

ENGINEERING (MENG)

The College of Engineering offers a Master of Engineering degree with the following concentrations:

- Advanced Manufacturing for Energy Systems
- Advanced Systems Engineering
- Biomedical Engineering
- Chemical Engineering
- Civil Engineering
- Computer Science and Engineering
- Data Sciences
- Digital Design and Manufacturing
- Electrical and Computer Engineering
- Environmental Engineering
- General Engineering
- Global Entrepreneurship
- Manufacturing Engineering
- Materials Science and Engineering
- Mechanical Engineering

Advanced Manufacturing for Energy Systems MENG

Master of Engineering in Advanced Manufacturing for Energy Systems (AMES) is an interdisciplinary degree, suitable for all engineering backgrounds. AMES provides students with background in advanced energy systems and manufacturing processes applied to these systems. Courses focus on fundamentals of energy systems and processes, as well as the background required to address the advanced manufacturing needs of the energy industry.

Advanced Systems Engineering MENG

The Institute for Advanced Systems Engineering has created a program to train the engineer of the next decade, one who is not constrained by disciplines, and that can bridge the gap between theory and application in the field of cyberphysical systems (C.P.S.) engineering. Students achieve a depth of knowledge in systems engineering practices and methods to work as a systems engineer and to provide leadership and expertise on the development of their company's systems engineering processes, functions, and methods. The program teaches requirements development and analysis, systems architecting, model-based system engineering methods, physics-based modeling and analysis, machine learning, data science, decision-making, optimization, and verification and validation of engineered systems.

Biomedical Engineering MENG

The Biomedical Engineering Department offers an online 30 credit Master of Engineering degree with a concentration in Biomedical Engineering. In this concentration students select either the Clinical Engineering track or the Biomechanics Engineering track. Upon completion of the Biomechanics Engineering track, students will be able to lead in the design, development, and manufacturing of biomedical technology, devices, and systems. The Biomechanics track is well suited to those with an undergraduate degree in either Biomedical Engineering or Mechanical Engineering. Upon completion of the Clinical Engineering track, students will be able to lead healthcare technology implementation and improvement by working with clinicians and administrators,

investigate technology-related incidents and accidents, evaluate and specify utility systems which connect to medical equipment, and analyze methods to interconnect medical devices to hospital computer networks to transfer data. Students will be prepared for certification by the American College of Clinical Engineering, will gain exposure in the community, will stay abreast of current technology and best practices, and will be prepared to advance in professional responsibilities and scope of expertise.

Chemical Engineering MENG

The Chemical and Biomolecular Engineering Department offers a 30 credit Master of Engineering with a concentration in Chemical Engineering to provide engineers an educational experience that will advance their knowledge and professional skills on modern chemical engineering topics and will prepare them for their careers in an industrial set up. This offering will help to prepare graduates for advanced positions in a variety of industries including petrochemical processing, materials manufacturing, energy distribution, microelectronics, and biotechnology.

Civil Engineering MENG

The Master of Engineering in Civil Engineering is a 30 credit master's degree with two tracks: structural engineering and transportation engineering. The field of study of Civil Engineering merges the benefits of technical engineering courses with professional development classes. The target audience includes students who are employed full time in industry as practicing engineers, as well as those interested in expanding their skills before entering industry. As part of a capstone course, all MENG students ultimately complete and defend a final project, typically connected to a work related problem requiring a solution. The structures track focuses on the design of buildings, bridges and other structures and applied mechanics which form the basis of all structural analysis and design. The transportation track focuses on planning, design and operation of transportation systems

Computer Science and Engineering MENG

The Master of Engineering with a concentration in Computer Science and Engineering fully prepares students for a career in industry. It also enhances the computing expertise of industrial personnel. Students could also pursue a Ph.D. degree after completing this program. This program provides comprehensive knowledge of the theoretical and applied aspects of computer science and engineering. The MENG program assumes that the student already has a background in computing equivalent to a B.A. or B.S. in Computer Science, Computer Science and Engineering, or Computer Engineering.

Data Sciences MENG

The Computer Science and Engineering Department offers a 30-credit Master of Engineering degree to train engineers on the design of advanced techniques to analyze different kinds of engineering data. The certificate program will build competency in the art of visualizing data and communicating technical ideas through data visualization, as well as competency in data mining, artificial intelligence and machine learning algorithms. This degree is designed to provide functional literacy in critical data sciences and engineering and technical analytics. Students are able to parlay their certificate credits into this degree concentration to receive a full Master of Engineering.

