	General Enginee	ering B.S. wi	th Computat	ional Modeling Minor	
For students entering Fall 2023					
	First Year - Fall Semester			First Year - Spring Semester	
Course	Title	Credits	Course	Title	
CHEM121	General Chemistry I	4	CHEM122	General Chemistry II	
MATH121	Calculus I	3	MATH122	Calculus II	
ENGR101	Introduction to Engineering I	1	PHYS122	General Physics I	
ECON 101	Economics (EPPS)	3	ENGR102	Introduction to Engineering II	
WRIT102	Research Writing	3	LIT104	LIT103, 201, 202, 207, 270	
CORE 113	Freshman Academic Seminar	3	RLST105	Religious Studies	
CORE103	Community Enrichment Series	0	CORE104	Community Enrichment Series	
ENGR192	Freshman Engineering Seminar	0	ENGR193	Freshman Engineering Seminar	
	Tota	al 17			Total
	Second Year - Fall Semester			Second Year - Spring Semester	
Course	Title	Credits	Course	Title	
MATH221	Calculus III	3	MATH306	Differential Equations I	
	General Physics I	4	ENGR202	Engineering Dynamics	
	Programming for Engineers	2		Mechanics of Materials	
ENGR210/L	Engineering Statics	3	·	Fundamentals of Electrical Engineeri	na
ENGR250	Solid Modeling and CAD	3	ENGR323/L	Sophmore Engr. Design for Service	ı ığ
		3	PHIL 205		
HIST1/200 ENGR292	History Elective		ENGR293	Philosophy and Reasoning	
ENGR292	Sophomore Engineering Seminar	0	ENGR293	Sophomore Engineering Seminar	Total
	Tota	al 18			Total
	Third Year - Fall Semester			Third Year - Spring Semester	
Course	Title	Credits	Course	Title	
			Course	TILLE	
MATH322	Linear Algebra	3	ENGR335	Engineering Instrumentation	
	Linear Algebra Fluid Mechanics				
		3	ENGR335	Engineering Instrumentation Heat Transfer	
ENGR301/L	Fluid Mechanics	3 4	ENGR335 ENGR375	Engineering Instrumentation	
ENGR301/L ENGR321	Fluid Mechanics Applied Engr. Thermodynamics Materials Science	3 4 3	ENGR335 ENGR375 ENGR379 MATH309	Engineering Instrumentation Heat Transfer Junior Engr. Design for Service	
ENGR301/L ENGR321 ENGR350	Fluid Mechanics Applied Engr. Thermodynamics Materials Science Social science elective (1/2)	3 4 3 3	ENGR335 ENGR375 ENGR379 MATH309 ENGR410	Engineering Instrumentation Heat Transfer Junior Engr. Design for Service Mathematical Modeling Applied Finite Element and Volume Modeling	
ENGR301/L ENGR321 ENGR350 EPPS	Fluid Mechanics Applied Engr. Thermodynamics Materials Science Social science elective (1/2) Writing Compentency Exam	3 4 3 3	ENGR335 ENGR375 ENGR379 MATH309 ENGR410	Engineering Instrumentation Heat Transfer Junior Engr. Design for Service Mathematical Modeling Applied Finite Element and Volume Modeling Approximation Methods I	
ENGR301/L ENGR321 ENGR350 EPPS EXAM301	Fluid Mechanics Applied Engr. Thermodynamics Materials Science Social science elective (1/2)	3 4 3 3 0 0	ENGR335 ENGR375 ENGR379 MATH309 ENGR410 MATH212	Engineering Instrumentation Heat Transfer Junior Engr. Design for Service Mathematical Modeling Applied Finite Element and Volume Modeling	Total
ENGR301/L ENGR321 ENGR350 EPPS EXAM301	Fluid Mechanics Applied Engr. Thermodynamics Materials Science Social science elective (1/2) Writing Compentency Exam Junior Engineering Seminar Total	3 4 3 3 0 0	ENGR335 ENGR375 ENGR379 MATH309 ENGR410 MATH212	Engineering Instrumentation Heat Transfer Junior Engr. Design for Service Mathematical Modeling Applied Finite Element and Volume Modeling Approximation Methods I Junior Engineering Seminar	Total
