

Engineering (BS)

Overview

Plan Requirements

First Year

Fall Semester		Hours
CH 101	Chemistry - A Molecular Science ¹	3
CH 102	General Chemistry Laboratory ¹	1
E 101	Introduction to Engineering & Problem Solving ²	1
E 115	Introduction to Computing Environments	1
ENG 101	Academic Writing and Research ²	4
MA 141	Calculus I ¹	4
Hours		14

Spring Semester

Select one of the following Economics courses:		3
ARE 201	Introduction to Agricultural & Resource Economics	
ARE 201A	Introduction to Agricultural & Resource Economics	
EC 201	Principles of Microeconomics	
EC 205	Fundamentals of Economics	
MA 241	Calculus II ¹	4
PY 205 & PY 206	Physics for Engineers and Scientists I and Physics for Engineers and Scientists I Laboratory ¹	4
Engineering Topics Elective (p. 2)		3
Hours		14

Second Year

Fall Semester		Hours
MA 242	Calculus III	4
PY 208 & PY 209	Physics for Engineers and Scientists II and Physics for Engineers and Scientists II Laboratory	4
Engineering Topics II Elective (p. 2)		3
Engineering Elective 200-Level (p. 2)		3
Hours		14

Spring Semester

Select one of the following Math Electives:		3
MA 303	Linear Analysis	
MA 341	Applied Differential Equations I	
MA 405	Introduction to Linear Algebra	
Basic Science Elective (p. 4)		4
Engineering Topics II Elective (p. 2)		3
Engineering Elective 200-Level (p. 2)		3
Hours		13

Third Year

Fall Semester		Hours
Engineering Topics III Elective (p. 4)		3
Engineering Elective 300 or 400 Level (p. 15)		3
Engineering Elective 300 or 400 Level (p. 15)		3

Engineering Elective 300 or 400 Level (p. 15)	3
Hours	12

Spring Semester

Communication Elective (p. 26)		3
Engineering Topics III Elective (p. 4)		3
Engineering Elective 300 or 400 Level (p. 15)		3
Engineering Elective 300 or 400 Level (p. 15)		3
Hours		12

Fourth Year

Fall Semester		Hours
Engineering Elective 300 or 400 Level (p. 15)		3
Engineering Elective 400 Level (p. 15)		3
BSE Topic Elective (p. 4) ³		3
BSE Topic Elective (p. 4) ³		3
Hours		12

Spring Semester

Engineering Topics IV Elective (p. 27)		3
Engineering Elective 300 or 400 Level Elective 400-Level (p. 15)		3
BSE Topic Elective (p. 4) ³		3
BSE Topic Elective (p. 4) ³		3
Hours		12
Total Hours		103

¹ A grade of C or higher is required.

² A grade of C- or higher is required.

³ Students should consult their academic advisors to determine how to complete this requirement.

Code	Title	Hours	Counts towards
GEP Courses			
	GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)	6	
	GEP Social Sciences (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-social-sciences/)	3	
	GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)	2	
	GEP US Diversity, Equity, and Inclusion (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-usdei/)	3	
	GEP Interdisciplinary Perspectives (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/)	5	

GEP Global Knowledge (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-global-knowledge/>) (verify requirement)

World Language Proficiency (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/world-language-proficiency/>) (verify requirement)

Total Hours 19

Engineering Topics Electives

Code	Title	Hours	Counts towards
CSC 112	Introduction to Computing-FORTRAN	3	
CSC 116	Introduction to Computing - Java	3	
ECE 109	Introduction to Computer Systems	3	
GC 120	Foundations of Graphics	3	
ST 370	Probability and Statistics for Engineers	3	
ST 371	Introduction to Probability and Distribution Theory	3	
TE 110	Computer-Based Modeling for Engineers	3	

Engineering Topics II Electives

Code	Title	Hours	Counts towards
CE 214	Engineering Mechanics-Statics	3	
CE 215		3	
CE 225	Mechanics of Solids	3	
CE 282	Hydraulics	3	
ECE 331	Principles of Electrical Engineering	3	
ISE 311	Engineering Economic Analysis	3	
MAE 201	Thermal-Fluid Sciences	3	
MAE 206	Engineering Statics	3	
MAE 208	Engineering Dynamics	3	
MAE 214	Solid Mechanics	3	

MAE 308	Fluid Mechanics	3
MSE 200	Mechanical Properties of Structural Materials	3
MSE 201	Structure and Properties of Engineering Materials	3

Engineering Electives 200-Level

Code	Title	Hours	Counts towards
BAE 200	Computer Methods in Biological Engineering	2	
BAE 202	Introduction to Biological and Agricultural Engineering Methods	4	
BAE 203	Introduction to AutoCAD Civil 3D for Environmental & Ecological Engineers	2	
BAE 204	Introduction to Environmental and Ecological Engineering	2	
BAET 201	Shop Processes and Management	3	
BME 201	Computer Methods in Biomedical Engineering	3	
BME 203			
BME 204			
BME 205	Introduction to Biomedical Mechanics	4	
BME 207	Biomedical Electronics	4	
BME 209	Introduction to the Materials Science of Biomaterials	4	
BME 215	Biomedical Mechanics Laboratory	1	
BME 217	Biomedical Electronics Laboratory	1	
BME 219	Materials Science of Biomaterials Lab	1	

BME 295	Research in Biomedical Engineering for Undergraduates	1-3	CSC 255	String Processing Languages	1
BME 298	Biomedical Engineering Design and Manufacturing I	2	CSC 281	Foundations of Interactive Game Design	3
BME 299	BME Design and Manufacturing I Lab	1	CSC 295	Special Topics in Computer Science	1-3
CE 214	Engineering Mechanics-Statics	3	E 201	Engineering Transfer to Success	1
CE 215			E 298	Special Topics Engineering	1-3
CE 225	Mechanics of Solids	3	ECE 200	Introduction to Signals, Circuits and Systems	4
CE 250	Introduction to Sustainable Infrastructure	3	ECE 209	Computer Systems Programming	3
CE 263	Introduction to Construction Engineering	3	ECE 211	Electric Circuits	4
CE 282	Hydraulics	3	ECE 212	Fundamentals of Logic Design	3
CE 297	Current Topics in Civil Engineering	1-4	ECE 220	Analytical Foundations of Electrical and Computer Engineering	3
CHE 205	Chemical Process Principles	4	ISE 215	Foundations of Design & 3D Modeling for Engineers	1
CHE 225	Introduction to Chemical Engineering Analysis	3	ISE 216	Product Development and Rapid Prototyping	3
CSC 200			MAE 200	Introduction to Mechanical Engineering Design	1
CSC 216	Software Development Fundamentals	3	MAE 201	Thermal-Fluid Sciences	3
CSC 217	Software Development Fundamentals Lab	1	MAE 206	Engineering Statics	3
CSC 226	Discrete Mathematics	3	MAE 208	Engineering Dynamics	3
CSC 236	Computer Organization and Assembly Language for Computer Scientists	3	MAE 214	Solid Mechanics	3
CSC 246	Concepts and Facilities of Operating Systems for Computer Scientists	3	MAE 250	Introduction to Aerospace Engineering	1
CSC 251	Web Page Development	1	MAE 251	Aerospace Vehicle Performance	3
			MAE 252	Aerodynamics I	3
			MAE 253	Experimental Aerodynamics I	1
			MAE 308	Fluid Mechanics	3

MSE 200	Mechanical Properties of Structural Materials	3
MSE 201	Structure and Properties of Engineering Materials	3
MSE 203		
MSE 255	Experimental Methods for Structural Analysis of Materials	2
MSE 260	Mathematical Methods for Materials Engineers	3
MSE 270	Materials Science and Engineering Seminar	1
NE 201	Introduction to Nuclear Engineering	2
NE 202	Radiation Sources, Interaction and Detection	4
NE 235	Nuclear Reactor Operations Training	2
NE 290	Introduction to Health Physics	3
PSE 201	Pulping and Papermaking Technology	3
PSE 211	Pulp and Paper Internship	1
PSE 212	Paper Properties	4
PSE 220	From Papyrus to Advanced Functional Materials: The Power of Paper in Society	2
PSE 293	Independent Study in Paper Science & Engineering	1-6
PSE 294	Independent Study in Paper Science & Engineering	1-6
PSE 295	Special Topics in Paper Science & Engineering	1-3

TE 200	Introduction to Polymer Science and Engineering	3
--------	---	---

TE 201	Fiber Science	4
TE 205	Analog and Digital Circuits	4

Basic Science Electives

Code	Title	Hours	Counts towards
BIO 181	Introductory Biology: Ecology, Evolution, and Biodiversity	4	
BIO 183	Introductory Biology: Cellular and Molecular Biology	4	
CH 201	Chemistry - A Quantitative Science	3	
CH 202	Quantitative Chemistry Laboratory	1	
MEA 101	Geology I: Physical	3	
MEA 110	Geology I Laboratory	1	

Engineering Topics III Elective

Code	Title	Hours	Counts towards
BAE 302	Transport Phenomena	3	
BAE 305	Biological Engineering Circuits	4	
BAE 321	Bioprocessing Engineering Fundamentals	3	
BAE 322	Introduction to Food Process Engineering	3	
BAE 325	Introductory Geomatics	3	
BAE 361	Analytical Methods in Engineering Design	3	
BAE 371	Fundamentals of Hydrology for Engineers	3	
BAE 376	Watershed Assessment and Water Quality Protection	3	
BAE 401	Sensors and Controls	3	

