

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. 3)		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. 3)		3
Engineering Elective 300 or 400 Level (p. 8)		3
Engineering Elective 300 or 400 Level (p. 8)		3

Engineering Elective 300 or 400 Level (p. 8)	3
Hours	12

Spring Semester

Communication Elective (p. 12)	3
Engineering Topics III Elective (p. 3)	3
Engineering Elective 300 or 400 Level (p. 8)	3
Engineering Elective 300 or 400 Level (p. 8)	3
Hours	12

Fourth Year

Fall Semester		Hours
Engineering Elective 300 or 400 Level (p. 8)		3
Engineering Elective 400 Level (p. 8)		3
BSE Topic Elective (p. 3) ³		3
BSE Topic Elective (p. 3) ³		3
Hours		12

Spring Semester

Engineering Topics IV Elective (p. 12)	3
Engineering Elective 300 or 400 Level Elective 400-Level (p. 8)	3
BSE Topic Elective (p. 3) ³	3
BSE Topic Elective (p. 3) 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
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 Elective (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/)	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)	
	GEP Foundations of American Democracy (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-fad/) (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
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
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
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
BME 298	Biomedical Engineering Design and Manufacturing I	2
BME 299	BME Design and Manufacturing I Lab	1
CE 214	Engineering Mechanics-Statics	3
CE 215		

CE 225	Mechanics of Solids	3
CE 250	Introduction to Sustainable Infrastructure	3
CE 263	Introduction to Construction Engineering	3
CE 282	Hydraulics	3
CE 297	Current Topics in Civil Engineering	1-4
CHE 205	Chemical Process Principles	4
CHE 225	Introduction to Chemical Engineering Analysis	3
CSC 200		
CSC 216	Software Development Fundamentals	3
CSC 217	Software Development Fundamentals Lab	1
CSC 226	Discrete Mathematics	3
CSC 236	Computer Organization and Assembly Language for Computer Scientists	3
CSC 246	Concepts and Facilities of Operating Systems for Computer Scientists	3
CSC 251	Python Applications	3
CSC 255		
CSC 281	Foundations of Interactive Game Design	3
CSC 295	Special Topics in Computer Science	1-3
E 201	Engineering Transfer to Success	1
E 298	Special Topics in Engineering	1-4
ECE 200	Introduction to Signals, Circuits and Systems	4
ECE 209	Computer Systems Programming	3
ECE 211	Electric Circuits	4
ECE 212	Fundamentals of Logic Design	3
ECE 220	Analytical Foundations of Electrical and Computer Engineering	3
ISE 215	Foundations of Design & 3D Modeling for Engineers	1
ISE 216	Product Development and Rapid Prototyping	3
MAE 200	Introduction to Mechanical Engineering Design	1
MAE 201	Thermal-Fluid Sciences	3
MAE 206	Engineering Statics	3
MAE 208	Engineering Dynamics	3
MAE 214	Solid Mechanics	3
MAE 250	Introduction to Aerospace Engineering	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
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
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
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 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 525	Industrial Microbiology and Bioprocessing	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 332	Management of Animal Environments	4
BAET 333	Processing Agricultural Products	3
BAET 343	Agricultural Electrification	4
BAET 411	Agricultural Machinery and Power Units	4
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		
BEC 488	Animal Cell Culture Engineering	2
BEC 562	Fundamentals of Bio-Nanotechnology	3
BEC 563	Fermentation of Recombinant Microorganisms	2
BEC 583		
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 217	Biomedical Electronics Laboratory	1
BME 301	Human Physiology : Electrical Analysis	3
BME 302	Human Physiology: Mechanical Analysis	3
BME 315	Biotransport	3
BME 325	Biochemistry for Biomedical Engineers	3
BME 335	Biomaterials	3
BME 342		
BME 345	Biomedical Solid Mechanics	3
BME 355	Biocontrols	3
BME 365	Linear Systems in Biomedical Engineering	3
BME 375	Biomedical Microcontroller Applications	3
BME 385	Bioinstrumentation	3
BME 398	Biomedical Engineering Design and Manufacturing II	2
BME 412	Biomedical Signal Processing	3
BME 418	Wearable Biosensors and Microsystems	3
BME 425	Bioelectricity	3
BME 444	Orthopaedic Biomechanics	3
BME 451	BME Senior Design: Product Development	3
BME 452	BME Senior Design: Product Implementation and Strategy	3
BME 462		
BME 466	Polymeric Biomaterials Engineering	3
BME 467	Mechanics of Tissues & Implants Requirements	3
BME 481	Quality Management Systems for Engineers	3
BME 483	Tissue Engineering Technologies	2
BME 484	Fundamentals of Tissue Engineering	3
BME 490	Special Topics in Biomedical Engineering	1-4
BME 498	Undergraduate Research in Biomedical Engineering	3
BME 518	Wearable Biosensors and Microsystems	3
BME 525	Bioelectricity	3

BME 544	Orthopaedic Biomechanics	3	CE 488	Water Resources Engineering	3
BME 566	Polymeric Biomaterials Engineering	3	CE 499	Undergraduate Research Thesis in Civil, Construction and Environmental Engineering	1-3
BME 583	Tissue Engineering Technologies	2	CE 501	Transportation Planning	3
BME 584	Fundamentals of Tissue Engineering	3	CE 502	Traffic Operations	3
BUS 340	Information Systems Management	3	CE 503	Transportation System Design	3
CE 225	Mechanics of Solids	3	CE 505	Railroad System Planning, Design, and Operation	3
CE 282	Hydraulics	3	CE 525	Advanced Structural Analysis	3
CE 301	Civil Engineering Surveying and Geomatics	3	CE 564	Legal Aspects of Contracting	3
CE 305	Introduction to Transportation Systems	3	CE 568	Building Information Modeling in Construction	3
CE 324			CE 578	Energy and Climate	3
CE 325	Structural Analysis I	3	CE 588	Water Resources Engineering	3
CE 327	Reinforced Concrete Design	3	CH 335	Principles of Green Chemistry	4
CE 332	Civil Engineering Materials	4	CHE 311	Transport Processes I	3
CE 339	Civil Engineering Systems	3	CHE 312	Transport Processes II	3
CE 342	Engineering Behavior of Soils and Foundations	4	CHE 315	Chemical Process Thermodynamics	3
CE 365	Construction Equipment and Methods	3	CHE 316	Thermodynamics of Chemical and Phase Equilibria	3
CE 367	Mechanical and Electrical Systems in Buildings	3	CHE 330	Chemical Engineering Lab I	4
CE 373	Fundamentals of Environmental Engineering	3	CHE 331	Chemical Engineering Lab II	2
CE 378	Environmental Chemistry and Microbiology	4	CHE 395	Professional Development Seminar	1
CE 381	Hydraulics Systems Measurements Lab	1	CHE 435	Process Systems Analysis and Control	3
CE 383	Hydrology and Urban Water Systems	3	CHE 446	Design and Analysis of Chemical Reactors	3
CE 390			CHE 447	Bioreactor Engineering	3
CE 400			CHE 450	Chemical Engineering Design I	3
CE 401	Transportation Planning	3	CHE 451	Chemical Engineering Design II	3
CE 402	Traffic Operations	3	CHE 460	Chemical Processing of Electronic Materials	3
CE 403	Transportation System Design	3	CHE 461	Polymer Sciences and Technology	3
CE 405	Railroad System Planning, Design, and Operation	3	CHE 462	Fundamentals of Bio-Nanotechnology	3
CE 413	Principles of Pavement Design	3	CHE 463	Fermentation of Recombinant Microorganisms	2
CE 420	Structural Engineering Project	3	CHE 465	Colloidal and Nanoscale Engineering	3
CE 421			CHE 467	Polymer Rheology	3
CE 425	Advanced Structural Analysis	3	CHE 468	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3
CE 426	Structural Steel Design	3	CHE 488	Animal Cell Culture Engineering	2
CE 435	Engineering Geology	3	CHE 495	Honors Thesis Preparation	1
CE 437	Civil Engineering Computing	3	CHE 497	Chemical Engineering Projects I	3
CE 440			CHE 498	Chemical Engineering Projects II	1-3
CE 443	Seepage, Earth Embankments and Retaining Structures	3	CHE 562	Fundamentals of Bio-Nanotechnology	3
CE 444	An Introduction to Foundation Engineering	3	CHE 563	Fermentation of Recombinant Microorganisms	2
CE 450	Civil Engineering Project	3	CHE 568	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3
CE 463	Construction Estimating, Planning, and Control	3	CHE 575	Advances in Pollution Prevention: Environmental Management for the Future	3
CE 464	Legal Aspects of Contracting	3	CSC 302	Introduction to Numerical Methods	3
CE 466	Building Construction Engineering	3	CSC 316	Data Structures and Algorithms	3
CE 468	Building Information Modeling in Construction	3	CSC 326	Software Engineering	4
CE 469	Construction Engineering Project	3	CSC 333	Automata, Grammars, and Computability	3
CE 476	Air Pollution Control	3	CSC 342	Applied Web-based Client-Server Computing	3
CE 477	Principles of Solid Waste Engineering	3	CSC 379	Ethics in Computing	1
CE 478	Energy and Climate	3	CSC 401	Data and Computer Communications Networks	3
CE 479	Air Quality	3			
CE 480					
CE 481	Environmental Engineering Project	3			
CE 484	Water Supply and Waste Water Systems	3			
CE 487	Introduction to Coastal and Ocean Engineering	3			