ENGR301/L ENGR321 ENGR350 EPPS EXAM301 ENGR392	Fluid Mechanics Applied Engr. Thermodynamics Materials Science Social science elective (1/2) Writing Compentency Exam Junior Engineering Seminar  Total	3 4 3 3 0 0	ENGR335 ENGR375 ENGR379 MATH309 ENGR410 MATH212 ENGR393	Engineering Instrumentation Heat Transfer Junior Engr. Design for Service Mathematical Modeling Applied Finite Element and Volume Modeling Approximation Methods I Junior Engineering Seminar  Senior Year - Spring Semester	Total
ENGR301/L ENGR321 ENGR350 EPPS EXAM301 ENGR392	Fluid Mechanics Applied Engr. Thermodynamics Materials Science Social science elective (1/2) Writing Compentency Exam Junior Engineering Seminar  Tota  Senior Year - Fall Semester  Title	3 4 3 3 0 0 16	ENGR335 ENGR375 ENGR379 MATH309 ENGR410 MATH212 ENGR393	Engineering Instrumentation Heat Transfer Junior Engr. Design for Service Mathematical Modeling Applied Finite Element and Volume Modeling Approximation Methods I Junior Engineering Seminar  Senior Year - Spring Semester Title	Total
ENGR301/L ENGR321 ENGR350 EPPS EXAM301 ENGR392 Course ENGR427	Fluid Mechanics Applied Engr. Thermodynamics Materials Science Social science elective (1/2) Writing Compentency Exam Junior Engineering Seminar  Tota  Senior Year - Fall Semester Title Power/Thermal Systems Lab	3 4 3 3 0 0 16 Credits	ENGR335 ENGR375 ENGR379 MATH309 ENGR410 MATH212 ENGR393	Engineering Instrumentation Heat Transfer Junior Engr. Design for Service Mathematical Modeling Applied Finite Element and Volume Modeling Approximation Methods I Junior Engineering Seminar  Senior Year - Spring Semester Title Capstone Design	Total
ENGR301/L ENGR321 ENGR350 EPPS EXAM301 ENGR392 Course ENGR427 ENGR415	Fluid Mechanics Applied Engr. Thermodynamics Materials Science Social science elective (1/2) Writing Compentency Exam Junior Engineering Seminar  Tota  Senior Year - Fall Semester  Title Power/Thermal Systems Lab Senior Lab	3 4 3 3 0 0 16  Credits 1 3	ENGR335 ENGR375 ENGR379 MATH309 ENGR410 MATH212 ENGR393	Engineering Instrumentation Heat Transfer Junior Engr. Design for Service Mathematical Modeling Applied Finite Element and Volume Modeling Approximation Methods I Junior Engineering Seminar  Senior Year - Spring Semester Title Capstone Design Keystone Seminar	Total
ENGR301/L ENGR321 ENGR350 EPPS EXAM301 ENGR392 Course ENGR427 ENGR415 ENGR497	Fluid Mechanics Applied Engr. Thermodynamics Materials Science Social science elective (1/2) Writing Compentency Exam Junior Engineering Seminar  Tota  Senior Year - Fall Semester Title Power/Thermal Systems Lab Senior Lab Capstone Design Proposal	3 4 3 3 0 0 16  Credits 1 3 1	ENGR335 ENGR375 ENGR379 MATH309 ENGR410 MATH212 ENGR393	Engineering Instrumentation Heat Transfer Junior Engr. Design for Service Mathematical Modeling Applied Finite Element and Volume Modeling Approximation Methods I Junior Engineering Seminar  Senior Year - Spring Semester Title Capstone Design Keystone Seminar Social science elective (2/2)	Total