BAE 425	Industrial Microbiology and Bioprocessing	3	BAET 333	Processing Agricultural Products	3
BAE 435	Precision Agriculture Technology	3	BAET 343	Agricultural Electrification	4
BAE 451	Engineering Design I	2	BAET 411	Agricultural Machinery and Power Units	4
BAE 452	Engineering Design II	2	BAET 432	Agricultural and Environmental Safety and Health	3
BAE 462	Machinery Design and Applications	3	BEC 462	Fundamentals of Bio-Nanotechnology	3
BAE 472	Irrigation and Drainage	3	BEC 463	Fermentation of Recombinant Microorganisms	2
BAE 473	Introduction to Hydrologic and Water Quality Modeling	3	BEC 483	Tissue Engineering Technologies	2
BAE 474	Principles and Applications of Ecological Engineering	3	BEC 488	Animal Cell Culture Engineering	2
BAE 481	Structures & Environment	3	BEC 562	Fundamentals of Bio-Nanotechnology	3
BAE 488	Postharvest Engineering	3	BEC 563	Fermentation of Recombinant Microorganisms	2
BAE 492	External Learning Experience	1-6	BEC 583	Tissue Engineering Technologies	2
BAE 493	Special Problems in Biological and Agricultural Engineering	1-6	BIT 463	Fermentation of Recombinant Microorganisms	2
BAE 495	Special Topics in Biological and Agricultural Engineering	1-3	BIT 464	Protein Purification	2
BAE 501	Sensors and Controls	3	BIT 563	Fermentation of Recombinant Microorganisms	2
BAE 525	Industrial Microbiology and Bioprocessing	3	BIT 564	Protein Purification	2
BAE 535	Precision Agriculture Technology	3	BME 217	Biomedical Electronics Laboratory	1
BAE 572	Irrigation and Drainage	3	BME 301	Human Physiology : Electrical Analysis	3
BAE 573	Introduction to Hydrologic and Water Quality Modeling	3	BME 302	Human Physiology: Mechanical Analysis	3
BAE 578	Circular Approach to Manure Management	3	BME 315	Biotransport	3
BAET 332	Management of Animal Environments	4	BME 325	Biochemistry for Biomedical Engineers	3

BME 335	Biomaterials	3	BME 518	Wearable Biosensors and Microsystems	3
BME 342			BME 525	Bioelectricity	3
BME 345	Biomedical Solid Mechanics	3	BME 544	Orthopaedic Biomechanics	3
BME 355	Biocontrols	3	BME 566	Polymeric Biomaterials Engineering	3
BME 365	Linear Systems in Biomedical Engineering	3	BME 583	Tissue Engineering Technologies	2
BME 375	Biomedical Microcontroller Applications	3	BME 584	Fundamentals of Tissue Engineering	3
BME 385	Bioinstrumentation	3	BUS 340	Information Systems Management	3
BME 398	Biomedical Engineering Design and Manufacturing II	2	CE 225	Mechanics of Solids	3
BME 412	Biomedical Signal Processing	3	CE 282	Hydraulics	3
BME 418	Wearable Biosensors and Microsystems	3	CE 301	Civil Engineering Surveying and Geomatics	3
BME 425	Bioelectricity	3	CE 305	Introduction to Transportation Systems	3
BME 444	Orthopaedic Biomechanics	3	CE 324		
BME 451	BME Senior Design: Product Development	3	CE 325	Structural Analysis I	3
BME 452	BME Senior Design: Product Implementation and Strategy	3	CE 327	Reinforced Concrete Design	3
BME 462	Biomaterials Characterization	3	CE 332	Civil Engineering Materials	4
BME 466	Polymeric Biomaterials Engineering	3	CE 339	Civil Engineering Systems	3
BME 467	Mechanics of Tissues & Implants Requirements	3	CE 342	Engineering Behavior of Soils and Foundations	4
BME 481	Quality Management Systems for Engineers	3	CE 365	Construction Equipment and Methods	3
BME 483	Tissue Engineering Technologies	2	CE 367	Mechanical and Electrical Systems in Buildings	3
BME 484	Fundamentals of Tissue Engineering	3	CE 373	Fundamentals of Environmental Engineering	3
BME 490	Special Topics in Biomedical Engineering	1-4	CE 378	Environmental Chemistry and Microbiology	4
BME 498	Undergraduate Research in Biomedical Engineering	3	CE 381	Hydraulics Systems Measurements Lab	1

CE 383	Hydrology and Urban Water Systems	3	CE 477	Principles of Solid Waste Engineering	3
CE 390			CE 478	Energy and Climate	3
CE 400			CE 479	Air Quality	3
CE 401	Transportation Planning	3	CE 480		
CE 402	Traffic Operations	3	CE 481	Environmental Engineering Project	3
CE 403	Transportation System Design	3	CE 484	Water Supply and Waste Water Systems	3
CE 405	Railroad System Planning, Design, and Operation	3	CE 487	Introduction to Coastal and Ocean Engineering	3
CE 413	Principles of Pavement Design	3	CE 488	Water Resources Engineering	3
CE 420	Structural Engineering Project	3	CE 499	Undergraduate Research Thesis in Civil, Construction and Environmental Engineering	1-3
CE 421			CE 501	Transportation Planning	3
CE 425	Advanced Structural Analysis	3	CE 502	Traffic Operations	3
CE 426	Structural Steel Design	3	CE 503	Transportation System Design	3
CE 435	Engineering Geology	3	CE 505	Railroad System Planning, Design, and Operation	3
CE 437	Civil Engineering Computing	3	CE 525	Advanced Structural Analysis	3
CE 440			CE 564	Legal Aspects of Contracting	3
CE 443	Seepage, Earth Embankments and Retaining Structures	3	CE 568	Building Information Modeling in Construction	3
CE 444	An Introduction to Foundation Engineering	3	CE 578	Energy and Climate	3
CE 450	Civil Engineering Project	3	CE 588	Water Resources Engineering	3
CE 463	Construction Estimating, Planning, and Control	3	CH 335	Principles of Green Chemistry	4
CE 464	Legal Aspects of Contracting	3	CHE 311	Transport Processes I	3
CE 466	Building Construction Engineering	3	CHE 312	Transport Processes II	3
CE 468	Building Information Modeling in Construction	3	CHE 315	Chemical Process Thermodynamics	3
CE 469	Construction Engineering Project	3			
CE 476	Air Pollution Control	3			

CHE 316	Thermodynamics of Chemical and Phase Equilibria	3	CHE 497	Chemical Engineering Projects I	3
CHE 330	Chemical Engineering Lab I	4	CHE 498	Chemical Engineering Projects II	1-3
CHE 331	Chemical Engineering Lab II	2	CHE 562	Fundamentals of Bio-Nanotechnology	3
CHE 395	Professional Development Seminar	1	CHE 563	Fermentation of Recombinant Microorganisms	2
CHE 435	Process Systems Analysis and Control	3	CHE 568	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3
CHE 446	Design and Analysis of Chemical Reactors	3	CHE 575	Advances in Pollution Prevention: Environmental Management for the Future	3
CHE 447	Bioreactor Engineering	3	CSC 302	Introduction to Numerical Methods	3
CHE 450	Chemical Engineering Design I	3	CSC 316	Data Structures and Algorithms	3
CHE 451	Chemical Engineering Design II	3	CSC 326	Software Engineering	4
CHE 460	Chemical Processing of Electronic Materials	3	CSC 333	Automata, Grammars, and Computability	3
CHE 461	Polymer Sciences and Technology	3	CSC 342	Applied Web-based Client-Server Computing	3
CHE 462	Fundamentals of Bio-Nanotechnology	3	CSC 379	Ethics in Computing	1
CHE 463	Fermentation of Recombinant Microorganisms	2	CSC 401	Data and Computer Communications Networks	3
CHE 465	Colloidal and Nanoscale Engineering	3	CSC 402	Networking Projects	3
CHE 467	Polymer Rheology	3	CSC 405	Computer Security	3
CHE 468	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3	CSC 406	Architecture Of Parallel Computers	3
CHE 488	Animal Cell Culture Engineering	2	CSC 411	Introduction to Artificial Intelligence	3
CHE 495	Honors Thesis Preparation	1	CSC 414	Foundations of Cryptography	3
			CSC 415	Software Security	3

CSC 417	Theory of Programming Languages	3	CSC 506	Architecture Of Parallel Computers	3
CSC 422	Automated Learning and Data Analysis	3	CSC 512	Compiler Construction	3
CSC 427	Introduction to Numerical Analysis I	3	CSC 514	Foundations of Cryptography	3
CSC 428	Introduction to Numerical Analysis II	3	CSC 522	Automated Learning and Data Analysis	3
CSC 431	File Organization and Processing	3	CSC 584	Building Game AI	3
CSC 433	Privacy in the Digital Age	3	E 101	Introduction to Engineering & Problem Solving	1
CSC 440	Database Management Systems	3	E 304	Introduction to Nano Science and Technology	3
CSC 442	Introduction to Data Science	3	E 480	Namibia Wildlife Aerial Observatory	6
CSC 450	Web Services	3	E 490	Fundamentals of Engineering(FE) Exam Preparation	1
CSC 453	Introduction to Internet of Things (IoT) Systems	3	E 497	Engineering Research Projects	1-3
CSC 455	Social Computing and Decentralized Artificial Intelligence	3	ECE 301	Linear Systems	3
CSC 456	Computer Architecture and Multiprocessors	3	ECE 302	Microelectronics	4
CSC 461	Computer Graphics	3	ECE 303	Electromagnetic Fields	3
CSC 462	Advanced Computer Graphics Projects	3	ECE 305	Principles of Electromechanical Energy Conversion	3
CSC 467	Multimedia Technology	3	ECE 306	Introduction to Embedded Systems	3
CSC 472	Cybersecurity Projects	3	ECE 308	Elements of Control Systems	3
CSC 474	Network Security	3	ECE 309	Data Structures and Object-Oriented Programming for Electrical and Computer Engineers	3
CSC 481	Game Engine Foundations	3	ECE 310	Design of Complex Digital Systems	3
CSC 482	Advanced Computer Game Projects	3	ECE 331	Principles of Electrical Engineering	3
CSC 484	Building Game AI	3	ECE 380	Engineering Profession for Electrical Engineers	1
CSC 492	Senior Design Project	3			
CSC 495	Special Topics in Computer Science	1-6			
CSC 499	Independent Research in Computer Science	1-6			