CSC 402	Networking Projects	3	ECE 381	Engineering Profession for Computer Engineers	1
CSC 405	Computer Security	3	ECE 383	Introduction to Entrepreneurship and New Product Development	1
CSC 406	Architecture Of Parallel Computers	3	ECE 384	Practical Engineering Prototyping	3
CSC 411	Introduction to Artificial Intelligence	3	ECE 402	Communications Engineering	3
CSC 414	Foundations of Cryptography	3	ECE 403	Electronics Engineering	3
CSC 415	Software Security	3	ECE 404	Introduction to Solid-State Devices	3
CSC 417	Theory of Programming Languages	3	ECE 406	Architecture Of Parallel Computers	3
CSC 422	Automated Learning and Data Analysis	3	ECE 407	Introduction to Computer Networking	3
CSC 427	Introduction to Numerical Analysis I	3	ECE 418	Wearable Biosensors and Microsystems	3
CSC 428	Introduction to Numerical Analysis II	3	ECE 420	Wireless Communication Systems	3
CSC 431	File Organization and Processing	3	ECE 421	Introduction to Signal Processing	3
CSC 433	Privacy in the Digital Age	3	ECE 422	Transmission Lines and Antennas for Wireless	3
CSC 440	Database Management Systems	3	ECE 423	Introduction to Photonics and Optical Communications	3
CSC 442	Introduction to Data Science	3	ECE 424	Radio System Design	3
CSC 450	Web Services	3	ECE 426	Analog Electronics Laboratory	3
CSC 453	Introduction to Internet of Things (IoT) Systems	3	ECE 434	Fundamentals of Power Electronics	3
CSC 455	Social Computing and Decentralized Artificial Intelligence	3	ECE 436	Digital Control Systems	3
CSC 456	Computer Architecture and Multiprocessors	3	ECE 442	Introduction to Integrated Circuit Technology and Fabrication	3
CSC 461	Computer Graphics	3	ECE 451	Power System Analysis	3
CSC 462	Advanced Computer Graphics Projects	3	ECE 452	Renewable Electric Energy Systems	3
CSC 467	Introduction to Quantum Algorithms	3	ECE 453	Electric Motor Drives	3
CSC 472	Cybersecurity Practicum	3	ECE 455	Industrial Robot Systems	3
CSC 474	Network Security	3	ECE 456	Mechatronics	3
CSC 481	Game Engine Foundations	3	ECE 460		3
CSC 482	Advanced Computer Game Projects	3	ECE 461	Embedded System Analysis and Optimization	3
CSC 484	Building Game AI	3	ECE 463	Microprocessor Architecture	3
CSC 492	Senior Design Project	3	ECE 464	ASIC and FPGA Design with Verilog	3
CSC 495			ECE 466	Compiler Optimization and Scheduling	3
CSC 499	Independent Research in Computer Science	1-6	ECE 468	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3
CSC 506	Architecture Of Parallel Computers	3	ECE 470	Internetworking	3
CSC 512	Compiler Construction	3	ECE 482	Engineering Entrepreneurship Senior Design I	3
CSC 514	Foundations of Cryptography	3	ECE 483	Engineering Entrepreneurship Senior Design II	3
CSC 522	Automated Learning and Data Analysis	3	ECE 484	Electrical and Computer Engineering Senior Design I	3
CSC 584	Building Game AI	3	ECE 485	Electrical and Computer Engineering Senior Design II	3
E 101	Introduction to Engineering & Problem Solving	1	ECE 488	Systems Biology Modeling of Plant Regulation	3
E 304	Introduction to Nano Science and Technology	3	ECE 489	Solid State Solar and Thermal Energy Harvesting	3
E 480	Namibia Wildlife Aerial Observatory	6	ECE 492	Special Topics in Electrical and Computer Engineering	1-4
E 490	Fundamentals of Engineering(FE) Exam Preparation	1	ECE 495	Individual Study in ECE	1-3
E 497	Engineering Research Projects	1-3	ECE 498	Special Projects in ECE	1-3
ECE 301	Linear Systems	3	ECE 506	Architecture Of Parallel Computers	3
ECE 302	Microelectronics	4	ECE 518	Wearable Biosensors and Microsystems	3
ECE 303	Electromagnetic Fields	3	ECE 524	Radio System Design	3
ECE 305	Principles of Electromechanical Energy Conversion	3	ECE 552	Renewable Electric Energy Systems	3
ECE 306	Introduction to Embedded Systems	3	ECE 556	Mechatronics	3
ECE 308	Elements of Control Systems	3	ECE 560		3
ECE 309	Data Structures and Object-Oriented Programming for Electrical and Computer Engineers	3			
ECE 310	Design of Complex Digital Systems	3			
ECE 331	Principles of Electrical Engineering	3			
ECE 380	Engineering Profession for Electrical Engineers	1			