Digital Design and Manufacturing MENG

The School of Mechanical, Aerospace, and Manufacturing Engineering offers a 30 credit Master of Engineering with a concentration in Digital Design and Manufacturing. This concentration is intended for students seeking to advance their knowledge in digital tools used in design and manufacturing.

Electrical and Computer Engineering MENG

The Electrical and Computer Engineering department offers a 30 credit Master of Engineering concentration. Electrical Engineering focuses on various industries from electric power and communications to create technologies connecting the world and helping to improve our lives. Computer Engineering emphasizes the analysis, design, implementation, optimization, and application of computing systems. This concentration allows students to provide technical contributions to design, development, and manufacturing in their practice of electrical and systems engineering, in addition to professional development.

Environmental Engineering MENG

The Civil and Environmental Engineering department has created a series of courses that will provide the necessary knowledge at an advanced level for thorough understanding of environmental engineering knowledge, techniques and technologies. This will allow students to use appropriate tools and techniques for the planning and design of site investigations and waste containment systems. The depth of knowledge provides an understanding of physical, chemical and biological processes governing containment fate and transport in the environment and application of modern tools to predict behavior. Students will learn to apply fundamental physical, chemical and biological principles to problems in environmental engineering and design comprehensive treatment strategies. In addition, students will acquire the professional discipline for staying abreast of current environmental engineering best practices, follow changes in regulatory and safety standards, and adhere to ethical engineering practice. Students become a member of the environmental engineering community through networking with professional societies, and will be prepared to advance in professional responsibilities and scope of expertise.

General Engineering MENG

The General Engineering concentration is multidisciplinary. This is particularly attractive to practicing engineers and professionals in related fields who seek a wider base of knowledge. The MENG in General Engineering requires students to complete 30 credits of graduate level study. Students in this degree concentration will be required to study a set of core disciplines, as well as a range of elective courses.

Global Entrepreneurship MENG

The Global Entrepreneurship program, a partnership between the University of Connecticut Schools of Engineering and Business and Southern Connecticut State University, is intended to create a nurturing ecosystem for a profession that sees 90 percent of start-ups fold. Students in the program will have a diversified science or engineering background and unique entrepreneurial ideas. This program will enable novice entrepreneurs to learn best practices, receive mentorship from veteran entrepreneurs, and be set up for success.

Manufacturing Engineering MENG

The School of Mechanical, Aerospace, and Manufacturing Engineering offers a fully online 30 credit Master of Engineering with a concentration in Manufacturing Engineering. This curriculum features the synergistic blend of traditional manufacturing techniques and the recent, revolutionary progresses in Industry 4.0 initiative.

Materials Science and Engineering MENG

The Materials Science and Engineering department offers a 30 credit Master of Engineering concentration intended for working professionals seeking to advance their knowledge in the discovery, design, selection, characterization, modeling or applications of modern engineering materials, especially metals, alloys, ceramics and composites. Courses in the MSE curriculum place common emphasis on the development of fundamental principles used to establish relationships between structure, processing, properties and performance of materials in engineering applications. Students select plans of study that best match their individual interests or help them achieve their educational and professional goals.

Mechanical Engineering MENG

The School of Mechanical, Aerospace, and Manufacturing Engineering offers a 30 credit Master of Engineering concentration in Mechanical Engineering. These courses encompass analysis, design, manufacturing, and maintenance of mechanical systems. Students in the MENG program may elect to complete their degree with a track in Systems and Mechanics, or in Thermal and Fluid Sciences if they take at least four courses (12 credits) in the corresponding track.

Advanced Manufacturing for Energy Systems Requirements

Students must take a total of 30 credits.

Course	Title	Credits
ENGR 5311	Professional Communication and Information Management	3
ENGR 5312	Engineering Project Planning and Management	3
ENGR 5314	Advanced Engineering Mathematics	3
ENGR 5315	MENG Capstone	3
AMES 5111	Computer Aided Engineering	3
Select five technical electives from the following:		15
AMES 5410		
AMES 5420	Introduction to Smart and Green Manufacturing	
AMES 5441		
AMES 5451		
AMES 5461		
CE 5164	Finite Element Methods in Applied Mechanics I	
CE 5166	Finite Element Methods in Applied Mechanics II	
ECE 5101	Introduction to System Theory	
ECE 5510	Power System Analysis	
ECE 5512	Power Distribution	
ECE 5520	Advanced Power Electronics	