ENGR301/L ENGR321 ENGR350 EPPS EXAM301 ENGR392 Course ENGR427 ENGR415 ENGR497 MATH312	Fluid Mechanics Applied Engr. Thermodynamics Materials Science Social science elective (1/2) Writing Compentency Exam Junior Engineering Seminar  Tota  Senior Year - Fall Semester Title Power/Thermal Systems Lab Senior Lab Capstone Design Proposal Approximation Methods II	3 4 3 3 0 0 16  Credits 1 3 1	ENGR335 ENGR375 ENGR379 MATH309 ENGR410 MATH212 ENGR393 Course ENGR498 CORE407 EPPS EPPS	Engineering Instrumentation Heat Transfer Junior Engr. Design for Service Mathematical Modeling Applied Finite Element and Volume Modeling Approximation Methods I Junior Engineering Seminar  Senior Year - Spring Semester Title Capstone Design Keystone Seminar Social science elective (2/2) Language requirement	Total
ENGR301/L ENGR321 ENGR350 EPPS EXAM301 ENGR392 Course ENGR427 ENGR415 ENGR497 MATH312 CPSC28x*	Fluid Mechanics Applied Engr. Thermodynamics Materials Science Social science elective (1/2) Writing Compentency Exam Junior Engineering Seminar  Tota  Senior Year - Fall Semester Title Power/Thermal Systems Lab Senior Lab Capstone Design Proposal Approximation Methods II Algorithmic Programming	3 4 3 3 0 0 16  Credits 1 3 1 3 2	ENGR335 ENGR375 ENGR379 MATH309 ENGR410 MATH212 ENGR393 Course ENGR498 CORE407 EPPS EPPS FNAR	Engineering Instrumentation Heat Transfer Junior Engr. Design for Service Mathematical Modeling Applied Finite Element and Volume Modeling Approximation Methods I Junior Engineering Seminar  Senior Year - Spring Semester Title Capstone Design Keystone Seminar Social science elective (2/2) Language requirement Fine Arts	Total
ENGR301/L ENGR321 ENGR350 EPPS EXAM301 ENGR392 Course ENGR427 ENGR415 ENGR497 MATH312 CPSC28x* DIVER	Fluid Mechanics Applied Engr. Thermodynamics Materials Science Social science elective (1/2) Writing Compentency Exam Junior Engineering Seminar  Tota  Senior Year - Fall Semester Title Power/Thermal Systems Lab Senior Lab Capstone Design Proposal Approximation Methods II Algorithmic Programming Diversity requirement	3 4 3 3 0 0 16  Credits 1 3 1 3 2 3	ENGR335 ENGR375 ENGR379 MATH309 ENGR410 MATH212 ENGR393 Course ENGR498 CORE407 EPPS EPPS	Engineering Instrumentation Heat Transfer Junior Engr. Design for Service Mathematical Modeling Applied Finite Element and Volume Modeling Approximation Methods I Junior Engineering Seminar  Senior Year - Spring Semester Title Capstone Design Keystone Seminar Social science elective (2/2) Language requirement	Total
ENGR301/L ENGR321 ENGR350 EPPS EXAM301 ENGR392  Course ENGR427 ENGR415 ENGR497 MATH312 CPSC28x* DIVER PHIL/RLST	Fluid Mechanics Applied Engr. Thermodynamics Materials Science Social science elective (1/2) Writing Compentency Exam Junior Engineering Seminar  Tota  Senior Year - Fall Semester Title Power/Thermal Systems Lab Senior Lab Capstone Design Proposal Approximation Methods II Algorithmic Programming Diversity requirement Philosophy/Religious Studies Elect.	3 4 3 3 0 0 16  Credits 1 3 1 3 2 3 3	ENGR335 ENGR375 ENGR379 MATH309 ENGR410 MATH212 ENGR393 Course ENGR498 CORE407 EPPS EPPS FNAR	Engineering Instrumentation Heat Transfer Junior Engr. Design for Service Mathematical Modeling Applied Finite Element and Volume Modeling Approximation Methods I Junior Engineering Seminar  Senior Year - Spring Semester Title Capstone Design Keystone Seminar Social science elective (2/2) Language requirement Fine Arts	Total