ECE 561	Embedded System Analysis and Optimization	3	MAE 306	Mechanical Engineering Laboratory II	1
ECE 563	Microprocessor Architecture	3	MAE 308	Fluid Mechanics	3
ECE 564	ASIC and FPGA Design with Verilog	3	MAE 310	Heat Transfer Fundamentals	3
ECE 566	Compiler Optimization and Scheduling	3	MAE 315	Fundamentals of Vibrations	3
ECE 568	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3	MAE 316	Strength of Mechanical Components	3
ECE 588	Systems Biology Modeling of Plant Regulation	3	MAE 342	Introduction to Automotive Engineering	3
ECE 589	Solid State Solar and Thermal Energy Harvesting	3	MAE 351	Aerodynamics II	3
FB 576	Environmental Life Cycle Analysis	3	MAE 352	Experimental Aerodynamics II	1
ISE 311	Engineering Economic Analysis	3	MAE 361	Dynamics & Controls	3
ISE 315	Introduction to Computer-Aided Manufacturing	1	MAE 371	Aerospace Structures I	3
ISE 316	Manufacturing Engineering I - Processes	3	MAE 372	Aerospace Vehicle Structures Lab	1
ISE 352	Fundamentals of Human-Machine Systems Design	3	MAE 403	Air Conditioning	3
ISE 361	Deterministic Models in Industrial Engineering	3	MAE 405	Controls Lab	1
ISE 362	Stochastic Models in Industrial Engineering	3	MAE 406	Energy Conservation in Industry	3
ISE 408	Design and Control of Production and Service Systems	3	MAE 407	Steam and Gas Turbines	3
ISE 411	Supply Chain Economics and Decision Making	3	MAE 408	Internal Combustion Engine Fundamentals	3
ISE 413	Humanitarian Logistics	3	MAE 410	Modern Manufacturing Processes	3
ISE 416	Manufacturing Engineering II - Automation	3	MAE 412	Design of Thermal System	3
ISE 417	Database Applications in Industrial & Systems Engineering	3	MAE 413	Design of Mechanical Systems	3
ISE 435	Python Programming for Industrial & Systems Engineers	3	MAE 415	Mechanical Engineering Design I	3
ISE 437	Data Analytics for Industrial Engineering	3	MAE 416	Mechanical Engineering Design II	4
ISE 441	Introduction to Simulation	3	MAE 420	Dynamic Analysis of Human Movement	3
ISE 443	Quality Design and Control	3	MAE 421	Design of Solar Energy Systems	3
ISE 447	Applications of Data Science in Healthcare	3	MAE 426	Fundamentals of Product Design	3
ISE 452	Advanced Human-Machine Systems Design	3	MAE 430	Applied Finite Element Analysis	3
ISE 453	Modeling and Analysis of Supply Chains	3	MAE 435	Principles of Automatic Control	3
ISE 462	Advanced Stochastic Models in Industrial Engineering	3	MAE 440	Non-Destructive Testing and Evaluation	3
ISE 489	Special Topics in Industrial and Systems Engineering	1-3	MAE 451	Experimental Aerodynamics III	1
ISE 495	Project Work in Industrial Engineering	1-3	MAE 452	Aerodynamics of V/STOL Vehicles	3
ISE 498	Senior Design Project	3	MAE 455	Boundary Layer Theory	3
ISE 511	Supply Chain Economics and Decision Making	3	MAE 456	Computational Methods in Aerodynamics	3
ISE 513	Humanitarian Logistics	3	MAE 457	Flight Vehicle Stability and Control	3
ISE 535	Python Programming for Industrial & Systems Engineers	3	MAE 458	Propulsion	3
ISE 547	Applications of Data Science in Healthcare	3	MAE 459	Rocket Propulsion	3
MA 414	Foundations of Cryptography	3	MAE 467	Introduction to Space Flight	3
MA 416	Introduction to Combinatorics	3	MAE 472	Aerospace Structures II	3
MA 427	Introduction to Numerical Analysis I	3	MAE 480	Aerospace Vehicle Design I	3
MA 428	Introduction to Numerical Analysis II	3	MAE 481	Aerospace Vehicle Design II	3
MA 514	Foundations of Cryptography	3	MAE 482	Engineering Entrepreneurship Senior Design I	3
MAE 201	Thermal-Fluid Sciences	3	MAE 483	Engineering Entrepreneurship Senior Design II	3
MAE 214	Solid Mechanics	3	MAE 484	Engineering Entrepreneurship Senior Design Lab	1
MAE 252	Aerodynamics I	3	MAE 495	Special Topics in Mechanical and Aerospace Engineering	1-3
MAE 253	Experimental Aerodynamics I	1	MAE 496	Undergraduate Project Work in Mechanical and Aerospace Engineering	1-6
MAE 302	Engineering Thermodynamics II	3	MAE 520	Dynamic Analysis of Human Movement	3
MAE 305	Mechanical Engineering Laboratory I	1	MAE 526	Fundamentals of Product Design	3
			MEA 479	Air Quality	3
			MSE 260	Mathematical Methods for Materials Engineers	3
			MSE 300	Structure of Materials at the Nanoscale	3
			MSE 301	Introduction to Thermodynamics of Materials	3
			MSE 320	Introduction to Defects in Solids	3

MSE 335	Experimental Methods for Analysis of Material Properties	2	PB 488/588	Systems Biology Modeling of Plant Regulation	3
MSE 355	Electrical, Magnetic and Optical Properties of Materials	3	PSE 322	Wet End and Polymer Chemistry	4
MSE 360	Kinetic Processes in Materials	3	PSE 332	Wood and Pulping Chemistry	3
MSE 370	Microstructure of Inorganic Materials	3	PSE 335	Principles of Green Chemistry	4
MSE 380	Microstructure of Organic Materials	3	PSE 355	Pulp and Paper Unit Processes I	3
MSE 409	Nuclear Materials	3	PSE 360	Pulp and Paper Unit Processes II	3
MSE 420	Mechanical Properties of Materials	3	PSE 370	Pulp and Paper Products and Markets	3
MSE 423	Introduction to Materials Engineering Design	1	PSE 371	Pulping Process Analysis	3
MSE 440	Processing of Metallic Materials	3	PSE 415	Paper Industry Strategic Project Analysis	3
MSE 445	Ceramic Processing	3	PSE 416	Process Design and Analysis	3
MSE 455	Polymer Technology and Engineering	3	PSE 417	Modeling & Simulation of Pulp & Paper Processes	3
MSE 456	Composite Materials	3	PSE 425	Bioenergy & Biomaterials Engineering	3
MSE 460	Microelectronic Materials	3	PSE 465	Process Engineering	3
MSE 465	Introduction to Nanomaterials	3	PSE 472	Paper Process Analysis	3
MSE 470	Materials Science and Engineering Senior Design Project	3	PSE 475	Process Control in Pulp and Paper	3
MSE 480	Materials Forensics and Degradation	3	PSE 476	Environmental Life Cycle Analysis	3
MSE 485	Biomaterials	3	PSE 493	Independent Study in Paper Science & Engineering	1-6
MSE 489	Solid State Solar and Thermal Energy Harvesting	3	PSE 494	Independent Study in Paper Science & Engineering	1-6
MSE 490	Special Topics in Materials Science and Engineering	1-4	PY 414	Electromagnetism I	3
MSE 495	Materials Engineering Projects	1-6	PY 415	Electromagnetism II	3
MSE 509	Nuclear Materials	3	PY 489	Solid State Solar and Thermal Energy Harvesting	3
MSE 540	Processing of Metallic Materials	3	PY 514	Electromagnetism I	3
MSE 545	Ceramic Processing	3	PY 515	Electromagnetism II	3
MSE 556	Composite Materials	3	PY 589	Solid State Solar and Thermal Energy Harvesting	3
MSE 565	Introduction to Nanomaterials	3	SSC 440	Geographic Information Systems (GIS) in Soil Science and Agriculture	3
MSE 580	Materials Forensics and Degradation	3	SSC 473	Introduction to Hydrologic and Water Quality Modeling	3
MSE 589	Solid State Solar and Thermal Energy Harvesting	3	SSC 540	Geographic Information Systems (GIS) in Soil Science and Agriculture	3
NE 301	Fundamentals of Nuclear Engineering	3	SSC 573	Introduction to Hydrologic and Water Quality Modeling	3
NE 400	Nuclear Reactor Energy Conversion	4	ST 442	Introduction to Data Science	3
NE 401	Reactor Analysis and Design	3	TE 301	Engineering Textile Structures I: Linear Assemblies	3
NE 402	Reactor Engineering	4	TE 302	Textile Manufacturing Processes and Systems II	4
NE 403	Nuclear Reactor Laboratory	2	TE 303	Thermodynamics for Textile Engineers	3
NE 404	Radiation Safety and Shielding	3	TE 401	Textile Engineering Design I	4
NE 405	Reactor Systems	3	TE 402	Textile Engineering Design II	4
NE 406	Nuclear Engineering Senior Design Preparation	1	TE 404	Lean Six Sigma Quality	3
NE 408	Nuclear Engineering Design Project	3	TE 424	Textile Engineering Quality Improvement Laboratory	1
NE 409	Nuclear Materials	3	TE 435	Process Systems Analysis and Control	3
NE 412	Nuclear Fuel Cycles	3	TE 440	Textile Information Systems Design	4
NE 418	Nuclear Power Plant Instrumentation	3	TE 463	Polymer Engineering	3
NE 419	Introduction to Nuclear Energy	3	TE 466	Polymeric Biomaterials Engineering	3
NE 431	Nuclear Waste Management	3	TE 467	Mechanics of Tissues & Implants Requirements	3
NE 490	Health Physics and Radiological Emergency Response	3	TE 492	Special Topics in Textile Engineering	1-3
NE 491	Special Topics in Nuclear Engineering	1-4	TE 540	Textile Information Systems Design	4
NE 501	Reactor Analysis and Design	3	TE 566	Polymeric Biomaterials Engineering	3
NE 509	Nuclear Materials	3			
NE 531	Nuclear Waste Management	3			
NE 590	Health Physics and Radiological Emergency Response	3			