ECE 5530	Modeling and Control of Electric Drives
ECE 6102	
ECE 6104	
ECE 6108	
ECE 6161	
ECE 6437	Computational Methods for Optimization
ECE 6439	Estimation Theory and Comp Algorithms
ME 5110	Advanced Thermodynamics
ME 5120	Advanced Thermo-Fluids I
ME 5130	Advanced Heat and Mass Transfer
ME 5140	Heat and Mass Transfer in Multiphase Systems
ME 5160	Theory and Design of Automatic Control Systems
ME 5180	Dynamics
ME 5190	Advanced Solid Mechanics
ME 5311	Computational Fluid Dynamics
ME 5320	Flow of Compressible Fluids I
ME 5341	Radiation Heat Transfer
ME 5430	Mechanics of Composite Materials
ME 5443	Composites Manufacturing
ME 5511	Principles of Optimum Design
ME 5522	Advanced Analysis of Composite Materials and Structures
ME 5895	Special Topics in Mechanical Engineering (Fuel Cells)
ME 5895	Special Topics in Mechanical Engineering (Fundamentals of Mechanics of Composites)
ME 6130	Advanced Thermo-Fluids II
ME 6170	Combustion and Air Pollution Engineering
MSE 5001	Principles of Materials Engineering
MSE 5320	Investigation of Special Topics (Composites Characterization)
MSE 5322	Materials Characterization
MSE 5336	Material Selection in Mechanical Design
MSE 5787	Behavior of Composites

Total Credits 30

Other courses may also be substituted if mutually agreed by the student, advisor and program director.

Advanced Systems Engineering Requirements

Course	Title	Credits
Required Core Courses		
ENGR 5311	Professional Communication and Information Management	3
ENGR 5312	Engineering Project Planning and Management	3
ENGR 5314	Advanced Engineering Mathematics	3
ENGR 5315	MENG Capstone	3
SE 5000 or SE 5001	Introduction to Systems Engineering ¹ Model-Based Systems Engineering	3

Required Electives

15 credits chosen in consultation with the student's major advisor		15
SE 5101	Foundations of Physical Systems Modeling	
SE 5102	Uncertainty Analysis, Robust Design, and Optimization	
SE 5201	Embedded/Networked Systems Modeling Abstractions	
SE 5202	Foundations of Control	
SE 5302		
SE 5402	Architecture of Internet of Things	
SE 5602	Machine Learning for Physical Sciences and Systems	
SE 5702	Data Science for Materials and Manufacturing	
SE 5095	Special Topics	

Total Credits 30

¹ Students may take both SE 5000 Introduction to Systems Engineering and SE 5001 Model-Based Systems Engineering and one course will count as a required elective.

With prior approval of the major advisor, students may substitute other courses to meet the concentration course requirement. With prior approval of the major advisor, students in designated programs can meet up to nine credits of these requirements through coursework at other approved institutions.

Biomedical Engineering M.Eng. Requirements

Clinical Engineering Track Requirements

Course	Title	Credits
Required Core Courses		
ENGR 5311	Professional Communication and Information Management	3
ENGR 5312	Engineering Project Planning and Management	3
ENGR 5314	Advanced Engineering Mathematics	3
ENGR 5315	MENG Capstone	3
Required Concentration Courses		
BME 5020	Clinical Engineering Fundamentals	3
BME 5030	Human Error and Medical Device Accidents	3
BME 5040	Medical Instrumentation in the Hospital	3
BME 5050	Engineering Problems in the Hospital	3
BME 5070	Clinical Systems Engineering	3
BME 5080	Medical Device Cybersecurity	3
Total Credits		30

Biomechanics Engineering Track Requirements

Course	Title	Credits
Required Core Courses		
ENGR 5311	Professional Communication and Information Management	3

ENGR 5312	Engineering Project Planning and Management	3
ENGR 5314	Advanced Engineering Mathematics	3
ENGR 5315	MENG Capstone	3

Required Core Concentration Courses

Select four courses from the following: 12

BME 5000	Physiological Systems I (Select four courses from the following:)	
BME 5100	Physiological Modeling	
BME 5320	Biosensors and Nanodevices for Biomedical Applications	
BME 5500	Clinical Instrumentation Systems	
BME 5600	Human Biomechanics	
BME 5630	Multiphysics Finite Element Analysis	
BME 5700	Biomaterials and Tissue Engineering	
BME 6810	Machine Learning Methods for Biomedical Signal Analysis	