ECE 381	Engineering Profession for Computer Engineers	1	ECE 452	Renewable Electric Energy Systems	3
ECE 383	Introduction to Entrepreneurship and New Product Development	1	ECE 453	Electric Motor Drives	3
ECE 384	Practical Engineering Prototyping	3	ECE 455	Industrial Robot Systems	3
ECE 402	Communications Engineering	3	ECE 456	Mechatronics	3
ECE 403	Electronics Engineering	3	ECE 460	Embedded System Architectures	3
ECE 404	Introduction to Solid-State Devices	3	ECE 461	Embedded System Analysis and Optimization	3
ECE 406	Architecture Of Parallel Computers	3	ECE 463	Microprocessor Architecture	3
ECE 407	Introduction to Computer Networking	3	ECE 464	ASIC and FPGA Design with Verilog	3
ECE 418	Wearable Biosensors and Microsystems	3	ECE 466	Compiler Optimization and Scheduling	3
ECE 420	Wireless Communication Systems	3	ECE 468	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3
ECE 421	Introduction to Signal Processing	3	ECE 470	Internetworking	3
ECE 422	Transmission Lines and Antennas for Wireless	3	ECE 482	Engineering Entrepreneurship and New Product Development I	3
ECE 423	Introduction to Photonics and Optical Communications	3	ECE 483	Engineering Entrepreneurship and New Product Development II	3
ECE 424	Radio System Design	3	ECE 484	Electrical and Computer Engineering Senior Design I	3
ECE 426	Analog Electronics Laboratory	3	ECE 485	Electrical and Computer Engineering Senior Design II	3
ECE 434	Fundamentals of Power Electronics	3	ECE 488	Systems Biology Modeling of Plant Regulation	3
ECE 436	Digital Control Systems	3	ECE 489	Solid State Solar and Thermal Energy Harvesting	3
ECE 442	Introduction to Integrated Circuit Technology and Fabrication	3	ECE 492	Special Topics in Electrical and Computer Engineering	1-4
ECE 451	Power System Analysis	3			

ECE 495	Individual Study in ECE	1-3	ISE 352	Fundamentals of Human-Machine Systems Design	3
ECE 498	Special Projects in ECE	1-3	ISE 361	Deterministic Models in Industrial Engineering	3
ECE 506	Architecture Of Parallel Computers	3	ISE 362	Stochastic Models in Industrial Engineering	3
ECE 518	Wearable Biosensors and Microsystems	3	ISE 408	Design and Control of Production and Service Systems	3
ECE 524	Radio System Design	3	ISE 411	Decision Making and Game Theory for Supply Chains	3
ECE 552	Renewable Electric Energy Systems	3	ISE 413	Humanitarian Logistics	3
ECE 556	Mechatronics	3	ISE 416	Manufacturing Engineering II - Automation	3
ECE 560	Embedded System Architectures	3	ISE 417	Database Applications in Industrial & Systems Engineering	3
ECE 561	Embedded System Analysis and Optimization	3	ISE 435	Python Programming for Industrial & Systems Engineers	3
ECE 563	Microprocessor Architecture	3	ISE 437	Data Analytics for Industrial Engineering	3
ECE 564	ASIC and FPGA Design with Verilog	3	ISE 441	Introduction to Simulation	3
ECE 566	Compiler Optimization and Scheduling	3	ISE 443	Quality Design and Control	3
ECE 568	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3	ISE 447	Applications of Data Science in Healthcare	3
ECE 588	Systems Biology Modeling of Plant Regulation	3	ISE 452	Advanced Human-Machine Systems Design	3
ECE 589	Solid State Solar and Thermal Energy Harvesting	3	ISE 453	Modeling and Analysis of Supply Chains	3
FB 576	Environmental Life Cycle Analysis	3	ISE 462	Advanced Stochastic Models in Industrial Engineering	3
ISE 311	Engineering Economic Analysis	3	ISE 489	Special Topics in Industrial and Systems Engineering	1-3
ISE 315	Introduction to Computer-Aided Manufacturing	1			
ISE 316	Manufacturing Engineering I - Processes	3			

ISE 495	Project Work in Industrial Engineering	1-3	MAE 351	Aerodynamics II	3
ISE 498	Senior Design Project	3	MAE 352	Experimental Aerodynamics II	1
ISE 511	Decision Making and Game Theory for Supply Chains	3	MAE 361	Dynamics & Controls	3
ISE 513	Humanitarian Logistics	3	MAE 371	Aerospace Structures I	3
ISE 535	Python Programming for Industrial & Systems Engineers	3	MAE 372	Aerospace Vehicle Structures Lab	1
ISE 547	Applications of Data Science in Healthcare	3	MAE 403	Air Conditioning	3
MA 414	Foundations of Cryptography	3	MAE 405	Controls Lab	1
MA 416	Introduction to Combinatorics	3	MAE 406	Energy Conservation in Industry	3
MA 427	Introduction to Numerical Analysis I	3	MAE 407	Steam and Gas Turbines	3
MA 428	Introduction to Numerical Analysis II	3	MAE 408	Internal Combustion Engine Fundamentals	3
MA 514	Foundations of Cryptography	3	MAE 410	Modern Manufacturing Processes	3
MAE 201	Thermal-Fluid Sciences	3	MAE 412	Design of Thermal System	3
MAE 214	Solid Mechanics	3	MAE 413	Design of Mechanical Systems	3
MAE 252	Aerodynamics I	3	MAE 415	Mechanical Engineering Design I	3
MAE 253	Experimental Aerodynamics I	1	MAE 416	Mechanical Engineering Design II	4
MAE 302	Engineering Thermodynamics II	3	MAE 420	Dynamic Analysis of Human Movement	3
MAE 305	Mechanical Engineering Laboratory I	1	MAE 421	Design of Solar Energy Systems	3
MAE 306	Mechanical Engineering Laboratory II	1	MAE 426	Fundamentals of Product Design	3
MAE 308	Fluid Mechanics	3	MAE 430	Applied Finite Element Analysis	3
MAE 310	Heat Transfer Fundamentals	3	MAE 435	Principles of Automatic Control	3
MAE 315	Fundamentals of Vibrations	3	MAE 440	Non-Destructive Testing and Evaluation	3
MAE 316	Strength of Mechanical Components	3	MAE 451	Experimental Aerodynamics III	1
MAE 342	Introduction to Automotive Engineering	3	MAE 452	Aerodynamics of V/STOL Vehicles	3
			MAE 455	Boundary Layer Theory	3

MAE 456	Computational Methods in Aerodynamics	3	MSE 335	Experimental Methods for Analysis of Material Properties	2
MAE 457	Flight Vehicle Stability and Control	3	MSE 355	Electrical, Magnetic and Optical Properties of Materials	3
MAE 458	Propulsion	3	MSE 360	Kinetic Processes in Materials	3
MAE 459	Rocket Propulsion	3	MSE 370	Microstructure of Inorganic Materials	3
MAE 467	Introduction to Space Flight	3	MSE 380	Microstructure of Organic Materials	3
MAE 472	Aerospace Structures II	3	MSE 409	Nuclear Materials	3
MAE 480	Aerospace Vehicle Design I	3	MSE 420	Mechanical Properties of Materials	3
MAE 481	Aerospace Vehicle Design II	3	MSE 423	Introduction to Materials Engineering Design	1
MAE 482	Engineering Entrepreneurship and New Product Development I	3	MSE 440	Processing of Metallic Materials	3
MAE 483	Engineering Entrepreneurship and New Product Development II	3	MSE 445	Ceramic Processing	3
MAE 484	Engineering Entrepreneurship Senior Design Lab	1	MSE 455	Polymer Technology and Engineering	3
MAE 495	Special Topics in Mechanical and Aerospace Engineering	1-3	MSE 456	Composite Materials	3
MAE 496	Undergraduate Project Work in Mechanical and Aerospace Engineering	1-6	MSE 460	Microelectronic Materials	3
MAE 520	Dynamic Analysis of Human Movement	3	MSE 465	Introduction to Nanomaterials	3
MAE 526	Fundamentals of Product Design	3	MSE 470	Materials Science and Engineering Senior Design Project	3
MEA 479	Air Quality	3	MSE 480	Materials Forensics and Degradation	3
MSE 260	Mathematical Methods for Materials Engineers	3	MSE 485	Biomaterials	3
MSE 300	Structure of Materials at the Nanoscale	3	MSE 489	Solid State Solar and Thermal Energy Harvesting	3
MSE 301	Introduction to Thermodynamics of Materials	3	MSE 490	Special Topics in Materials Engineering	1-4
MSE 320	Introduction to Defects in Solids	3	MSE 495	Materials Engineering Projects	1-6
			MSE 509	Nuclear Materials	3

MSE 540	Processing of Metallic Materials	3	NE 531	Nuclear Waste Management	3
MSE 545	Ceramic Processing	3	NE 590	Health Physics and Radiological Emergency Response	3
MSE 556	Composite Materials	3	PB 488/588	Systems Biology Modeling of Plant Regulation	3
MSE 565	Introduction to Nanomaterials	3	PSE 322	Wet End and Polymer Chemistry	4
MSE 580	Materials Forensics and Degradation	3	PSE 332	Wood and Pulping Chemistry	3
MSE 589	Solid State Solar and Thermal Energy Harvesting	3	PSE 335	Principles of Green Chemistry	4
NE 301	Fundamentals of Nuclear Engineering	3	PSE 355	Pulp and Paper Unit Processes I	3
NE 400	Nuclear Reactor Energy Conversion	4	PSE 360	Pulp and Paper Unit Processes II	3
NE 401	Reactor Analysis and Design	3	PSE 370	Pulp and Paper Products and Markets	3
NE 402	Reactor Engineering	4	PSE 371	Pulping Process Analysis	3
NE 403	Nuclear Reactor Laboratory	2	PSE 415	Paper Industry Strategic Project Analysis	3
NE 404	Radiation Safety and Shielding	3	PSE 416	Process Design and Analysis	3
NE 405	Reactor Systems	3	PSE 417	Modeling & Simulation of Pulp & Paper Processes	3
NE 406	Nuclear Engineering Senior Design Preparation	1	PSE 425	Bioenergy & Biomaterials Engineering	3
NE 408	Nuclear Engineering Design Project	3	PSE 465	Process Engineering	3
NE 409	Nuclear Materials	3	PSE 472	Paper Process Analysis	3
NE 412	Nuclear Fuel Cycles	3	PSE 475	Process Control in Pulp and Paper	3
NE 418	Nuclear Power Plant Instrumentation	3	PSE 476	Environmental Life Cycle Analysis	3
NE 419	Introduction to Nuclear Energy	3	PSE 493	Independent Study in Paper Science & Engineering	1-6
NE 431	Nuclear Waste Management	3	PSE 494	Independent Study in Paper Science & Engineering	1-6
NE 490	Health Physics and Radiological Emergency Response	3	PY 414	Electromagnetism I	3
NE 491	Special Topics in Nuclear Engineering	1-4			
NE 501	Reactor Analysis and Design	3			
NE 509	Nuclear Materials	3			