Engineering Electives 300- or 400-Level

Code	Title	Hours
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
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 323	Water Management	3
BAET 332	Management of Animal Environments	4
BAET 333	Processing Agricultural Products	3
BAET 343	Agricultural Electrification	4
BAET 411	Agricultural Machinery and Power Units	4
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		
BEC 488	Animal Cell Culture Engineering	2
BEC 562	Fundamentals of Bio-Nanotechnology	3
BEC 563	Fermentation of Recombinant Microorganisms	2
BEC 583		
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 217	Biomedical Electronics Laboratory	1
BME 301	Human Physiology : Electrical Analysis	3
BME 302	Human Physiology: Mechanical Analysis	3
BME 315	Biotransport	3
BME 325	Biochemistry for Biomedical Engineers	3
BME 335	Biomaterials	3
BME 342		
BME 345	Biomedical Solid Mechanics	3
BME 355	Biocontrols	3
BME 365	Linear Systems in Biomedical Engineering	3
BME 375	Biomedical Microcontroller Applications	3
BME 385	Bioinstrumentation	3
BME 398	Biomedical Engineering Design and Manufacturing II	2
BME 412	Biomedical Signal Processing	3
BME 418	Wearable Biosensors and Microsystems	3
BME 425	Bioelectricity	3
BME 444	Orthopaedic Biomechanics	3
BME 451	BME Senior Design: Product Development	3
BME 452	BME Senior Design: Product Implementation and Strategy	3
BME 462		3
BME 466	Polymeric Biomaterials Engineering	3
BME 467	Mechanics of Tissues & Implants Requirements	3
BME 481	Quality Management Systems for Engineers	3
BME 483	Tissue Engineering Technologies	2
BME 484	Fundamentals of Tissue Engineering	3
BME 490	Special Topics in Biomedical Engineering	1-4
BME 498	Undergraduate Research in Biomedical Engineering	3
BME 518	Wearable Biosensors and Microsystems	3
BME 525	Bioelectricity	3
BME 544	Orthopaedic Biomechanics	3
BME 566	Polymeric Biomaterials Engineering	3
BME 583	Tissue Engineering Technologies	2
BME 584	Fundamentals of Tissue Engineering	3
BUS 340	Information Systems Management	3
CE 225	Mechanics of Solids	3
CE 282	Hydraulics	3
CE 301	Civil Engineering Surveying and Geomatics	3
CE 305	Introduction to Transportation Systems	3
CE 324		1
CE 325	Structural Analysis I	3
CE 327	Reinforced Concrete Design	3
CE 332	Civil Engineering Materials	3
CE 339	Civil Engineering Systems	3
CE 342	Engineering Behavior of Soils and Foundations	4
CE 365	Construction Equipment and Methods	3
CE 367	Mechanical and Electrical Systems in Buildings	3
CE 373	Fundamentals of Environmental Engineering	3
CE 378	Environmental Chemistry and Microbiology	4
CE 381	Hydraulics Systems Measurements Lab	1
CE 383	Hydrology and Urban Water Systems	3

CE 390		1	CHE 331	Chemical Engineering Lab II	2
CE 400		3	CHE 395	Professional Development Seminar	1
CE 401	Transportation Planning	3	CHE 435	Process Systems Analysis and Control	3
CE 402	Traffic Operations	3	CHE 446	Design and Analysis of Chemical Reactors	3
CE 403	Transportation System Design	3	CHE 447	Bioreactor Engineering	3
CE 405	Railroad System Planning, Design, and Operation	3	CHE 450	Chemical Engineering Design I	3
CE 413	Principles of Pavement Design	3	CHE 451	Chemical Engineering Design II	3
CE 420	Structural Engineering Project	3	CHE 460	Chemical Processing of Electronic Materials	3
CE 421		3	CHE 461	Polymer Sciences and Technology	3
CE 425	Advanced Structural Analysis	3	CHE 462	Fundamentals of Bio-Nanotechnology	3
CE 426	Structural Steel Design	3	CHE 463	Fermentation of Recombinant Microorganisms	2
CE 435	Engineering Geology	3	CHE 465	Colloidal and Nanoscale Engineering	3
CE 437	Civil Engineering Computing	3	CHE 467	Polymer Rheology	3
CE 440		3	CHE 468	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3
CE 443	Seepage, Earth Embankments and Retaining Structures	3	CHE 475	Advances in Pollution Prevention: Environmental Management for the Future	3
CE 444	An Introduction to Foundation Engineering	3	CHE 488	Animal Cell Culture Engineering	2
CE 450	Civil Engineering Project	3	CHE 495	Honors Thesis Preparation	1
CE 463	Construction Estimating, Planning, and Control	3	CHE 497	Chemical Engineering Projects I	3
CE 464	Legal Aspects of Contracting	3	CHE 498	Chemical Engineering Projects II	1-3
CE 466	Building Construction Engineering	3	CHE 562	Fundamentals of Bio-Nanotechnology	3
CE 468	Building Information Modeling in Construction	1	CHE 563	Fermentation of Recombinant Microorganisms	2
CE 469	Construction Engineering Project	3	CHE 568	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3
CE 476	Air Pollution Control	3	CHE 575	Advances in Pollution Prevention: Environmental Management for the Future	3
CE 477	Principles of Solid Waste Engineering	3	CSC 302	Introduction to Numerical Methods	3
CE 478	Energy and Climate	3	CSC 316	Data Structures and Algorithms	3
CE 479	Air Quality	3	CSC 326	Software Engineering	4
CE 480		3	CSC 333	Automata, Grammars, and Computability	3
CE 481	Environmental Engineering Project	3	CSC 342	Applied Web-based Client-Server Computing	3
CE 484	Water Supply and Waste Water Systems	3	CSC 379	Ethics in Computing	1
CE 487	Introduction to Coastal and Ocean Engineering	3	CSC 401	Data and Computer Communications Networks	3
CE 488	Water Resources Engineering	3	CSC 402	Networking Projects	3
CE 493	Independent Study in Civil Engineering	1-4	CSC 405	Computer Security	3
CE 497	Current Topics in Civil Engineering	1-4	CSC 406	Architecture Of Parallel Computers	3
CE 498	Special Problems in Civil Engineering	1-4	CSC 411	Introduction to Artificial Intelligence	3
CE 499	Undergraduate Research Thesis in Civil, Construction and Environmental Engineering	1-3	CSC 412	Compiler Construction	3
CE 501	Transportation Planning	3	CSC 414	Foundations of Cryptography	3
CE 502	Traffic Operations	3	CSC 415	Software Security	3
CE 503	Transportation System Design	3	CSC 416	Introduction to Combinatorics	3
CE 505	Railroad System Planning, Design, and Operation	3	CSC 417	Theory of Programming Languages	3
CE 525	Advanced Structural Analysis	3	CSC 422	Automated Learning and Data Analysis	3
CE 564	Legal Aspects of Contracting	3	CSC 427	Introduction to Numerical Analysis I	3
CE 568	Building Information Modeling in Construction	1	CSC 428	Introduction to Numerical Analysis II	3
CE 578	Energy and Climate	3	CSC 431	File Organization and Processing	3
CE 588	Water Resources Engineering	3	CSC 433	Privacy in the Digital Age	3
CH 335	Principles of Green Chemistry	4	CSC 440	Database Management Systems	3
CHE 311	Transport Processes I	3	CSC 442	Introduction to Data Science	3
CHE 312	Transport Processes II	3	CSC 450	Web Services	3
CHE 315	Chemical Process Thermodynamics	3			
CHE 316	Thermodynamics of Chemical and Phase Equilibria	3			
CHE 330	Chemical Engineering Lab I	4			