Electives

Select six credits from Core Concentration Courses or the following electives: 6

CE 5122	Advanced Mechanics of Materials	
CE 5128	Elastic Stability	
CE 5163	Fracture Mechanics	
CE 5164	Finite Element Methods in Applied Mechanics I	
CE 5166	Finite Element Methods in Applied Mechanics II	
ME 5105	Basic Concepts of Continuum Mechanics	
ME 5150	Analytical and Applied Kinematics	
ME 5155		
ME 5180	Dynamics	
ME 5190	Advanced Solid Mechanics	

Total Credits 30**Chemical Engineering Requirements**

Course	Title	Credits
Required Core Courses		
ENGR 5311	Professional Communication and Information Management	3
ENGR 5312	Engineering Project Planning and Management	3
ENGR 5314	Advanced Engineering Mathematics	3
ENGR 5315	MENG Capstone	3
Core Concentration Course		
CHEG 5001	Advanced Chemical Engineering Fundamentals	3
Electives		
Select 15 credits from the following: 15		
CHEG 5301	Chemical Engineering Thermodynamics I	
CHEG 5315	Transfer Operations I	
CHEG 5321	Reaction Kinetics I	
CHEG 5323	Surface Chemistry and Heterogeneous Catalysis	

CHEG 5330	Applied Machine Learning in Chemical Engineering	
CHEG 5333	Computer Simulation in Chemical Engineering	
CHEG 5339	Uncertainty Analysis, Robust Design, and Optimization	
CHEG 5341	Fuel Processing	
CHEG 5373	Biochemical Engineering	
CHEG 5376	Bioseparations	

Total Credits 30**Civil Engineering Requirements**

Course	Title	Credits
Required Core Courses		
ENGR 5311	Professional Communication and Information Management	3
ENGR 5312	Engineering Project Planning and Management	3
ENGR 5314	Advanced Engineering Mathematics	3
ENGR 5315	MENG Capstone	3

Additional Track Core Courses

Select one of the following tracks: 18

Structural Track	
Transportation Track	

Total Credits 30**Additional Tracks****Structural Track**

Course	Title	Credits
Core Courses		
Select four of the following: 12		
CE 5650		
CE 5122	Advanced Mechanics of Materials	
CE 5125	Reliability for Engineers	
CE 5128	Elastic Stability	
CE 5150	Structural Vibrations	
CE 5151	Experimental Structural Dynamics	
CE 5163	Fracture Mechanics	
CE 5164	Finite Element Methods in Applied Mechanics I	
CE 5166	Finite Element Methods in Applied Mechanics II	
CE 5380	Bridge Structures	
CE 5382		
CE 5383	Design of Bridges for Extreme Events	
CE 5384	Accelerated Bridge Construction	
CE 5610	Advanced Reinforced Concrete Structures	
CE 5620		
CE 5640	Prestressed Concrete Structures	

Elective Courses

Select six credits of any engineering course with M.Eng. advisor approval 6

Total Credits 18

Transportation Track

Course	Title	Credits
Core Courses		
Select three of the following:		9
CE 5200	Operations Research in Civil and Environmental Engineering	
CE 5720	Street and Highway Design	
CE 5730	Transportation Planning	
CE 5740	Traffic Engineering I	
CE 5750		
Elective Courses		
Select nine credits from the following:		9
CE 5125	Reliability for Engineers	
CE 5128	Elastic Stability	
CE 5150	Structural Vibrations	
CE 5151	Experimental Structural Dynamics	
CE 5163	Fracture Mechanics	
CE 5166	Finite Element Methods in Applied Mechanics II	
CE 5380	Bridge Structures	
CE 5640	Prestressed Concrete Structures	
CE 5715	Sustainable Transportation	
CE 5725	Transportation Safety	
CE 5735	Public Transportation Systems	
Total Credits		18

Computer Science and Engineering Requirements

The degree requires at least 30 credits of graduate level courses.

Course	Title	Credits
Core Courses		
ENGR 5311	Professional Communication and Information Management	3
ENGR 5312	Engineering Project Planning and Management	3
ENGR 5315	MENG Capstone	3
CSE 5050	Algorithms and Complexity ¹	3
or CSE 5500	Algorithms	
Graduate Level Course Work		
Select an additional 18 credits of graduate-level coursework in CSE ²		18
Total Credits		30

¹ Students must pass CSE 5050 Algorithms and Complexity or CSE 5500 Algorithms with a grade of B- or higher. Students may take CSE 5500 Algorithms as an elective if not already taken as a core course.