PY 415	Electromagnetism II	3
PY 489	Solid State Solar and Thermal Energy Harvesting	3
PY 514	Electromagnetism I	3
PY 515	Electromagnetism II	3
PY 589	Solid State Solar and Thermal Energy Harvesting	3
SSC 440	Geographic Information Systems (GIS) in Soil Science and Agriculture	3
SSC 473	Introduction to Hydrologic and Water Quality Modeling	3
SSC 540	Geographic Information Systems (GIS) in Soil Science and Agriculture	3
SSC 573	Introduction to Hydrologic and Water Quality Modeling	3
ST 442	Introduction to Data Science	3
TE 301	Engineering Textile Structures I: Linear Assemblies	3
TE 302	Textile Manufacturing Processes and Systems II	4
TE 303	Thermodynamics for Textile Engineers	3
TE 401	Textile Engineering Design I	4
TE 402	Textile Engineering Design II	4
TE 404	Textile Engineering Quality Improvement	3

TE 424	Textile Engineering Quality Improvement Laboratory	1
TE 435	Process Systems Analysis and Control	3
TE 440	Textile Information Systems Design	4
TE 463	Polymer Engineering	3
TE 466	Polymeric Biomaterials Engineering	3
TE 467	Mechanics of Tissues & Implants Requirements	3
TE 492	Special Topics in Textile Engineering	1-3
TE 540	Textile Information Systems Design	4
TE 566	Polymeric Biomaterials Engineering	3

Engineering Electives 300- or 400-Level

Code	Title	Hours	Counts towards
BAE 302	Transport Phenomena	3	
BAE 305	Biological Engineering Circuits	4	
BAE 321	Bioprocessing Engineering Fundamentals	3	
BAE 322	Introduction to Food Process Engineering	3	
BAE 325	Introductory Geomatics	3	
BAE 361	Analytical Methods in Engineering Design	3	
BAE 371	Fundamentals of Hydrology for Engineers	3	
BAE 376	Watershed Assessment and Water Quality Protection	3	
BAE 401	Sensors and Controls	3	

BAE 425	Industrial Microbiology and Bioprocessing	3	BAET 332	Management of Animal Environments	4
BAE 435	Precision Agriculture Technology	3	BAET 333	Processing Agricultural Products	3
BAE 451	Engineering Design I	2	BAET 343	Agricultural Electrification	4
BAE 452	Engineering Design II	2	BAET 411	Agricultural Machinery and Power Units	4
BAE 462	Machinery Design and Applications	3	BAET 432	Agricultural and Environmental Safety and Health	3
BAE 472	Irrigation and Drainage	3	BEC 462	Fundamentals of Bio-Nanotechnology	3
BAE 473	Introduction to Hydrologic and Water Quality Modeling	3	BEC 463	Fermentation of Recombinant Microorganisms	2
BAE 474	Principles and Applications of Ecological Engineering	3	BEC 483	Tissue Engineering Technologies	2
BAE 478	Circular Approach to Manure Management	3	BEC 488	Animal Cell Culture Engineering	2
BAE 481	Structures & Environment	3	BEC 562	Fundamentals of Bio-Nanotechnology	3
BAE 488	Postharvest Engineering	3	BEC 563	Fermentation of Recombinant Microorganisms	2
BAE 492	External Learning Experience	1-6	BEC 583	Tissue Engineering Technologies	2
BAE 493	Special Problems in Biological and Agricultural Engineering	1-6	BIT 463	Fermentation of Recombinant Microorganisms	2
BAE 495	Special Topics in Biological and Agricultural Engineering	1-3	BIT 464	Protein Purification	2
BAE 501	Sensors and Controls	3	BIT 563	Fermentation of Recombinant Microorganisms	2
BAE 535	Precision Agriculture Technology	3	BIT 564	Protein Purification	2
BAE 572	Irrigation and Drainage	3	BME 217	Biomedical Electronics Laboratory	1
BAE 573	Introduction to Hydrologic and Water Quality Modeling	3	BME 301	Human Physiology : Electrical Analysis	3
BAE 578	Circular Approach to Manure Management	3	BME 302	Human Physiology: Mechanical Analysis	3
BAET 323	Water Management	3	BME 315	Biotransport	3

BME 325	Biochemistry for Biomedical Engineers	3	BME 498	Undergraduate Research in Biomedical Engineering	3
BME 335	Biomaterials	3	BME 518	Wearable Biosensors and Microsystems	3
BME 342			BME 525	Bioelectricity	3
BME 345	Biomedical Solid Mechanics	3	BME 544	Orthopaedic Biomechanics	3
BME 355	Biocontrols	3	BME 566	Polymeric Biomaterials Engineering	3
BME 365	Linear Systems in Biomedical Engineering	3	BME 583	Tissue Engineering Technologies	2
BME 375	Biomedical Microcontroller Applications	3	BME 584	Fundamentals of Tissue Engineering	3
BME 385	Bioinstrumentation	3	BUS 340	Information Systems Management	3
BME 398	Biomedical Engineering Design and Manufacturing II	2	CE 225	Mechanics of Solids	3
BME 412	Biomedical Signal Processing	3	CE 282	Hydraulics	3
BME 418	Wearable Biosensors and Microsystems	3	CE 301	Civil Engineering Surveying and Geomatics	3
BME 425	Bioelectricity	3	CE 305	Introduction to Transportation Systems	3
BME 444	Orthopaedic Biomechanics	3	CE 324		1
BME 451	BME Senior Design: Product Development	3	CE 325	Structural Analysis I	3
BME 452	BME Senior Design: Product Implementation and Strategy	3	CE 327	Reinforced Concrete Design	3
BME 462	Biomaterials Characterization	3	CE 332	Civil Engineering Materials	3
BME 466	Polymeric Biomaterials Engineering	3	CE 339	Civil Engineering Systems	3
BME 467	Mechanics of Tissues & Implants Requirements	3	CE 342	Engineering Behavior of Soils and Foundations	4
BME 481	Quality Management Systems for Engineers	3	CE 365	Construction Equipment and Methods	3
BME 483	Tissue Engineering Technologies	2	CE 367	Mechanical and Electrical Systems in Buildings	3
BME 484	Fundamentals of Tissue Engineering	3	CE 373	Fundamentals of Environmental Engineering	3
BME 490	Special Topics in Biomedical Engineering	1-4	CE 378	Environmental Chemistry and Microbiology	4

CE 381	Hydraulics Systems Measurements Lab	1	CE 469	Construction Engineering Project	3
CE 383	Hydrology and Urban Water Systems	3	CE 476	Air Pollution Control	3
CE 390		1	CE 477	Principles of Solid Waste Engineering	3
CE 400		3	CE 478	Energy and Climate	3
CE 401	Transportation Planning	3	CE 479	Air Quality	3
CE 402	Traffic Operations	3	CE 480		3
CE 403	Transportation System Design	3	CE 481	Environmental Engineering Project	3
CE 405	Railroad System Planning, Design, and Operation	3	CE 484	Water Supply and Waste Water Systems	3
CE 413	Principles of Pavement Design	3	CE 487	Introduction to Coastal and Ocean Engineering	3
CE 420	Structural Engineering Project	3	CE 488	Water Resources Engineering	3
CE 421		3	CE 493	Independent Study in Civil Engineering	1-4
CE 425	Advanced Structural Analysis	3	CE 497	Current Topics in Civil Engineering	1-4
CE 426	Structural Steel Design	3	CE 498	Special Problems in Civil Engineering	1-4
CE 435	Engineering Geology	3	CE 499	Undergraduate Research Thesis in Civil, Construction and Environmental Engineering	1-3
CE 437	Civil Engineering Computing	3	CE 501	Transportation Planning	3
CE 440		3	CE 502	Traffic Operations	3
CE 443	Seepage, Earth Embankments and Retaining Structures	3	CE 503	Transportation System Design	3
CE 444	An Introduction to Foundation Engineering	3	CE 505	Railroad System Planning, Design, and Operation	3
CE 450	Civil Engineering Project	3	CE 525	Advanced Structural Analysis	3
CE 463	Construction Estimating, Planning, and Control	3	CE 564	Legal Aspects of Contracting	3
CE 464	Legal Aspects of Contracting	3	CE 568	Building Information Modeling in Construction	1
CE 466	Building Construction Engineering	3	CE 578	Energy and Climate	3
CE 468	Building Information Modeling in Construction	1			