CSC 453	Introduction to Internet of Things (IoT) Systems	3	ECE 423	Introduction to Photonics and Optical Communications	3
CSC 454	Human-Computer Interaction	3	ECE 424	Radio System Design	3
CSC 455	Social Computing and Decentralized Artificial Intelligence	3	ECE 426	Analog Electronics Laboratory	3
CSC 456	Computer Architecture and Multiprocessors	3	ECE 434	Fundamentals of Power Electronics	3
CSC 461	Computer Graphics	3	ECE 436	Digital Control Systems	3
CSC 462	Advanced Computer Graphics Projects	3	ECE 442	Introduction to Integrated Circuit Technology and Fabrication	3
CSC 467	Introduction to Quantum Algorithms	3	ECE 451	Power System Analysis	3
CSC 472	Cybersecurity Practicum	3	ECE 452	Renewable Electric Energy Systems	3
CSC 474	Network Security	3	ECE 453	Electric Motor Drives	3
CSC 481	Game Engine Foundations	3	ECE 455	Industrial Robot Systems	3
CSC 482	Advanced Computer Game Projects	3	ECE 456	Mechatronics	3
CSC 484	Building Game AI	3	ECE 460		3
CSC 492	Senior Design Project	3	ECE 461	Embedded System Analysis and Optimization	3
CSC 495		1-6	ECE 463	Microprocessor Architecture	3
CSC 499	Independent Research in Computer Science	1-6	ECE 464	ASIC and FPGA Design with Verilog	3
CSC 506	Architecture Of Parallel Computers	3	ECE 466	Compiler Optimization and Scheduling	3
CSC 512	Compiler Construction	3	ECE 468	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3
CSC 514	Foundations of Cryptography	3	ECE 470	Internetworking	3
CSC 522	Automated Learning and Data Analysis	3	ECE 482	Engineering Entrepreneurship Senior Design I	3
CSC 584	Building Game AI	3	ECE 483	Engineering Entrepreneurship Senior Design II	3
E 101	Introduction to Engineering & Problem Solving	1	ECE 484	Electrical and Computer Engineering Senior Design I	3
E 304	Introduction to Nano Science and Technology	3	ECE 485	Electrical and Computer Engineering Senior Design II	3
E 480	Namibia Wildlife Aerial Observatory	6	ECE 488	Systems Biology Modeling of Plant Regulation	3
E 490	Fundamentals of Engineering(FE) Exam Preparation	1	ECE 489	Solid State Solar and Thermal Energy Harvesting	3
E 497	Engineering Research Projects	1-3	ECE 492	Special Topics in Electrical and Computer Engineering	1-4
ECE 301	Linear Systems	3	ECE 495	Individual Study in ECE	1-3
ECE 302	Microelectronics	4	ECE 498	Special Projects in ECE	1-3
ECE 303	Electromagnetic Fields	3	ECE 506	Architecture Of Parallel Computers	3
ECE 305	Principles of Electromechanical Energy Conversion	3	ECE 518	Wearable Biosensors and Microsystems	3
ECE 306	Introduction to Embedded Systems	3	ECE 524	Radio System Design	3
ECE 308	Elements of Control Systems	3	ECE 552	Renewable Electric Energy Systems	3
ECE 309	Data Structures and Object-Oriented Programming for Electrical and Computer Engineers	3	ECE 556	Mechatronics	3
ECE 310	Design of Complex Digital Systems	3	ECE 560		3
ECE 331	Principles of Electrical Engineering	3	ECE 561	Embedded System Analysis and Optimization	3
ECE 380	Engineering Profession for Electrical Engineers	1	ECE 563	Microprocessor Architecture	3
ECE 381	Engineering Profession for Computer Engineers	1	ECE 564	ASIC and FPGA Design with Verilog	3
ECE 383	Introduction to Entrepreneurship and New Product Development	1	ECE 566	Compiler Optimization and Scheduling	3
ECE 384	Practical Engineering Prototyping	3	ECE 568	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3
ECE 402	Communications Engineering	3	ECE 588	Systems Biology Modeling of Plant Regulation	3
ECE 403	Electronics Engineering	3	ECE 589	Solid State Solar and Thermal Energy Harvesting	3
ECE 404	Introduction to Solid-State Devices	3	FB 576	Environmental Life Cycle Analysis	3
ECE 406	Architecture Of Parallel Computers	3	ISE 311	Engineering Economic Analysis	3
ECE 407	Introduction to Computer Networking	3	ISE 315	Introduction to Computer-Aided Manufacturing	1
ECE 418	Wearable Biosensors and Microsystems	3	ISE 316	Manufacturing Engineering I - Processes	3
ECE 420	Wireless Communication Systems	3	ISE 352	Fundamentals of Human-Machine Systems Design	3
ECE 421	Introduction to Signal Processing	3			
ECE 422	Transmission Lines and Antennas for Wireless	3			

ISE 361	Deterministic Models in Industrial Engineering	3	MAE 408	Internal Combustion Engine Fundamentals	3
ISE 362	Stochastic Models in Industrial Engineering	3	MAE 410	Modern Manufacturing Processes	3
ISE 408	Design and Control of Production and Service Systems	3	MAE 412	Design of Thermal System	3
ISE 411	Supply Chain Economics and Decision Making	3	MAE 413	Design of Mechanical Systems	3
ISE 413	Humanitarian Logistics	3	MAE 415	Mechanical Engineering Design I	3
ISE 416	Manufacturing Engineering II - Automation	3	MAE 416	Mechanical Engineering Design II	4
ISE 417	Database Applications in Industrial & Systems Engineering	3	MAE 420	Dynamic Analysis of Human Movement	3
ISE 435	Python Programming for Industrial & Systems Engineers	3	MAE 421	Design of Solar Energy Systems	3
ISE 437	Data Analytics for Industrial Engineering	3	MAE 426	Fundamentals of Product Design	3
ISE 441	Introduction to Simulation	3	MAE 430	Applied Finite Element Analysis	3
ISE 443	Quality Design and Control	3	MAE 435	Principles of Automatic Control	3
ISE 447	Applications of Data Science in Healthcare	3	MAE 440	Non-Destructive Testing and Evaluation	3
ISE 452	Advanced Human-Machine Systems Design	3	MAE 451	Experimental Aerodynamics III	1
ISE 453	Modeling and Analysis of Supply Chains	3	MAE 452	Aerodynamics of V/STOL Vehicles	3
ISE 462	Advanced Stochastic Models in Industrial Engineering	3	MAE 455	Boundary Layer Theory	3
ISE 489	Special Topics in Industrial and Systems Engineering	1-3	MAE 456	Computational Methods in Aerodynamics	3
ISE 495	Project Work in Industrial Engineering	1-3	MAE 457	Flight Vehicle Stability and Control	3
ISE 498	Senior Design Project	3	MAE 458	Propulsion	3
ISE 511	Supply Chain Economics and Decision Making	3	MAE 459	Rocket Propulsion	3
ISE 513	Humanitarian Logistics	3	MAE 467	Introduction to Space Flight	3
ISE 535	Python Programming for Industrial & Systems Engineers	3	MAE 472	Aerospace Structures II	3
ISE 547	Applications of Data Science in Healthcare	3	MAE 480	Aerospace Vehicle Design I	3
MA 414	Foundations of Cryptography	3	MAE 481	Aerospace Vehicle Design II	3
MA 416	Introduction to Combinatorics	3	MAE 482	Engineering Entrepreneurship Senior Design I	3
MA 427	Introduction to Numerical Analysis I	3	MAE 483	Engineering Entrepreneurship Senior Design II	3
MA 428	Introduction to Numerical Analysis II	3	MAE 484	Engineering Entrepreneurship Senior Design Lab	1
MA 514	Foundations of Cryptography	3	MAE 495	Special Topics in Mechanical and Aerospace Engineering	1-3
MAE 201	Thermal-Fluid Sciences	3	MAE 496	Undergraduate Project Work in Mechanical and Aerospace Engineering	1-6
MAE 214	Solid Mechanics	3	MAE 520	Dynamic Analysis of Human Movement	3
MAE 253	Experimental Aerodynamics I	1	MAE 526	Fundamentals of Product Design	3
MAE 302	Engineering Thermodynamics II	3	MEA 479	Air Quality	3
MAE 305	Mechanical Engineering Laboratory I	1	MSE 260	Mathematical Methods for Materials Engineers	3
MAE 306	Mechanical Engineering Laboratory II	1	MSE 300	Structure of Materials at the Nanoscale	3
MAE 308	Fluid Mechanics	3	MSE 301	Introduction to Thermodynamics of Materials	3
MAE 310	Heat Transfer Fundamentals	3	MSE 320	Introduction to Defects in Solids	3
MAE 315	Fundamentals of Vibrations	3	MSE 335	Experimental Methods for Analysis of Material Properties	2
MAE 316	Strength of Mechanical Components	3	MSE 355	Electrical, Magnetic and Optical Properties of Materials	3
MAE 342	Introduction to Automotive Engineering	3	MSE 360	Kinetic Processes in Materials	3
MAE 351	Aerodynamics II	3	MSE 370	Microstructure of Inorganic Materials	3
MAE 352	Experimental Aerodynamics II	1	MSE 380	Microstructure of Organic Materials	3
MAE 361	Dynamics & Controls	3	MSE 409	Nuclear Materials	3
MAE 371	Aerospace Structures I	3	MSE 420	Mechanical Properties of Materials	3
MAE 372	Aerospace Vehicle Structures Lab	1	MSE 423	Introduction to Materials Engineering Design	1
MAE 403	Air Conditioning	3	MSE 440	Processing of Metallic Materials	3
MAE 405	Controls Lab	1	MSE 445	Ceramic Processing	3
MAE 406	Energy Conservation in Industry	3	MSE 455	Polymer Technology and Engineering	3
MAE 407	Steam and Gas Turbines	3	MSE 456	Composite Materials	3
			MSE 460	Microelectronic Materials	3
			MSE 465	Introduction to Nanomaterials	3