² At most, six of those credits can be from a combination of CSE 5097 Seminar, CSE 5099 Independent Study in Computer Science and Engineering, and CSE 5600, with at most three credits from CSE 5097 Seminar.

Data Sciences Requirements

Course	Title	Credits
Required Core Courses		
ENGR 5311	Professional Communication and Information Management	3
ENGR 5312	Engineering Project Planning and Management	3
ENGR 5315	MENG Capstone	3
CSE 5050	Algorithms and Complexity	3
or CSE 5500	Algorithms	
Required Concentration Courses		
CSE 5520	Data Visualization and Communication	3
CSE 5713	Data Mining	3
CSE 5717	Big Data Analytics	3
CSE 5819	Introduction to Machine Learning	3
Elective Courses		
Select two elective courses from the following:		6
CSE 5050	Algorithms and Complexity (Cannot be taken to earn credit after 5500)	
CSE 5500	Algorithms	
CSE 5820	Machine Learning	
CSE 5850	Introduction to Cyber-Security	
ECE 6141	Neural Networks for Classification and Optimization	
ECE 6437	Computational Methods for Optimization	
ENGR 5314	Advanced Engineering Mathematics	
ME 5511	Principles of Optimum Design	
ME 5895	Special Topics in Mechanical Engineering ¹	
SE 5402/ CSE 5312	Architecture of Internet of Things	
SE 5702	Data Science for Materials and Manufacturing	
Only one of the following may be taken as an elective:		
CSE 5835	Machine Learning for Physical Sciences and Systems	
CSE/SE 5602	Machine Learning for Physical Sciences and Systems	
Total Credits		30

¹ When offered as "AI for Design and Manufacturing," or "Computational Nanomechanics".

Courses may not be used to simultaneously fulfill both core and elective requirements.

Digital Design and Manufacturing Requirements

Course	Title	Credits
Required Core Courses		
ENGR 5311	Professional Communication and Information Management	3
ENGR 5312	Engineering Project Planning and Management	3

ENGR 5314	Advanced Engineering Mathematics	3
ENGR 5315	MENG Capstone	3
Digital Design and Manufacturing Concentration Electives		
Select 18 credits from the following:		18
DDM 5110		
DDM 5120		
DDM 5130		
DDM 5140		
DDM 5150		
DDM 5170		
MFGE 5130	Manufacturing Automation and Industry 4.0	

Electrical and Computer Engineering Requirements

Course	Title	Credits
Core Courses		
ENGR 5311	Professional Communication and Information Management	3
ENGR 5312	Engineering Project Planning and Management	3
ENGR 5314	Advanced Engineering Mathematics	3
ENGR 5315	MENG Capstone	3
Concentration Courses		
Select 18 credits from any graduate-level coursework in ECE ¹		18
Total Credits		30

¹ Except ECE 6094 Seminar and ECE 6099 Independent Study in Electrical Engineering. Other graduate engineering courses may be taken as concentration electives with prior approval of the advisor.

Environmental Engineering Requirements

Course	Title	Credits
Required Core Courses		
ENGR 5311	Professional Communication and Information Management	3
ENGR 5312	Engineering Project Planning and Management	3
ENGR 5314	Advanced Engineering Mathematics	3
or ENVE 5320	Quantitative Methods for Engineers	
ENGR 5315	MENG Capstone	3
Environmental Engineering Concentration Electives		
Select 18 credits from the following:		18
AH 5275	HAZWOPER	
ENVE 5210	Environmental Engineering Chemistry - I	
ENVE 5240	Biodegradation and Bioremediation	
ENVE 5252	Environmental Remediation	
ENVE 5310	Environmental Transport Phenomena	
ENVE 5311	Environmental Biochemical Processes	
ENVE 5330	Probabilistic Methods in Engineering Systems	
ENVE 5331	Predictive Analytics for Scientists and Engineers	

ENVE 5530	Environmental Site Investigations	
ENVE 5810	Hydrometeorology	
ENVE 5811	Hydroclimatology	
ENVE 5812		
ENVE 5821	Vadose Zone Hydrology	
ENVE 5830	Groundwater Flow Modeling	
ENVE 5850		
Total Credits		30

