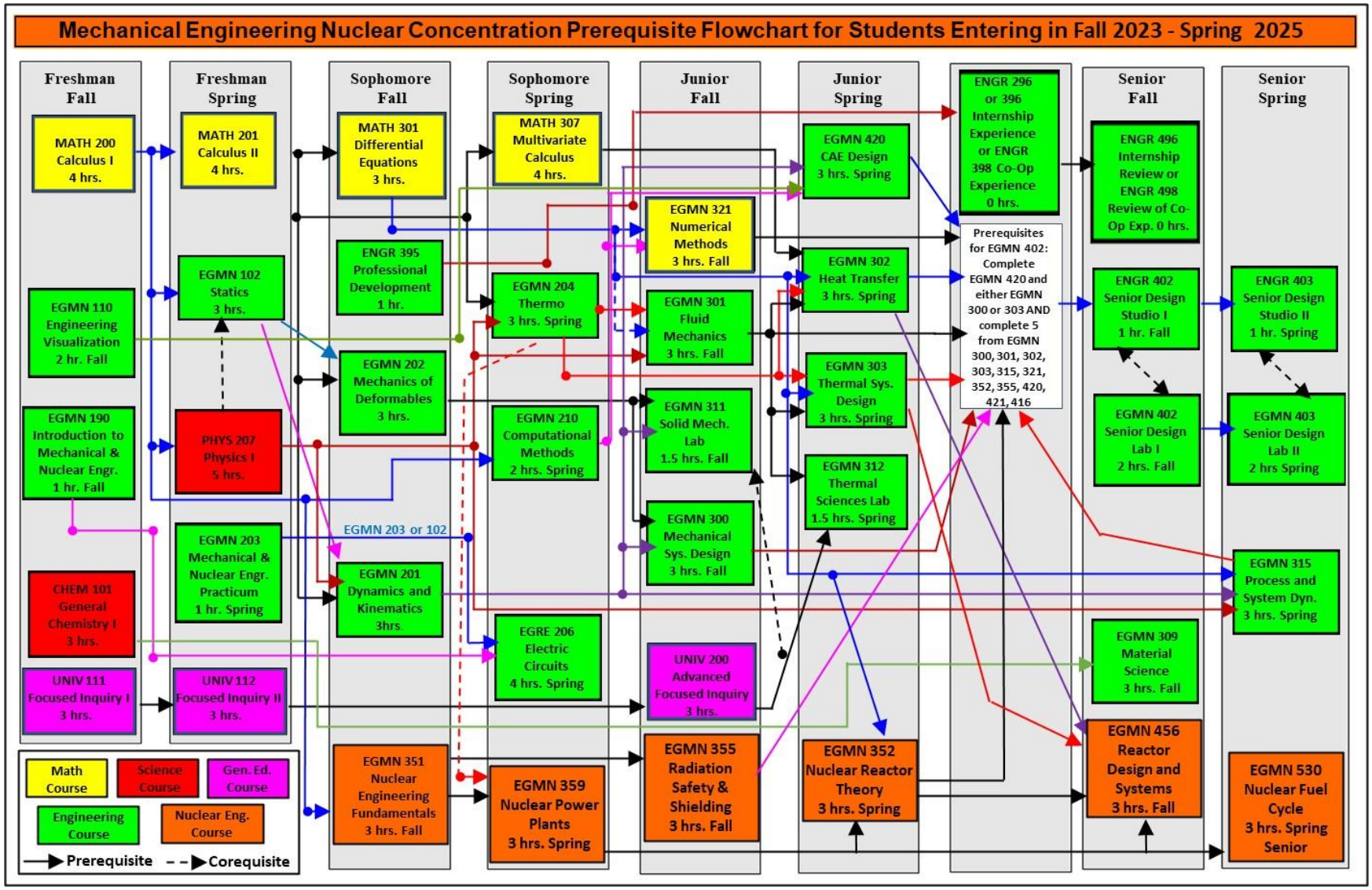
Freshman Fall	Freshman Spring	Sophomore Fall	Sophomore Spring	Junior Fall	Junior Spring	Summer	Senior Fall	Senior Spring
MATH 200 Calculus I 4 hrs.	MATH 201 Calculus II 4 hrs.	MATH 301 Differential Equations 3 hrs.	MATH 307 Multivariate Calculus 4 hrs.	UNIV 200 Advanced Focused Inquiry 3 hrs.	ECON 205 Economics of Product Dev. 3 hrs.	ENGR 296 or 396 Internship Experience or ENGR 398 Co-Op Experience 0 hrs.	ENGR 496 Internship Review or ENGR 498 Review of Co-Op Exp. 0 hrs.	130 credits required to graduate
CHEZ 101 General Chemistry Lab 1 hr.	PHYS 207 Physics I 5 hrs.	PHYS 208 Physics II 5 hrs.		EGMN 321 Numerical Methods 3 hrs. Fall	EGMN 420 CAE Design 3 hrs. Spring		ENGR 402 Senior Design Studio I 1 hr. Fall	MGMT 310 or SCMA 350 Managing People in Orgs or Project Management 3 hrs. Junior
CHEM 101 General Chemistry I 3 hrs.		ENGR 395 Professional Development 1 hr.	EGMN 204 Thermo 3 hrs. Spring	EGMN 301 Fluid Mechanics 3 hrs. Fall	EGMN 302 Heat Transfer 3 hrs. Spring		EGMN 402 Senior Design Lab I 2 hrs. Fall	ENGR 403 Senior Design Studio II 1 hr. Spring
EGMN 190 Introduction to Mechanical & Nuclear Engr. 1 hr. Fall	EGMN 102 Statics 3 hrs.	EGMN 202 Mechanics of Deformables 3 hrs.	