MSE 470	Materials Science and Engineering Senior Design Project	3	PSE 493	Independent Study in Paper Science & Engineering	1-6
MSE 480	Materials Forensics and Degradation	3	PSE 494	Independent Study in Paper Science & Engineering	1-6
MSE 485	Biomaterials	3	PY 414/514	Electromagnetism I	3
MSE 489	Solid State Solar and Thermal Energy Harvesting	3	PY 415/515	Electromagnetism II	3
MSE 490	Special Topics in Materials Science and Engineering	1-4	PY 489/589	Solid State Solar and Thermal Energy Harvesting	3
MSE 495	Materials Engineering Projects	1-6	SSC 440/540	Geographic Information Systems (GIS) in Soil Science and Agriculture	3
MSE 509	Nuclear Materials	3	SSC 473/573	Introduction to Hydrologic and Water Quality Modeling	3
MSE 540	Processing of Metallic Materials	3	ST 442	Introduction to Data Science	3
MSE 545	Ceramic Processing	3	TE 301	Engineering Textile Structures I: Linear Assemblies	3
MSE 556	Composite Materials	3	TE 302	Textile Manufacturing Processes and Systems II	4
MSE 565	Introduction to Nanomaterials	3	TE 303	Thermodynamics for Textile Engineers	3
MSE 580	Materials Forensics and Degradation	3	TE 401	Textile Engineering Design I	4
MSE 589	Solid State Solar and Thermal Energy Harvesting	3	TE 402	Textile Engineering Design II	4
NE 301	Fundamentals of Nuclear Engineering	3	TE 404	Lean Six Sigma Quality	3
NE 400	Nuclear Reactor Energy Conversion	4	TE 424	Textile Engineering Quality Improvement Laboratory	1
NE 401	Reactor Analysis and Design	3	TE 435	Process Systems Analysis and Control	3
NE 402	Reactor Engineering	4	TE 440	Textile Information Systems Design	4
NE 403	Nuclear Reactor Laboratory	2	TE 463	Polymer Engineering	3
NE 404	Radiation Safety and Shielding	3	TE 466	Polymeric Biomaterials Engineering	3
NE 405	Reactor Systems	3	TE 467	Mechanics of Tissues & Implants Requirements	3
NE 406	Nuclear Engineering Senior Design Preparation	1	TE 492	Special Topics in Textile Engineering	1-3
NE 408	Nuclear Engineering Design Project	3	TE 540	Textile Information Systems Design	4
NE 409	Nuclear Materials	3	TE 566	Polymeric Biomaterials Engineering	3
NE 412	Nuclear Fuel Cycles	3	Communication Electives		
NE 418	Nuclear Power Plant Instrumentation	3	Code	Title	Hours
NE 419	Introduction to Nuclear Energy	3	COM 110	Public Speaking	3
NE 431	Nuclear Waste Management	3	COM 112	Interpersonal Communication	3
NE 490	Health Physics and Radiological Emergency Response	3	COM 201	Introduction to Persuasion Theory	3
NE 491	Special Topics in Nuclear Engineering	1-4	COM 202	Small Group Communication	3
NE 501	Reactor Analysis and Design	3	ENG 331	Communication for Engineering and Technology	3
NE 509	Nuclear Materials	3	ENG 333	Communication for Science and Research	3
NE 531	Nuclear Waste Management	3	Engineering Topics IV Electives		
NE 590	Health Physics and Radiological Emergency Response	3	Code	Title	Hours
PB 488/588	Systems Biology Modeling of Plant Regulation	3	BAE 302	Transport Phenomena	3
PSE 322	Wet End and Polymer Chemistry	4	BAE 322	Introduction to Food Process Engineering	3
PSE 332	Wood and Pulping Chemistry	3	BAE 371	Fundamentals of Hydrology for Engineers	3
PSE 335	Principles of Green Chemistry	4	BAE 401	Sensors and Controls	3
PSE 355	Pulp and Paper Unit Processes I	3	BAE 425	Industrial Microbiology and Bioprocessing	3
PSE 360	Pulp and Paper Unit Processes II	3	BAE 435	Precision Agriculture Technology	3
PSE 370	Pulp and Paper Products and Markets	3	BAE 451	Engineering Design I	2
PSE 371	Pulping Process Analysis	3	BAE 452	Engineering Design II	2
PSE 415	Paper Industry Strategic Project Analysis	3	BAE 462	Machinery Design and Applications	3
PSE 416	Process Design and Analysis	3	BAE 472	Irrigation and Drainage	3
PSE 417	Modeling & Simulation of Pulp & Paper Processes	3	BAE 473	Introduction to Hydrologic and Water Quality Modeling	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			