CE 588	Water Resources Engineering	3	CHE 468	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3
CH 335	Principles of Green Chemistry	4	CHE 475	Advances in Pollution Prevention: Environmental Management for the Future	3
CHE 311	Transport Processes I	3	CHE 488	Animal Cell Culture Engineering	2
CHE 312	Transport Processes II	3	CHE 495	Honors Thesis Preparation	1
CHE 315	Chemical Process Thermodynamics	3	CHE 497	Chemical Engineering Projects I	3
CHE 316	Thermodynamics of Chemical and Phase Equilibria	3	CHE 498	Chemical Engineering Projects II	1-3
CHE 330	Chemical Engineering Lab I	4	CHE 562	Fundamentals of Bio-Nanotechnology	3
CHE 331	Chemical Engineering Lab II	2	CHE 563	Fermentation of Recombinant Microorganisms	2
CHE 395	Professional Development Seminar	1	CHE 568	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3
CHE 435	Process Systems Analysis and Control	3	CHE 575	Advances in Pollution Prevention: Environmental Management for the Future	3
CHE 446	Design and Analysis of Chemical Reactors	3	CSC 302	Introduction to Numerical Methods	3
CHE 447	Bioreactor Engineering	3	CSC 316	Data Structures and Algorithms	3
CHE 450	Chemical Engineering Design I	3	CSC 326	Software Engineering	4
CHE 451	Chemical Engineering Design II	3	CSC 333	Automata, Grammars, and Computability	3
CHE 460	Chemical Processing of Electronic Materials	3	CSC 342	Applied Web-based Client-Server Computing	3
CHE 461	Polymer Sciences and Technology	3	CSC 379	Ethics in Computing	1
CHE 462	Fundamentals of Bio-Nanotechnology	3			
CHE 463	Fermentation of Recombinant Microorganisms	2			
CHE 465	Colloidal and Nanoscale Engineering	3			
CHE 467	Polymer Rheology	3			

CSC 401	Data and Computer Communications Networks	3	CSC 461	Computer Graphics	3
CSC 402	Networking Projects	3	CSC 462	Advanced Computer Graphics Projects	3
CSC 405	Computer Security	3	CSC 467	Multimedia Technology	3
CSC 406	Architecture Of Parallel Computers	3	CSC 472	Cybersecurity Projects	3
CSC 411	Introduction to Artificial Intelligence	3	CSC 474	Network Security	3
CSC 412	Compiler Construction	3	CSC 481	Game Engine Foundations	3
CSC 414	Foundations of Cryptography	3	CSC 482	Advanced Computer Game Projects	3
CSC 415	Software Security	3	CSC 484	Building Game AI	3
CSC 416	Introduction to Combinatorics	3	CSC 492	Senior Design Project	3
CSC 417	Theory of Programming Languages	3	CSC 495	Special Topics in Computer Science	1-6
CSC 422	Automated Learning and Data Analysis	3	CSC 499	Independent Research in Computer Science	1-6
CSC 427	Introduction to Numerical Analysis I	3	CSC 506	Architecture Of Parallel Computers	3
CSC 428	Introduction to Numerical Analysis II	3	CSC 512	Compiler Construction	3
CSC 431	File Organization and Processing	3	CSC 514	Foundations of Cryptography	3
CSC 433	Privacy in the Digital Age	3	CSC 522	Automated Learning and Data Analysis	3
CSC 440	Database Management Systems	3	CSC 584	Building Game AI	3
CSC 442	Introduction to Data Science	3	E 101	Introduction to Engineering & Problem Solving	1
CSC 450	Web Services	3	E 304	Introduction to Nano Science and Technology	3
CSC 453	Introduction to Internet of Things (IoT) Systems	3	E 480	Namibia Wildlife Aerial Observatory	6
CSC 454	Human-Computer Interaction	3	E 490	Fundamentals of Engineering(FE) Exam Preparation	1
CSC 455	Social Computing and Decentralized Artificial Intelligence	3	E 497	Engineering Research Projects	1-3
CSC 456	Computer Architecture and Multiprocessors	3	ECE 301	Linear Systems	3
			ECE 302	Microelectronics	4
			ECE 303	Electromagnetic Fields	3

ECE 305	Principles of Electromechanical Energy Conversion	3	ECE 421	Introduction to Signal Processing	3
ECE 306	Introduction to Embedded Systems	3	ECE 422	Transmission Lines and Antennas for Wireless	3
ECE 308	Elements of Control Systems	3	ECE 423	Introduction to Photonics and Optical Communications	3
ECE 309	Data Structures and Object-Oriented Programming for Electrical and Computer Engineers	3	ECE 424	Radio System Design	3
ECE 310	Design of Complex Digital Systems	3	ECE 426	Analog Electronics Laboratory	3
ECE 331	Principles of Electrical Engineering	3	ECE 434	Fundamentals of Power Electronics	3
ECE 380	Engineering Profession for Electrical Engineers	1	ECE 436	Digital Control Systems	3
ECE 381	Engineering Profession for Computer Engineers	1	ECE 442	Introduction to Integrated Circuit Technology and Fabrication	3
ECE 383	Introduction to Entrepreneurship and New Product Development	1	ECE 451	Power System Analysis	3
ECE 384	Practical Engineering Prototyping	3	ECE 452	Renewable Electric Energy Systems	3
ECE 402	Communications Engineering	3	ECE 453	Electric Motor Drives	3
ECE 403	Electronics Engineering	3	ECE 455	Industrial Robot Systems	3
ECE 404	Introduction to Solid-State Devices	3	ECE 456	Mechatronics	3
ECE 406	Architecture Of Parallel Computers	3	ECE 460	Embedded System Architectures	3
ECE 407	Introduction to Computer Networking	3	ECE 461	Embedded System Analysis and Optimization	3
ECE 418	Wearable Biosensors and Microsystems	3	ECE 463	Microprocessor Architecture	3
ECE 420	Wireless Communication Systems	3	ECE 464	ASIC and FPGA Design with Verilog	3
			ECE 466	Compiler Optimization and Scheduling	3
			ECE 468	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3
			ECE 470	Internetworking	3

ECE 482	Engineering Entrepreneurship and New Product Development I	3	ECE 568	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3
ECE 483	Engineering Entrepreneurship and New Product Development II	3	ECE 588	Systems Biology Modeling of Plant Regulation	3
ECE 484	Electrical and Computer Engineering Senior Design I	3	ECE 589	Solid State Solar and Thermal Energy Harvesting	3
ECE 485	Electrical and Computer Engineering Senior Design II	3	FB 576	Environmental Life Cycle Analysis	3
ECE 488	Systems Biology Modeling of Plant Regulation	3	ISE 311	Engineering Economic Analysis	3
ECE 489	Solid State Solar and Thermal Energy Harvesting	3	ISE 315	Introduction to Computer-Aided Manufacturing	1
ECE 492	Special Topics in Electrical and Computer Engineering	1-4	ISE 316	Manufacturing Engineering I - Processes	3
ECE 495	Individual Study in ECE	1-3	ISE 352	Fundamentals of Human-Machine Systems Design	3
ECE 498	Special Projects in ECE	1-3	ISE 361	Deterministic Models in Industrial Engineering	3
ECE 506	Architecture Of Parallel Computers	3	ISE 362	Stochastic Models in Industrial Engineering	3
ECE 518	Wearable Biosensors and Microsystems	3	ISE 408	Design and Control of Production and Service Systems	3
ECE 524	Radio System Design	3	ISE 411	Decision Making and Game Theory for Supply Chains	3
ECE 552	Renewable Electric Energy Systems	3	ISE 413	Humanitarian Logistics	3
ECE 556	Mechatronics	3	ISE 416	Manufacturing Engineering II - Automation	3
ECE 560	Embedded System Architectures	3	ISE 417	Database Applications in Industrial & Systems Engineering	3
ECE 561	Embedded System Analysis and Optimization	3			
ECE 563	Microprocessor Architecture	3			
ECE 564	ASIC and FPGA Design with Verilog	3			
ECE 566	Compiler Optimization and Scheduling	3			

ISE 435	Python Programming for Industrial & Systems Engineers	3	MA 428	Introduction to Numerical Analysis II	3
ISE 437	Data Analytics for Industrial Engineering	3	MA 514	Foundations of Cryptography	3
ISE 441	Introduction to Simulation	3	MAE 201	Thermal-Fluid Sciences	3
ISE 443	Quality Design and Control	3	MAE 214	Solid Mechanics	3
ISE 447	Applications of Data Science in Healthcare	3	MAE 253	Experimental Aerodynamics I	1
ISE 452	Advanced Human-Machine Systems Design	3	MAE 302	Engineering Thermodynamics II	3
ISE 453	Modeling and Analysis of Supply Chains	3	MAE 305	Mechanical Engineering Laboratory I	1
ISE 462	Advanced Stochastic Models in Industrial Engineering	3	MAE 306	Mechanical Engineering Laboratory II	1
ISE 489	Special Topics in Industrial and Systems Engineering	1-3	MAE 308	Fluid Mechanics	3
ISE 495	Project Work in Industrial Engineering	1-3	MAE 310	Heat Transfer Fundamentals	3
ISE 498	Senior Design Project	3	MAE 315	Fundamentals of Vibrations	3
ISE 511	Decision Making and Game Theory for Supply Chains	3	MAE 316	Strength of Mechanical Components	3
ISE 513	Humanitarian Logistics	3	MAE 342	Introduction to Automotive Engineering	3
ISE 535	Python Programming for Industrial & Systems Engineers	3	MAE 351	Aerodynamics II	3
ISE 547	Applications of Data Science in Healthcare	3	MAE 352	Experimental Aerodynamics II	1
MA 414	Foundations of Cryptography	3	MAE 361	Dynamics & Controls	3
MA 416	Introduction to Combinatorics	3	MAE 371	Aerospace Structures I	3
MA 427	Introduction to Numerical Analysis I	3	MAE 372	Aerospace Vehicle Structures Lab	1
			MAE 403	Air Conditioning	3
			MAE 405	Controls Lab	1
			MAE 406	Energy Conservation in Industry	3
			MAE 407	Steam and Gas Turbines	3
			MAE 408	Internal Combustion Engine Fundamentals	3
			MAE 410	Modern Manufacturing Processes	3
			MAE 412	Design of Thermal System	3