ENGR301/L ENGR321 ENGR350 EPPS EXAM301 ENGR392 Course ENGR427 ENGR415 ENGR497 MATH312 CPSC28x* DIVER	Fluid Mechanics Applied Engr. Thermodynamics Materials Science Social science elective (1/2) Writing Compentency Exam Junior Engineering Seminar  Tota  Senior Year - Fall Semester Title Power/Thermal Systems Lab Senior Lab Capstone Design Proposal Approximation Methods II Algorithmic Programming Diversity requirement Philosophy/Religious Studies Elect. Senior Engineering Seminar	3 4 3 3 0 0 16 Credits 1 3 1 3 2 3 3 0	ENGR335 ENGR375 ENGR379 MATH309 ENGR410 MATH212 ENGR393 Course ENGR498 CORE407 EPPS EPPS FNAR	Engineering Instrumentation Heat Transfer Junior Engr. Design for Service Mathematical Modeling Applied Finite Element and Volume Modeling Approximation Methods I Junior Engineering Seminar  Senior Year - Spring Semester Title Capstone Design Keystone Seminar Social science elective (2/2) Language requirement Fine Arts	
ENGR301/L ENGR321 ENGR350 EPPS EXAM301 ENGR392  Course ENGR427 ENGR415 ENGR497 MATH312 CPSC28x* DIVER PHIL/RLST ENGR492	Fluid Mechanics Applied Engr. Thermodynamics Materials Science Social science elective (1/2) Writing Compentency Exam Junior Engineering Seminar  Tota  Senior Year - Fall Semester Title Power/Thermal Systems Lab Senior Lab Capstone Design Proposal Approximation Methods II Algorithmic Programming Diversity requirement Philosophy/Religious Studies Elect. Senior Engineering Seminar	3 4 3 3 0 0 16  Credits  1 3 1 3 2 3 3 0 1 1 3 1 1 3 1 1 3 1 1 1 1 1 1 1 1	ENGR335 ENGR375 ENGR379 MATH309 ENGR410 MATH212 ENGR393 Course ENGR498 CORE407 EPPS EPPS FNAR	Engineering Instrumentation Heat Transfer Junior Engr. Design for Service Mathematical Modeling Applied Finite Element and Volume Modeling Approximation Methods I Junior Engineering Seminar  Senior Year - Spring Semester Title Capstone Design Keystone Seminar Social science elective (2/2) Language requirement Fine Arts	Total
ENGR301/L ENGR321 ENGR350 EPPS EXAM301 ENGR392  Course ENGR427 ENGR415 ENGR497 MATH312 CPSC28x* DIVER PHIL/RLST ENGR492  *Two from CPSC	Fluid Mechanics Applied Engr. Thermodynamics Materials Science Social science elective (1/2) Writing Compentency Exam Junior Engineering Seminar  Tota  Senior Year - Fall Semester Title Power/Thermal Systems Lab Senior Lab Capstone Design Proposal Approximation Methods II Algorithmic Programming Diversity requirement Philosophy/Religious Studies Elect. Senior Engineering Seminar  Tota 280, 281, and 282 must be taken. Each are 1-cree	3 4 3 3 0 0 16  Credits  1 3 1 3 2 3 3 0 1 1 3 1 1 3 1 1 3 1 1 1 1 1 1 1 1	ENGR335 ENGR375 ENGR379 MATH309 ENGR410 MATH212 ENGR393 Course ENGR498 CORE407 EPPS EPPS FNAR	Engineering Instrumentation Heat Transfer Junior Engr. Design for Service Mathematical Modeling Applied Finite Element and Volume Modeling Approximation Methods I Junior Engineering Seminar  Senior Year - Spring Semester Title Capstone Design Keystone Seminar Social science elective (2/2) Language requirement Fine Arts	