BAE 474	Principles and Applications of Ecological Engineering	3	CE 401	Transportation Planning	3
BAE 478	Circular Approach to Manure Management	3	CE 402	Traffic Operations	3
BAE 481	Structures & Environment	3	CE 403	Transportation System Design	3
BAE 488	Postharvest Engineering	3	CE 405	Railroad System Planning, Design, and Operation	3
BAE 492	External Learning Experience	1-6	CE 413	Principles of Pavement Design	3
BAE 493	Special Problems in Biological and Agricultural Engineering	1-6	CE 420	Structural Engineering Project	3
BAE 495	Special Topics in Biological and Agricultural Engineering	1-3	CE 421		3
BAE 501	Sensors and Controls	3	CE 425	Advanced Structural Analysis	3
BAE 535	Precision Agriculture Technology	3	CE 426	Structural Steel Design	3
BAE 572	Irrigation and Drainage	3	CE 435	Engineering Geology	3
BAE 573	Introduction to Hydrologic and Water Quality Modeling	3	CE 437	Civil Engineering Computing	3
BAE 578	Circular Approach to Manure Management	3	CE 440		3
BAET 432	Agricultural and Environmental Safety and Health	3	CE 443	Seepage, Earth Embankments and Retaining Structures	3
BEC 462	Fundamentals of Bio-Nanotechnology	3	CE 444	An Introduction to Foundation Engineering	3
BEC 463	Fermentation of Recombinant Microorganisms	2	CE 450	Civil Engineering Project	3
BEC 483			CE 463	Construction Estimating, Planning, and Control	3
BEC 488	Animal Cell Culture Engineering	2	CE 464	Legal Aspects of Contracting	3
BEC 562	Fundamentals of Bio-Nanotechnology	3	CE 466	Building Construction Engineering	3
BEC 563	Fermentation of Recombinant Microorganisms	2	CE 468	Building Information Modeling in Construction	1
BIT 463	Fermentation of Recombinant Microorganisms	2	CE 469	Construction Engineering Project	3
BIT 464	Protein Purification	2	CE 476	Air Pollution Control	3
BIT 563	Fermentation of Recombinant Microorganisms	2	CE 477	Principles of Solid Waste Engineering	3
BIT 564	Protein Purification	2	CE 478	Energy and Climate	3
BME 375	Biomedical Microcontroller Applications	3	CE 479	Air Quality	3
BME 385	Bioinstrumentation	3	CE 480		3
BME 412	Biomedical Signal Processing	3	CE 481	Environmental Engineering Project	3
BME 418	Wearable Biosensors and Microsystems	3	CE 484	Water Supply and Waste Water Systems	3
BME 425	Bioelectricity	3	CE 487	Introduction to Coastal and Ocean Engineering	3
BME 444	Orthopaedic Biomechanics	3	CE 488	Water Resources Engineering	3
BME 451	BME Senior Design: Product Development	3	CE 493	Independent Study in Civil Engineering	1-4
BME 452	BME Senior Design: Product Implementation and Strategy	3	CE 497	Current Topics in Civil Engineering	1-4
BME 462		3	CE 498	Special Problems in Civil Engineering	1-4
BME 466	Polymeric Biomaterials Engineering	3	CE 499	Undergraduate Research Thesis in Civil, Construction and Environmental Engineering	1-3
BME 467	Mechanics of Tissues & Implants Requirements	3	CE 501	Transportation Planning	3
BME 481	Quality Management Systems for Engineers	3	CE 502	Traffic Operations	3
BME 483	Tissue Engineering Technologies	2	CE 503	Transportation System Design	3
BME 484	Fundamentals of Tissue Engineering	3	CE 505	Railroad System Planning, Design, and Operation	3
BME 490	Special Topics in Biomedical Engineering	1-4	CE 525	Advanced Structural Analysis	3
BME 498	Undergraduate Research in Biomedical Engineering	3	CE 564	Legal Aspects of Contracting	3
BME 518	Wearable Biosensors and Microsystems	3	CE 568	Building Information Modeling in Construction	1
BME 525	Bioelectricity	3	CE 578	Energy and Climate	3
BME 544	Orthopaedic Biomechanics	3	CE 588	Water Resources Engineering	3
BME 566	Polymeric Biomaterials Engineering	3	CHE 435	Process Systems Analysis and Control	3
BME 583	Tissue Engineering Technologies	2	CHE 446	Design and Analysis of Chemical Reactors	3
BME 584	Fundamentals of Tissue Engineering	3	CHE 447	Bioreactor Engineering	3
CE 365	Construction Equipment and Methods	3	CHE 450	Chemical Engineering Design I	3
CE 400		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	CSC 506	Architecture Of Parallel Computers	3
CHE 465	Colloidal and Nanoscale Engineering	3	CSC 512	Compiler Construction	3
CHE 467	Polymer Rheology	3	CSC 514	Foundations of Cryptography	3
CHE 468	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3	CSC 522	Automated Learning and Data Analysis	3
CHE 475	Advances in Pollution Prevention: Environmental Management for the Future	3	CSC 584	Building Game AI	3
CHE 488	Animal Cell Culture Engineering	2	E 101	Introduction to Engineering & Problem Solving	1
CHE 495	Honors Thesis Preparation	1	E 480	Namibia Wildlife Aerial Observatory	6
CHE 497	Chemical Engineering Projects I	3	E 490	Fundamentals of Engineering(FE) Exam Preparation	1
CHE 498	Chemical Engineering Projects II	1-3	E 497	Engineering Research Projects	1-3
CHE 562	Fundamentals of Bio-Nanotechnology	3	ECE 308	Elements of Control Systems	3
CHE 563	Fermentation of Recombinant Microorganisms	2	ECE 310	Design of Complex Digital Systems	3
CHE 568	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3	ECE 402	Communications Engineering	3
CHE 575	Advances in Pollution Prevention: Environmental Management for the Future	3	ECE 403	Electronics Engineering	3
CSC 401	Data and Computer Communications Networks	3	ECE 404	Introduction to Solid-State Devices	3
CSC 402	Networking Projects	3	ECE 406	Architecture Of Parallel Computers	3
CSC 405	Computer Security	3	ECE 407	Introduction to Computer Networking	3
CSC 406	Architecture Of Parallel Computers	3	ECE 421	Introduction to Signal Processing	3
CSC 411	Introduction to Artificial Intelligence	3	ECE 422	Transmission Lines and Antennas for Wireless	3
CSC 412	Compiler Construction	3	ECE 423	Introduction to Photonics and Optical Communications	3
CSC 414	Foundations of Cryptography	3	ECE 424	Radio System Design	3
CSC 415	Software Security	3	ECE 426	Analog Electronics Laboratory	3
CSC 416	Introduction to Combinatorics	3	ECE 434	Fundamentals of Power Electronics	3
CSC 417	Theory of Programming Languages	3	ECE 436	Digital Control Systems	3
CSC 422	Automated Learning and Data Analysis	3	ECE 442	Introduction to Integrated Circuit Technology and Fabrication	3
CSC 427	Introduction to Numerical Analysis I	3	ECE 451	Power System Analysis	3
CSC 428	Introduction to Numerical Analysis II	3	ECE 452	Renewable Electric Energy Systems	3
CSC 431	File Organization and Processing	3	ECE 453	Electric Motor Drives	3
CSC 433	Privacy in the Digital Age	3	ECE 455	Industrial Robot Systems	3
CSC 440	Database Management Systems	3	ECE 456	Mechatronics	3
CSC 442	Introduction to Data Science	3	ECE 460		3
CSC 450	Web Services	3	ECE 461	Embedded System Analysis and Optimization	3
CSC 453	Introduction to Internet of Things (IoT) Systems	3	ECE 463	Microprocessor Architecture	3
CSC 454	Human-Computer Interaction	3	ECE 464	ASIC and FPGA Design with Verilog	3
CSC 455	Social Computing and Decentralized Artificial Intelligence	3	ECE 466	Compiler Optimization and Scheduling	3
CSC 456	Computer Architecture and Multiprocessors	3	ECE 468	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3
CSC 461	Computer Graphics	3	ECE 470	Internetworking	3
CSC 462	Advanced Computer Graphics Projects	3	ECE 482	Engineering Entrepreneurship Senior Design I	3
CSC 467	Introduction to Quantum Algorithms	3	ECE 483	Engineering Entrepreneurship Senior Design II	3
CSC 472	Cybersecurity Practicum	3	ECE 484	Electrical and Computer Engineering Senior Design I	3
CSC 474	Network Security	3	ECE 485	Electrical and Computer Engineering Senior Design II	3
CSC 481	Game Engine Foundations	3	ECE 488	Systems Biology Modeling of Plant Regulation	3
CSC 482	Advanced Computer Game Projects	3	ECE 489	Solid State Solar and Thermal Energy Harvesting	3
CSC 484	Building Game AI	3	ECE 492	Special Topics in Electrical and Computer Engineering	1-4
CSC 492	Senior Design Project	3	ECE 495	Individual Study in ECE	1-3
CSC 495		1-6	ECE 498	Special Projects in ECE	1-3
CSC 499	Independent Research in Computer Science	1-6			