EGMN 210 Computational Methods 2 hrs. Spring	EGMN 311 Solid Mech. Lab 1.5 hrs. Fall	EGMN 303 Thermal Sys. Design 3 hrs. Spring	Required 300+ hour Internship (typically in summer after junior yr.) or Co-Op (2-3 full-time work terms between freshman & senior years)	EGMN 309 Material Science 3 hrs. Fall	EGMN 403 Senior Design Lab II 2 hrs. Spring
EGMN 110 Engineering Visualization 2 hr. Fall	EGMN 203 Mechanical & Nuclear Engr. Practicum 1 hr. Spring	EGMN 201 Dynamics and Kinematics 3 hrs.	EGRE 206 Electric Circuits 4 hrs. Spring	EGMN 300 Mechanical Sys. Design 3 hrs. Fall	EGMN 312 Thermal Sciences Lab 1.5 hrs. Spring		EGMN 456 Reactor Design and Systems 3 hrs. Fall	EGMN 315 Process and System Dyn. 3 hrs. Spring
Gen. Ed. Diversity or Creativity AOI 3 hrs.	UNIV 112 Focused Inquiry II 3 hrs.	EGMN 351 Nuclear Engineering Fundamentals 3 hrs. Fall	EGMN 359 Nuclear Power Plants 3 hrs. Spring	EGMN 355 Radiation Safety & Shielding 3 hrs. Fall	EGMN 352 Nuclear Reactor Theory 3 hrs. Spring		Gen. Ed Diversity or Creativity AOI (Humanities BOK too if not satisfied yet) 3 hrs.	EGMN 530 Nuclear Fuel Cycle 3 hrs. Spring Senior
UNIV 111 Focused Inquiry I 3 hrs.					Nuclear Engr. Elective 3 hrs. Spring Choose 1 from EGMN 510, 545, 550, 560, 574 & 575 or a pre- approved course			Nuclear Engr. Elective 3 hrs. Spring Choose 1 from EGMN 510, 545, 550, 560, 574 & 575 or a pre-approved course
17 hrs.	16 hrs.	18 hrs.	16 hrs.	16.5 hrs.	16.5 hrs.		15 hrs.	15 hrs.