General Engineering Requirements

Course	Title	Credits
Core Courses		
ENGR 5311	Professional Communication and Information Management	3
ENGR 5312	Engineering Project Planning and Management	3
ENGR 5314	Advanced Engineering Mathematics	3
or CSE 5500	Algorithms	
ENGR 5315	MENG Capstone	3
Additional Courses		
Select an additional 18 engineering credits with guidance provided from their advisor		18
Total Credits		30

Global Entrepreneurship Requirements

Course	Title	Credits
Core Courses		
ENGR 5311	Professional Communication and Information Management	3
ENGR 5312	Engineering Project Planning and Management	3
ENGR 5300	Special Topics in Engineering (six credits taught as Experiential Technology Entrepreneurship I and II)	6
ENGR 5315	MENG Capstone	3
Entrepreneurial Idea-related Technical Courses		
Three 5000-6000 level engineering or science courses, approved by student's major advisor.		
Healthcare-related Entrepreneurial Idea Courses		
BME 6086	Special Topics In Biomedical Engineering (when taught as Entrepreneurship Life Sciences)	3
Two Electives (three credits each) chosen from a list of entrepreneurial/business courses at the University of Connecticut.		6

Total requirements are five core courses and five additional concentration category courses totaling 30 credits.

Manufacturing Engineering Requirements

Course	Title	Credits
Core Courses		
ENGR 5311	Professional Communication and Information Management	3

ENGR 5312	Engineering Project Planning and Management	3
ENGR 5314	Advanced Engineering Mathematics	3
ENGR 5315	MENG Capstone	3

Additional Courses

Select four of the following courses: 12

MFGE 5110	Advanced Manufacturing Quality Control	
MFGE 5120	Advanced Manufacturing Processes and Products	
MFGE 5130	Manufacturing Automation and Industry 4.0	
MFGE 5140	Manufacturing Systems Planning	
MFGE 5210	Data Science for Materials and Manufacturing	
MFGE 5220	Composites Manufacturing	

Elective Courses

Select two engineering electives for six credits ¹ 6

Total Credits 30

¹ Which can be chosen from existing College of Engineering online courses with major advisor consent needed.

Materials Science and Engineering Requirements

Course	Title	Credits
Required Courses		
ENGR 5311	Professional Communication and Information Management	3
ENGR 5312	Engineering Project Planning and Management	3
ENGR 5314	Advanced Engineering Mathematics	3
ENGR 5315	MENG Capstone	3
MSE Concentration Courses		
Select 18 credits of MSE concentration courses ¹		18
Total Credits		30

¹ Of these 18 credits, at least 12 credits must come from graduate (5000-level) courses in the MSE field of study. Up to six credits of graduate (5000-level) courses covering topics relevant to materials science or materials engineering may be taken in fields of study other than MSE with major advisor approval. Students who have completed the certificate in Advanced Materials Characterization may apply up to six credits of the IMS courses as approved coursework in fields of study other than MSE and may substitute up to six additional credits of the IMS courses for the equivalent number of MSE course credits.

Mechanical Engineering Requirements

Course	Title	Credits
Core Courses		
ENGR 5311	Professional Communication and Information Management	3
ENGR 5312	Engineering Project Planning and Management	3

ENGR 5314	Advanced Engineering Mathematics	3
ENGR 5315	MENG Capstone	3

Tracks

Select one of the following tracks for 12 credits: 12

Systems and Mechanics

Thermal and Fluid Sciences

Elective Courses

Two additional elective ME 5000-level or ME 6000-level courses (which may include the above track courses). 6

Total Credits 30

Tracks**Systems and Mechanics**

Course	Title	Credits
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Add four of the following courses: 12

ME 5105	Basic Concepts of Continuum Mechanics	
ME 5150	Analytical and Applied Kinematics	
ME 5155		
ME 5160	Theory and Design of Automatic Control Systems	
ME 5180	Dynamics	
ME 5190	Advanced Solid Mechanics	
ME 5420	Mechanical Vibrations I	

Total Credits 12

Thermal and Fluid Sciences

Course	Title	Credits
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Add four of the following courses: 12

ME 5110	Advanced Thermodynamics	
ME 5120	Advanced Thermo-Fluids I	
ME 5130	Advanced Heat and Mass Transfer	
ME 5140	Heat and Mass Transfer in Multiphase Systems	
ME 5311	Computational Fluid Dynamics	
ME 6170	Combustion and Air Pollution Engineering	

Total Credits 12