ENGR301/L ENGR321 ENGR350 EPPS EXAM301 ENGR392  Course ENGR427 ENGR415 ENGR497 MATH312 CPSC28x* DIVER PHIL/RLST ENGR492  *Two from CPSC and can be taken	Fluid Mechanics Applied Engr. Thermodynamics Materials Science Social science elective (1/2) Writing Compentency Exam Junior Engineering Seminar  Tota  Senior Year - Fall Semester Title Power/Thermal Systems Lab Senior Lab Capstone Design Proposal Approximation Methods II Algorithmic Programming Diversity requirement Philosophy/Religious Studies Elect. Senior Engineering Seminar	3 4 3 3 0 0 16  Credits  1 3 1 3 2 3 3 0 1 1 3 1 1 3 1 1 3 1 1 1 1 1 1 1 1	ENGR335 ENGR375 ENGR379 MATH309 ENGR410 MATH212 ENGR393 Course ENGR498 CORE407 EPPS EPPS FNAR	Engineering Instrumentation Heat Transfer Junior Engr. Design for Service Mathematical Modeling Applied Finite Element and Volume Modeling Approximation Methods I Junior Engineering Seminar  Senior Year - Spring Semester Title Capstone Design Keystone Seminar Social science elective (2/2) Language requirement Fine Arts	
ENGR301/L ENGR321 ENGR350 EPPS EXAM301 ENGR392  Course ENGR427 ENGR415 ENGR497 MATH312 CPSC28x* DIVER PHIL/RLST ENGR492  *Two from CPSC and can be taken	Fluid Mechanics Applied Engr. Thermodynamics Materials Science Social science elective (1/2) Writing Compentency Exam Junior Engineering Seminar  Tota  Senior Year - Fall Semester Title Power/Thermal Systems Lab Senior Lab Capstone Design Proposal Approximation Methods II Algorithmic Programming Diversity requirement Philosophy/Religious Studies Elect. Senior Engineering Seminar  Tota 1280, 281, and 282 must be taken. Each are 1-cre in throughout the paradigm.	3 4 3 3 0 0 16  Credits  1 3 1 3 2 3 3 0 1 1 3 1 1 3 1 1 3 1 1 1 1 1 1 1 1	ENGR335 ENGR375 ENGR379 MATH309 ENGR410 MATH212 ENGR393 Course ENGR498 CORE407 EPPS EPPS FNAR	Engineering Instrumentation Heat Transfer Junior Engr. Design for Service Mathematical Modeling Applied Finite Element and Volume Modeling Approximation Methods I Junior Engineering Seminar  Senior Year - Spring Semester Title Capstone Design Keystone Seminar Social science elective (2/2) Language requirement Fine Arts Senior Engineering Seminar	

## Credits 3 4 3 3 0 18 Credits 3 3 0 18 Credits 3 3 18 Credits 3 3 **15**

136

## Computational Modeling Minor (15)

Total credits =

The Computational Modeling Minor should appeal to General Engineers with a desire to develop computational or numerical design programs that may be used by other engineering disciplines or

concentrations (especially robotics and mechanical). Students gain adeptness in computational modeling skills, mathematical solution methodologies and specialized computer programming.

- ENGR 410 Applied Finite Element and Volume Modeling, 4 MATH 309 Mathematical Modeling, 3
- MATH 212 Approximation Methods I, 3
- MATH 312 Approximation Methods II, 3

  CPSC 280-282 Algorithmic Programming, 2 credits required

## Credits in the General engineering central requirements = 82 Credits in the CORE curriculum Credits in the Minor = 15 136