MAE 413	Design of Mechanical Systems	3	MAE 484	Engineering Entrepreneurship Senior Design Lab	1
MAE 415	Mechanical Engineering Design I	3	MAE 495	Special Topics in Mechanical and Aerospace Engineering	1-3
MAE 416	Mechanical Engineering Design II	4	MAE 496	Undergraduate Project Work in Mechanical and Aerospace Engineering	1-6
MAE 420	Dynamic Analysis of Human Movement	3	MAE 520	Dynamic Analysis of Human Movement	3
MAE 421	Design of Solar Energy Systems	3	MAE 526	Fundamentals of Product Design	3
MAE 426	Fundamentals of Product Design	3	MEA 479	Air Quality	3
MAE 430	Applied Finite Element Analysis	3	MSE 260	Mathematical Methods for Materials Engineers	3
MAE 435	Principles of Automatic Control	3	MSE 300	Structure of Materials at the Nanoscale	3
MAE 440	Non-Destructive Testing and Evaluation	3	MSE 301	Introduction to Thermodynamics of Materials	3
MAE 451	Experimental Aerodynamics III	1	MSE 320	Introduction to Defects in Solids	3
MAE 452	Aerodynamics of V/STOL Vehicles	3	MSE 335	Experimental Methods for Analysis of Material Properties	2
MAE 455	Boundary Layer Theory	3	MSE 355	Electrical, Magnetic and Optical Properties of Materials	3
MAE 456	Computational Methods in Aerodynamics	3	MSE 360	Kinetic Processes in Materials	3
MAE 457	Flight Vehicle Stability and Control	3	MSE 370	Microstructure of Inorganic Materials	3
MAE 458	Propulsion	3	MSE 380	Microstructure of Organic Materials	3
MAE 459	Rocket Propulsion	3	MSE 409	Nuclear Materials	3
MAE 467	Introduction to Space Flight	3	MSE 420	Mechanical Properties of Materials	3
MAE 472	Aerospace Structures II	3	MSE 423	Introduction to Materials Engineering Design	1
MAE 480	Aerospace Vehicle Design I	3			
MAE 481	Aerospace Vehicle Design II	3			
MAE 482	Engineering Entrepreneurship and New Product Development I	3			
MAE 483	Engineering Entrepreneurship and New Product Development II	3			

MSE 440	Processing of Metallic Materials	3	NE 403	Nuclear Reactor Laboratory	2
MSE 445	Ceramic Processing	3	NE 404	Radiation Safety and Shielding	3
MSE 455	Polymer Technology and Engineering	3	NE 405	Reactor Systems	3
MSE 456	Composite Materials	3	NE 406	Nuclear Engineering Senior Design Preparation	1
MSE 460	Microelectronic Materials	3	NE 408	Nuclear Engineering Design Project	3
MSE 465	Introduction to Nanomaterials	3	NE 409	Nuclear Materials	3
MSE 470	Materials Science and Engineering Senior Design Project	3	NE 412	Nuclear Fuel Cycles	3
MSE 480	Materials Forensics and Degradation	3	NE 418	Nuclear Power Plant Instrumentation	3
MSE 485	Biomaterials	3	NE 419	Introduction to Nuclear Energy	3
MSE 489	Solid State Solar and Thermal Energy Harvesting	3	NE 431	Nuclear Waste Management	3
MSE 490	Special Topics in Materials Engineering	1-4	NE 490	Health Physics and Radiological Emergency Response	3
MSE 495	Materials Engineering Projects	1-6	NE 491	Special Topics in Nuclear Engineering	1-4
MSE 509	Nuclear Materials	3	NE 501	Reactor Analysis and Design	3
MSE 540	Processing of Metallic Materials	3	NE 509	Nuclear Materials	3
MSE 545	Ceramic Processing	3	NE 531	Nuclear Waste Management	3
MSE 556	Composite Materials	3	NE 590	Health Physics and Radiological Emergency Response	3
MSE 565	Introduction to Nanomaterials	3	PB 488/588	Systems Biology Modeling of Plant Regulation	3
MSE 580	Materials Forensics and Degradation	3	PSE 322	Wet End and Polymer Chemistry	4
MSE 589	Solid State Solar and Thermal Energy Harvesting	3	PSE 332	Wood and Pulp Chemistry	3
NE 301	Fundamentals of Nuclear Engineering	3	PSE 335	Principles of Green Chemistry	4
NE 400	Nuclear Reactor Energy Conversion	4	PSE 355	Pulp and Paper Unit Processes I	3
NE 401	Reactor Analysis and Design	3	PSE 360	Pulp and Paper Unit Processes II	3
NE 402	Reactor Engineering	4	PSE 370	Pulp and Paper Products and Markets	3

PSE 371	Pulping Process Analysis	3
PSE 415	Paper Industry Strategic Project Analysis	3
PSE 416	Process Design and Analysis	3
PSE 417	Modeling & Simulation of Pulp & Paper Processes	3
PSE 425	Bioenergy & Biomaterials Engineering	3
PSE 465	Process Engineering	3
PSE 472	Paper Process Analysis	3
PSE 475	Process Control in Pulp and Paper	3
PSE 476	Environmental Life Cycle Analysis	3
PSE 493	Independent Study in Paper Science & Engineering	1-6
PSE 494	Independent Study in Paper Science & Engineering	1-6
PY 414/514	Electromagnetism I	3
PY 415/515	Electromagnetism II	3
PY 489/589	Solid State Solar and Thermal Energy Harvesting	3
SSC 440/540	Geographic Information Systems (GIS) in Soil Science and Agriculture	3
SSC 473/573	Introduction to Hydrologic and Water Quality Modeling	3
ST 442	Introduction to Data Science	3
TE 301	Engineering Textile Structures I: Linear Assemblies	3

TE 302	Textile Manufacturing Processes and Systems II	4
TE 303	Thermodynamics for Textile Engineers	3
TE 401	Textile Engineering Design I	4
TE 402	Textile Engineering Design II	4
TE 404	Textile Engineering Quality Improvement	3
TE 424	Textile Engineering Quality Improvement Laboratory	1
TE 435	Process Systems Analysis and Control	3
TE 440	Textile Information Systems Design	4
TE 463	Polymer Engineering	3
TE 466	Polymeric Biomaterials Engineering	3
TE 467	Mechanics of Tissues & Implants Requirements	3
TE 492	Special Topics in Textile Engineering	1-3
TE 540	Textile Information Systems Design	4
TE 566	Polymeric Biomaterials Engineering	3

Communication Electives

Code	Title	Hours	Counts towards
COM 110	Public Speaking	3	
COM 112	Interpersonal Communication	3	
COM 201	Introduction to Persuasion Theory	3	
COM 202	Small Group Communication	3	

ENG 331	Communication for Engineering and Technology	3
ENG 333	Communication for Science and Research	3

Engineering Topics IV Electives

Code	Title	Hours	Counts towards
BAE 302	Transport Phenomena	3	
BAE 322	Introduction to Food Process Engineering	3	
BAE 371	Fundamentals of Hydrology for Engineers	3	
BAE 401	Sensors and Controls	3	
BAE 425	Industrial Microbiology and Bioprocessing	3	
BAE 435	Precision Agriculture Technology	3	
BAE 451	Engineering Design I	2	
BAE 452	Engineering Design II	2	
BAE 462	Machinery Design and Applications	3	
BAE 472	Irrigation and Drainage	3	
BAE 473	Introduction to Hydrologic and Water Quality Modeling	3	
BAE 474	Principles and Applications of Ecological Engineering	3	
BAE 478	Circular Approach to Manure Management	3	
BAE 481	Structures & Environment	3	
BAE 488	Postharvest Engineering	3	
BAE 492	External Learning Experience	1-6	
BAE 493	Special Problems in Biological and Agricultural Engineering	1-6	

BAE 495	Special Topics in Biological and Agricultural Engineering	1-3
BAE 501	Sensors and Controls	3
BAE 535	Precision Agriculture Technology	3
BAE 572	Irrigation and Drainage	3
BAE 573	Introduction to Hydrologic and Water Quality Modeling	3
BAE 578	Circular Approach to Manure Management	3
BAET 432	Agricultural and Environmental Safety and Health	3
BEC 462	Fundamentals of Bio-Nanotechnology	3
BEC 463	Fermentation of Recombinant Microorganisms	2
BEC 483	Tissue Engineering Technologies	2
BEC 488	Animal Cell Culture Engineering	2
BEC 562	Fundamentals of Bio-Nanotechnology	3
BEC 563	Fermentation of Recombinant Microorganisms	2
BIT 463	Fermentation of Recombinant Microorganisms	2
BIT 464	Protein Purification	2
BIT 563	Fermentation of Recombinant Microorganisms	2
BIT 564	Protein Purification	2
BME 375	Biomedical Microcontroller Applications	3
BME 385	Bioinstrumentation	3
BME 412	Biomedical Signal Processing	3

BME 418	Wearable Biosensors and Microsystems	3	CE 401	Transportation Planning	3
BME 425	Bioelectricity	3	CE 402	Traffic Operations	3
BME 444	Orthopaedic Biomechanics	3	CE 403	Transportation System Design	3
BME 451	BME Senior Design: Product Development	3	CE 405	Railroad System Planning, Design, and Operation	3
BME 452	BME Senior Design: Product Implementation and Strategy	3	CE 413	Principles of Pavement Design	3
BME 462	Biomaterials Characterization	3	CE 420	Structural Engineering Project	3
BME 466	Polymeric Biomaterials Engineering	3	CE 421		3
BME 467	Mechanics of Tissues & Implants Requirements	3	CE 425	Advanced Structural Analysis	3
BME 481	Quality Management Systems for Engineers	3	CE 426	Structural Steel Design	3
BME 483	Tissue Engineering Technologies	2	CE 435	Engineering Geology	3
BME 484	Fundamentals of Tissue Engineering	3	CE 437	Civil Engineering Computing	3
BME 490	Special Topics in Biomedical Engineering	1-4	CE 440		3
BME 498	Undergraduate Research in Biomedical Engineering	3	CE 443	Seepage, Earth Embankments and Retaining Structures	3
BME 518	Wearable Biosensors and Microsystems	3	CE 444	An Introduction to Foundation Engineering	3
BME 525	Bioelectricity	3	CE 450	Civil Engineering Project	3
BME 544	Orthopaedic Biomechanics	3	CE 463	Construction Estimating, Planning, and Control	3
BME 566	Polymeric Biomaterials Engineering	3	CE 464	Legal Aspects of Contracting	3
BME 583	Tissue Engineering Technologies	2	CE 466	Building Construction Engineering	3
BME 584	Fundamentals of Tissue Engineering	3	CE 468	Building Information Modeling in Construction	1
CE 365	Construction Equipment and Methods	3	CE 469	Construction Engineering Project	3
CE 400		3	CE 476	Air Pollution Control	3
			CE 477	Principles of Solid Waste Engineering	3
			CE 478	Energy and Climate	3