ECE 506	Architecture Of Parallel Computers	3	MAE 406	Energy Conservation in Industry	3
ECE 518	Wearable Biosensors and Microsystems	3	MAE 407	Steam and Gas Turbines	3
ECE 524	Radio System Design	3	MAE 408	Internal Combustion Engine Fundamentals	3
ECE 552	Renewable Electric Energy Systems	3	MAE 410	Modern Manufacturing Processes	3
ECE 556	Mechatronics	3	MAE 412	Design of Thermal System	3
ECE 560		3	MAE 413	Design of Mechanical Systems	3
ECE 561	Embedded System Analysis and Optimization	3	MAE 415	Mechanical Engineering Design I	3
ECE 563	Microprocessor Architecture	3	MAE 416	Mechanical Engineering Design II	4
ECE 564	ASIC and FPGA Design with Verilog	3	MAE 420	Dynamic Analysis of Human Movement	3
ECE 566	Compiler Optimization and Scheduling	3	MAE 421	Design of Solar Energy Systems	3
ECE 568	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems	3	MAE 426	Fundamentals of Product Design	3
ECE 588	Systems Biology Modeling of Plant Regulation	3	MAE 430	Applied Finite Element Analysis	3
ECE 589	Solid State Solar and Thermal Energy Harvesting	3	MAE 435	Principles of Automatic Control	3
FB 576	Environmental Life Cycle Analysis	3	MAE 440	Non-Destructive Testing and Evaluation	3
ISE 362	Stochastic Models in Industrial Engineering	3	MAE 451	Experimental Aerodynamics III	1
ISE 408	Design and Control of Production and Service Systems	3	MAE 452	Aerodynamics of V/STOL Vehicles	3
ISE 411	Supply Chain Economics and Decision Making	3	MAE 455	Boundary Layer Theory	3
ISE 413	Humanitarian Logistics	3	MAE 456	Computational Methods in Aerodynamics	3
ISE 416	Manufacturing Engineering II - Automation	3	MAE 457	Flight Vehicle Stability and Control	3
ISE 417	Database Applications in Industrial & Systems Engineering	3	MAE 458	Propulsion	3
ISE 435	Python Programming for Industrial & Systems Engineers	3	MAE 459	Rocket Propulsion	3
ISE 437	Data Analytics for Industrial Engineering	3	MAE 467	Introduction to Space Flight	3
ISE 441	Introduction to Simulation	3	MAE 472	Aerospace Structures II	3
ISE 443	Quality Design and Control	3	MAE 480	Aerospace Vehicle Design I	3
ISE 447	Applications of Data Science in Healthcare	3	MAE 481	Aerospace Vehicle Design II	3
ISE 452	Advanced Human-Machine Systems Design	3	MAE 482	Engineering Entrepreneurship Senior Design I	3
ISE 453	Modeling and Analysis of Supply Chains	3	MAE 483	Engineering Entrepreneurship Senior Design II	3
ISE 462	Advanced Stochastic Models in Industrial Engineering	3	MAE 484	Engineering Entrepreneurship Senior Design Lab	1
ISE 489	Special Topics in Industrial and Systems Engineering	1-3	MAE 495	Special Topics in Mechanical and Aerospace Engineering	1-3
ISE 495	Project Work in Industrial Engineering	1-3	MAE 496	Undergraduate Project Work in Mechanical and Aerospace Engineering	1-6
ISE 498	Senior Design Project	3	MAE 520	Dynamic Analysis of Human Movement	3
ISE 511	Supply Chain Economics and Decision Making	3	MAE 526	Fundamentals of Product Design	3
ISE 513	Humanitarian Logistics	3	MEA 479	Air Quality	3
ISE 535	Python Programming for Industrial & Systems Engineers	3	MSE 409	Nuclear Materials	3
ISE 547	Applications of Data Science in Healthcare	3	MSE 420	Mechanical Properties of Materials	3
MA 414	Foundations of Cryptography	3	MSE 423	Introduction to Materials Engineering Design	1
MA 416	Introduction to Combinatorics	3	MSE 440	Processing of Metallic Materials	3
MA 427	Introduction to Numerical Analysis I	3	MSE 445	Ceramic Processing	3
MA 428	Introduction to Numerical Analysis II	3	MSE 455	Polymer Technology and Engineering	3
MA 514	Foundations of Cryptography	3	MSE 456	Composite Materials	3
MAE 342	Introduction to Automotive Engineering	3	MSE 460	Microelectronic Materials	3
MAE 361	Dynamics & Controls	3	MSE 465	Introduction to Nanomaterials	3
MAE 372	Aerospace Vehicle Structures Lab	1	MSE 470	Materials Science and Engineering Senior Design Project	3
MAE 403	Air Conditioning	3	MSE 480	Materials Forensics and Degradation	3
MAE 405	Controls Lab	1	MSE 485	Biomaterials	3
			MSE 489	Solid State Solar and Thermal Energy Harvesting	3
			MSE 490	Special Topics in Materials Science and Engineering	1-4
			MSE 509	Nuclear Materials	3
			MSE 540	Processing of Metallic Materials	3

MSE 545	Ceramic Processing	3
MSE 556	Composite Materials	3
MSE 565	Introduction to Nanomaterials	3
MSE 580	Materials Forensics and Degradation	3
MSE 589	Solid State Solar and Thermal Energy Harvesting	3
NE 400	Nuclear Reactor Energy Conversion	4
NE 401	Reactor Analysis and Design	3
NE 402	Reactor Engineering	4
NE 403	Nuclear Reactor Laboratory	2
NE 404	Radiation Safety and Shielding	3
NE 405	Reactor Systems	3
NE 406	Nuclear Engineering Senior Design Preparation	1
NE 408	Nuclear Engineering Design Project	3
NE 409	Nuclear Materials	3
NE 412	Nuclear Fuel Cycles	3
NE 418	Nuclear Power Plant Instrumentation	3
NE 419	Introduction to Nuclear Energy	3
NE 431	Nuclear Waste Management	3
NE 490	Health Physics and Radiological Emergency Response	3
NE 491	Special Topics in Nuclear Engineering	1-4
NE 501	Reactor Analysis and Design	3
NE 509	Nuclear Materials	3
NE 531	Nuclear Waste Management	3
NE 590	Health Physics and Radiological Emergency Response	3
PB 488/588	Systems Biology Modeling of Plant Regulation	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	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	Lean Six Sigma Quality	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		
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. 3)		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/)	3
GEP 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. 3)	3
Engineering Elective 300- or 400-Level (p. 8)	3
Engineering Elective 300- or 400-Level (p. 8)	3
Engineering Elective 300- or 400-Level (p. 8)	3
GEP Requirement (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/)	3
Hours	15
Spring Semester	
Communication Elective (p. 12)	3
Engineering Topics III Elective (p. 3)	3
Engineering Elective 300- or 400-Level (p. 8)	3
Engineering Elective 300- or 400-Level (p. 8)	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. 8)	3
Engineering Elective 400-Level (p. 8)	3
BSE Topic Elective (p. 3)	3
BSE Topic Elective (p. 3)	3
GEP Requirement (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/)	3
Hours	15
Spring Semester	
Engineering Topics IV Elective (p. 12)	3
Engineering Elective 400-Level (p. 8)	3
BSE Topic Elective (p. 3)	3
BSE Topic Elective (p. 3)	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.

Focus 2 Apply Assessment (<https://www.focus2career.com/Portal/Register.cfm?SID=1929>) (Available to prospective students)

A career assessment tool designed to support prospective students in exploring and choosing the right major and career path based on your unique personality, interests, skills and values. Get started with Focus 2 Apply and see how it can guide your journey at NC State.