Engineering Course | Math Course | Business Course
Nuclear Eng. Course | Science Course | Gen. Ed. Course

Fall = Only Offered in Fall Semesters
Spring = Only Offered in Spring Semesters
Junior = Junior Standing to Enroll

Students must earn a minimum grade of C in UNIV 112 and 200; PHYS 207; all EGMN, ENGR, and MATH courses used to fulfill graduation requirements; and all courses used to fulfill Nuclear Engineering elective requirements.

***Please refer to VCU Undergraduate Bulletin for the official list of required courses.


Mechanical Engineering Nuclear Concentration Prerequisite Flowchart for Students Entering in Fall 2023 - Spring 2025
Freshman Fall
Freshman Spring
Sophomore Fall
Sophomore Spring
Junior Fall
Junior Spring
Senior Fall
Senior Spring
MATH 200 Calculus I 4 hrs.
MATH 201 Calculus II 4 hrs.
MATH 301 Differential Equations 3 hrs.
MATH 307 Multivariate Calculus 4 hrs.
EGMN 110 Engineering Visualization 2 hr. Fall
EGMN 102 Statics 3 hrs.
ENGR 395 Professional Development 1 hr.
EGMN 204 Thermo 3 hrs. Spring
EGMN 321 Numerical Methods 3 hrs. Fall
EGMN 420 CAE Design 3 hrs. Spring
EGMN 302 Heat Transfer 3 hrs. Spring
EGMN 190 Introduction to Mechanical & Nuclear Engr. 1 hr. Fall
PHYS 207 Physics I 5 hrs.
EGMN 202 Mechanics of Deformables 3 hrs.
EGMN 210 Computational Methods 2 hrs. Spring
EGMN 301 Fluid Mechanics 3 hrs. Fall
EGMN 303 Thermal Sys. Design 3 hrs. Spring
EGMN 311 Solid Mech. Lab 1.5 hrs. Fall
EGMN 312 Thermal Sciences Lab 1.5 hrs. Spring
EGMN 203 or 102
EGMN 203 Mechanical & Nuclear Engr. Practicum 1 hr. Spring
EGMN 300 Mechanical Sys. Design 3 hrs. Fall
CHEM 101 General Chemistry I 3 hrs.
EGMN 201 Dynamics and Kinematics 3hrs.
EGRE 206 Electric Circuits 4 hrs. Spring
UNIV 200 Advanced Focused Inquiry 3 hrs.
UNIV 111 Focused Inquiry I 3 hrs.
UNIV 112 Focused Inquiry II 3 hrs.
EGMN 351 Nuclear Engineering Fundamentals 3 hrs. Fall
EGMN 359 Nuclear Power Plants 3 hrs. Spring
EGMN 355 Radiation Safety & Shielding 3 hrs. Fall
EGMN 352 Nuclear Reactor Theory 3 hrs. Spring
ENGR 296 or 396 Internship Experience or ENGR 398 Co-Op Experience 0 hrs.
Prerequisites for EGMN 402: Complete EGMN 420 and either EGMN 300 or 303 AND complete 5 from EGMN 300, 301, 302, 303, 315, 321, 352, 355, 420, 421, 416
ENGR 496 Internship Review or ENGR 498 Review of Co-Op Exp. 0 hrs.
ENGR 402 Senior Design Studio I 1 hr. Fall
EGMN 402 Senior Design Lab I 2 hrs. Fall
ENGR 403 Senior Design Studio II 1 hr. Spring
EGMN 403 Senior Design Lab II 2 hrs Spring
EGMN 315 Process and System Dyn. 3 hrs. Spring
EGMN 309 Material Science 3 hrs. Fall
EGMN 456 Reactor Design and Systems 3 hrs. Fall
EGMN 530 Nuclear Fuel Cycle 3 hrs. Spring Senior
Math Course
Science Course
Gen. Ed. Course
Engineering Course
Nuclear Eng. Course
Prerequisite
Corequisite