CE 479	Air Quality	3
CE 480		3
CE 481	Environmental Engineering Project	3
CE 484	Water Supply and Waste Water Systems	3
CE 487	Introduction to Coastal and Ocean Engineering	3
CE 488	Water Resources Engineering	3
CE 493	Independent Study in Civil Engineering	1-4
CE 497	Current Topics in Civil Engineering	1-4
CE 498	Special Problems in Civil Engineering	1-4
CE 499	Undergraduate Research Thesis in Civil, Construction and Environmental Engineering	1-3
CE 501	Transportation Planning	3
CE 502	Traffic Operations	3
CE 503	Transportation System Design	3
CE 505	Railroad System Planning, Design, and Operation	3
CE 525	Advanced Structural Analysis	3
CE 564	Legal Aspects of Contracting	3
CE 568	Building Information Modeling in Construction	1
CE 578	Energy and Climate	3
CE 588	Water Resources Engineering	3
CHE 435	Process Systems Analysis and Control	3
CHE 446	Design and Analysis of Chemical Reactors	3

CHE 447	Bioreactor Engineering	3
CHE 450	Chemical Engineering Design I	3
CHE 451	Chemical Engineering Design II	3
CHE 460	Chemical Processing of Electronic Materials	3
CHE 461	Polymer Sciences and Technology	3
CHE 462	Fundamentals of Bio-Nanotechnology	3
CHE 463	Fermentation of Recombinant Microorganisms	2
CHE 465	Colloidal and Nanoscale Engineering	3
CHE 467	Polymer Rheology	3
CHE 468	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3
CHE 475	Advances in Pollution Prevention: Environmental Management for the Future	3
CHE 488	Animal Cell Culture Engineering	2
CHE 495	Honors Thesis Preparation	1
CHE 497	Chemical Engineering Projects I	3
CHE 498	Chemical Engineering Projects II	1-3
CHE 562	Fundamentals of Bio-Nanotechnology	3
CHE 563	Fermentation of Recombinant Microorganisms	2

CHE 568	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3	CSC 453	Introduction to Internet of Things (IoT) Systems	3
CHE 575	Advances in Pollution Prevention: Environmental Management for the Future	3	CSC 454	Human-Computer Interaction	3
CSC 401	Data and Computer Communications Networks	3	CSC 455	Social Computing and Decentralized Artificial Intelligence	3
CSC 402	Networking Projects	3	CSC 456	Computer Architecture and Multiprocessors	3
CSC 405	Computer Security	3	CSC 461	Computer Graphics	3
CSC 406	Architecture Of Parallel Computers	3	CSC 462	Advanced Computer Graphics Projects	3
CSC 411	Introduction to Artificial Intelligence	3	CSC 467	Multimedia Technology	3
CSC 412	Compiler Construction	3	CSC 472	Cybersecurity Projects	3
CSC 414	Foundations of Cryptography	3	CSC 474	Network Security	3
CSC 415	Software Security	3	CSC 481	Game Engine Foundations	3
CSC 416	Introduction to Combinatorics	3	CSC 482	Advanced Computer Game Projects	3
CSC 417	Theory of Programming Languages	3	CSC 484	Building Game AI	3
CSC 422	Automated Learning and Data Analysis	3	CSC 492	Senior Design Project	3
CSC 427	Introduction to Numerical Analysis I	3	CSC 495	Special Topics in Computer Science	1-6
CSC 428	Introduction to Numerical Analysis II	3	CSC 499	Independent Research in Computer Science	1-6
CSC 431	File Organization and Processing	3	CSC 506	Architecture Of Parallel Computers	3
CSC 433	Privacy in the Digital Age	3	CSC 512	Compiler Construction	3
CSC 440	Database Management Systems	3	CSC 514	Foundations of Cryptography	3
CSC 442	Introduction to Data Science	3	CSC 522	Automated Learning and Data Analysis	3
CSC 450	Web Services	3	CSC 584	Building Game AI	3
			E 101	Introduction to Engineering & Problem Solving	1
			E 480	Namibia Wildlife Aerial Observatory	6

E 490	Fundamentals of Engineering(FE) Exam Preparation	1	ECE 455	Industrial Robot Systems	3
E 497	Engineering Research Projects	1-3	ECE 456	Mechatronics	3
ECE 308	Elements of Control Systems	3	ECE 460	Embedded System Architectures	3
ECE 310	Design of Complex Digital Systems	3	ECE 461	Embedded System Analysis and Optimization	3
ECE 402	Communications Engineering	3	ECE 463	Microprocessor Architecture	3
ECE 403	Electronics Engineering	3	ECE 464	ASIC and FPGA Design with Verilog	3
ECE 404	Introduction to Solid-State Devices	3	ECE 466	Compiler Optimization and Scheduling	3
ECE 406	Architecture Of Parallel Computers	3	ECE 468	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3
ECE 407	Introduction to Computer Networking	3	ECE 470	Internetworking	3
ECE 421	Introduction to Signal Processing	3	ECE 482	Engineering Entrepreneurship and New Product Development I	3
ECE 422	Transmission Lines and Antennas for Wireless	3	ECE 483	Engineering Entrepreneurship and New Product Development II	3
ECE 423	Introduction to Photonics and Optical Communications	3	ECE 484	Electrical and Computer Engineering Senior Design I	3
ECE 424	Radio System Design	3	ECE 485	Electrical and Computer Engineering Senior Design II	3
ECE 426	Analog Electronics Laboratory	3	ECE 488	Systems Biology Modeling of Plant Regulation	3
ECE 434	Fundamentals of Power Electronics	3	ECE 489	Solid State Solar and Thermal Energy Harvesting	3
ECE 436	Digital Control Systems	3	ECE 492	Special Topics in Electrical and Computer Engineering	1-4
ECE 442	Introduction to Integrated Circuit Technology and Fabrication	3	ECE 495	Individual Study in ECE	1-3
ECE 451	Power System Analysis	3	ECE 498	Special Projects in ECE	1-3
ECE 452	Renewable Electric Energy Systems	3			
ECE 453	Electric Motor Drives	3			

ECE 506	Architecture Of Parallel Computers	3	ISE 416	Manufacturing Engineering II - Automation	3
ECE 518	Wearable Biosensors and Microsystems	3	ISE 417	Database Applications in Industrial & Systems Engineering	3
ECE 524	Radio System Design	3	ISE 435	Python Programming for Industrial & Systems Engineers	3
ECE 552	Renewable Electric Energy Systems	3	ISE 437	Data Analytics for Industrial Engineering	3
ECE 556	Mechatronics	3	ISE 441	Introduction to Simulation	3
ECE 560	Embedded System Architectures	3	ISE 443	Quality Design and Control	3
ECE 561	Embedded System Analysis and Optimization	3	ISE 447	Applications of Data Science in Healthcare	3
ECE 563	Microprocessor Architecture	3	ISE 452	Advanced Human-Machine Systems Design	3
ECE 564	ASIC and FPGA Design with Verilog	3	ISE 453	Modeling and Analysis of Supply Chains	3
ECE 566	Compiler Optimization and Scheduling	3	ISE 462	Advanced Stochastic Models in Industrial Engineering	3
ECE 568	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3	ISE 489	Special Topics in Industrial and Systems Engineering	1-3
ECE 588	Systems Biology Modeling of Plant Regulation	3	ISE 495	Project Work in Industrial Engineering	1-3
ECE 589	Solid State Solar and Thermal Energy Harvesting	3	ISE 498	Senior Design Project	3
FB 576	Environmental Life Cycle Analysis	3	ISE 511	Decision Making and Game Theory for Supply Chains	3
ISE 362	Stochastic Models in Industrial Engineering	3	ISE 513	Humanitarian Logistics	3
ISE 408	Design and Control of Production and Service Systems	3	ISE 535	Python Programming for Industrial & Systems Engineers	3
ISE 411	Decision Making and Game Theory for Supply Chains	3	ISE 547	Applications of Data Science in Healthcare	3
ISE 413	Humanitarian Logistics	3			

MA 414	Foundations of Cryptography	3	MAE 440	Non-Destructive Testing and Evaluation	3
MA 416	Introduction to Combinatorics	3	MAE 451	Experimental Aerodynamics III	1
MA 427	Introduction to Numerical Analysis I	3	MAE 452	Aerodynamics of V/STOL Vehicles	3
MA 428	Introduction to Numerical Analysis II	3	MAE 455	Boundary Layer Theory	3
MA 514	Foundations of Cryptography	3	MAE 456	Computational Methods in Aerodynamics	3
MAE 342	Introduction to Automotive Engineering	3	MAE 457	Flight Vehicle Stability and Control	3
MAE 361	Dynamics & Controls	3	MAE 458	Propulsion	3
MAE 372	Aerospace Vehicle Structures Lab	1	MAE 459	Rocket Propulsion	3
MAE 403	Air Conditioning	3	MAE 467	Introduction to Space Flight	3
MAE 405	Controls Lab	1	MAE 472	Aerospace Structures II	3
MAE 406	Energy Conservation in Industry	3	MAE 480	Aerospace Vehicle Design I	3
MAE 407	Steam and Gas Turbines	3	MAE 481	Aerospace Vehicle Design II	3
MAE 408	Internal Combustion Engine Fundamentals	3	MAE 482	Engineering Entrepreneurship and New Product Development I	3
MAE 410	Modern Manufacturing Processes	3	MAE 483	Engineering Entrepreneurship and New Product Development II	3
MAE 412	Design of Thermal System	3	MAE 484	Engineering Entrepreneurship Senior Design Lab	1
MAE 413	Design of Mechanical Systems	3	MAE 495	Special Topics in Mechanical and Aerospace Engineering	1-3
MAE 415	Mechanical Engineering Design I	3	MAE 496	Undergraduate Project Work in Mechanical and Aerospace Engineering	1-6
MAE 416	Mechanical Engineering Design II	4	MAE 520	Dynamic Analysis of Human Movement	3
MAE 420	Dynamic Analysis of Human Movement	3	MAE 526	Fundamentals of Product Design	3
MAE 421	Design of Solar Energy Systems	3	MEA 479	Air Quality	3
MAE 426	Fundamentals of Product Design	3	MSE 409	Nuclear Materials	3
MAE 430	Applied Finite Element Analysis	3	MSE 420	Mechanical Properties of Materials	3
MAE 435	Principles of Automatic Control	3			

MSE 423	Introduction to Materials Engineering Design	1	NE 404	Radiation Safety and Shielding	3
MSE 440	Processing of Metallic Materials	3	NE 405	Reactor Systems	3
MSE 445	Ceramic Processing	3	NE 406	Nuclear Engineering Senior Design Preparation	1
MSE 455	Polymer Technology and Engineering	3	NE 408	Nuclear Engineering Design Project	3
MSE 456	Composite Materials	3	NE 409	Nuclear Materials	3
MSE 460	Microelectronic Materials	3	NE 412	Nuclear Fuel Cycles	3
MSE 465	Introduction to Nanomaterials	3	NE 418	Nuclear Power Plant Instrumentation	3
MSE 470	Materials Science and Engineering Senior Design Project	3	NE 419	Introduction to Nuclear Energy	3
MSE 480	Materials Forensics and Degradation	3	NE 431	Nuclear Waste Management	3
MSE 485	Biomaterials	3	NE 490	Health Physics and Radiological Emergency Response	3
MSE 489	Solid State Solar and Thermal Energy Harvesting	3	NE 491	Special Topics in Nuclear Engineering	1-4
MSE 490	Special Topics in Materials Engineering	1-4	NE 501	Reactor Analysis and Design	3
MSE 509	Nuclear Materials	3	NE 509	Nuclear Materials	3
MSE 540	Processing of Metallic Materials	3	NE 531	Nuclear Waste Management	3
MSE 545	Ceramic Processing	3	NE 590	Health Physics and Radiological Emergency Response	3
MSE 556	Composite Materials	3	PB 488/588	Systems Biology Modeling of Plant Regulation	3
MSE 565	Introduction to Nanomaterials	3	PSE 415	Paper Industry Strategic Project Analysis	3
MSE 580	Materials Forensics and Degradation	3	PSE 416	Process Design and Analysis	3
MSE 589	Solid State Solar and Thermal Energy Harvesting	3	PSE 417	Modeling & Simulation of Pulp & Paper Processes	3
NE 400	Nuclear Reactor Energy Conversion	4	PSE 425	Bioenergy & Biomaterials Engineering	3
NE 401	Reactor Analysis and Design	3	PSE 465	Process Engineering	3
NE 402	Reactor Engineering	4	PSE 472	Paper Process Analysis	3
NE 403	Nuclear Reactor Laboratory	2	PSE 475	Process Control in Pulp and Paper	3

PSE 476	Environmental Life Cycle Analysis	3
PSE 493	Independent Study in Paper Science & Engineering	1-6
PSE 494	Independent Study in Paper Science & Engineering	1-6
PY 414	Electromagnetism I	3
PY 415	Electromagnetism II	3
PY 489	Solid State Solar and Thermal Energy Harvesting	3
PY 514	Electromagnetism I	3
PY 515	Electromagnetism II	3
PY 589	Solid State Solar and Thermal Energy Harvesting	3
SSC 440/540	Geographic Information Systems (GIS) in Soil Science and Agriculture	3
SSC 473/573	Introduction to Hydrologic and Water Quality Modeling	3
ST 442	Introduction to Data Science	3
TE 401	Textile Engineering Design I	4
TE 402	Textile Engineering Design II	4
TE 404	Textile Engineering Quality Improvement	3
TE 424	Textile Engineering Quality Improvement Laboratory	1
TE 435	Process Systems Analysis and Control	3

TE 440/540	Textile Information Systems Design	4
TE 463	Polymer Engineering	3
TE 466/566	Polymeric Biomaterials Engineering	3
TE 467	Mechanics of Tissues & Implants Requirements	3
TE 492	Special Topics in Textile Engineering	1-3

Semester Sequence

This is a sample.

First Year

Fall Semester		Hours
CH 101	Chemistry - A Molecular Science ¹	3
CH 102	General Chemistry Laboratory ¹	1
E 101	Introduction to Engineering & Problem Solving ²	1
E 115	Introduction to Computing Environments ²	1
ENG 101	Academic Writing and Research ²	4
MA 141	Calculus I ¹	4
Hours		14

Spring Semester

Select one of the following Economics courses:		3
EC 205	Fundamentals of Economics	
EC 201	Principles of Microeconomics	
ARE 201	Introduction to Agricultural & Resource Economics	
MA 241	Calculus II ¹	4
PY 205	Physics for Engineers and Scientists I ¹	3
PY 206	Physics for Engineers and Scientists I Laboratory	1
Engineering Topics Elective (p. 2)		3
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		1
Hours		15

Second Year

Fall Semester		Hours
MA 242	Calculus III	4
PY 208	Physics for Engineers and Scientists II	3
PY 209	Physics for Engineers and Scientists II Laboratory	1
Engineering Topics II Elective (p. 2)		3
Engineering Elective 200-Level (p. 2)		3
GEP Requirement (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/)		3
Hours		17

Spring Semester

Select one of the following Math Electives: 3

MA 303	Linear Analysis	
MA 341	Applied Differential Equations I	
MA 405	Introduction to Linear Algebra	

Basic Science Elective (p. 4) 4

Engineering Topics II Elective (p. 2) 3

Engineering Elective 200-Level (p. 2) 3

GEP Requirement (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/>) 3GEP Health and Exercise Studies (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/>) 1**Hours 17****Third Year****Fall Semester**

Engineering Topics III Elective (p. 4) 3

Engineering Elective 300- or 400-Level (p. 15) 3

Engineering Elective 300- or 400-Level (p. 15) 3

Engineering Elective 300- or 400-Level (p. 15) 3

GEP Requirement (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/>) 3**Hours 15****Spring Semester**

Communication Elective (p. 26) 3

Engineering Topics III Elective (p. 4) 3

Engineering Elective 300- or 400-Level (p. 15) 3

Engineering Elective 300- or 400-Level (p. 15) 3

GEP Requirement (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/>) 2-3**Hours 14-15****Fourth Year****Fall Semester**

Engineering Elective 300 or 400 Level (p. 15) 3

Engineering Elective 400-Level (p. 15) 3

BSE Topic Elective (p. 4) 3

BSE Topic Elective (p. 4) 3

GEP Requirement (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/>) 3**Hours 15****Spring Semester**

Engineering Topics IV Elective (p. 27) 3

Engineering Elective 400-Level (p. 15) 3

BSE Topic Elective (p. 4) 3

BSE Topic Elective (p. 4) 3

GEP Requirement (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/>) 3**Hours 15****Total Hours 122-123**¹ A grade of C or higher is required.² A grade of C- or higher is required.**Career Opportunities****Career Titles**

- Aeronautical & Aerospace Engineer
- Aerospace Engineering Technician
- Agricultural Engineer
- Airport Engineer
- Automotive Engineer
- Biomedical Engineer
- Ceramic Engineer
- Chemical Engineer
- Civil Engineer
- Civil Engineering Technician
- Clinical Data Managers
- Computer Network Architects
- Computer Systems Engineer
- Cost Analysis Engineer
- Cost Estimator
- Electronics Engineer
- Energy Engineer
- Engineering Professor
- Environmental Engineer
- Factory Layout Engineer
- Fire Prevention Engineer
- Human Factors Engineers and Ergonomists
- Industrial Engineer
- Industrial Engineering Technician
- Industrial Safety and Health Engineer
- Irrigation Engineer
- Logistics Engineers
- Marine Engineer
- Marine Surveyor
- Materials Engineer
- Mechanical Engineer
- Mechanical Engineering Technician
- Meteorologist
- Mining Engineer
- Model Maker
- Natural Sciences Managers
- Nuclear Engineer
- Nuclear Fuels Research Engineer
- Operating Engineer
- Petroleum Engineer
- Photogrammetrist
- Physicist
- Product Safety Engineer
- Quality Control Managers
- Radiation Protection Engineer
- Sanitary Engineer
- Ship Engineers
- Software Developers - Applications
- Soil Engineer

- Solar Energy Systems Designer
- Solar Energy Systems Engineers
- Sound Engineering Technicians
- Structural Engineer
- Surveying Technicians
- Surveyor
- Sustainability Specialists
- Tool and Machine Designer
- Transportation Engineer
- Urban and Regional Planner
- Wind Energy Engineer

Learn More About Careers

NCcareers.org (<https://nccareers.org/>)

Explore North Carolina's central online resource for students, parents, educators, job seekers and career counselors looking for high quality job and career information.

Occupational Outlook Handbook (<https://www.bls.gov/ooh/>)

Browse the Occupational Outlook Handbook published by the Bureau of Labor Statistics to view state and area employment and wage statistics. You can also identify and compare similar occupations based on your interests.

Career One Stop Videos (<https://www.careeronestop.org/>)

View videos that provide career details and information on wages, employment trends, skills needed, and more for any occupation. Sponsored by the U.S. Department of Labor.

Focus 2 Career Assessment (<https://careers.dasa.ncsu.edu/explore-careers/career-assessments/>) (NC State student email address required)

This career, major and education planning system is available to current NC State students to learn about how your values, interests, competencies, and personality fit into the NC State majors and your future career. An NC State email address is required to create an account. Make an appointment with your career counselor (<https://careers.dasa.ncsu.edu/about/hours-appointments/>) to discuss the results.