

## Chemical & Biological Engineering and Chemical Engineering

Engineering Technical Electives (including CHEN 3000+ Technical Electives) are listed first, followed by General Technical Electives. (All Engineering Technical Electives can also be used for General Technical Elective credit.)

### ENGINEERING TECH ELECTIVES

AREN 1027.....Engineering Drawing  
AREN 1316.....Intro to AREN  
AREN 2050.....Building Materials and Systems  
AREN 3010.....Mechanical Systems for Buildings  
AREN 3050.....Environmental Systems for Buildings 1  
AREN 3060.....Environmental Systems for Buildings 2  
AREN 3140.....Illumination Laboratory  
AREN 3540.....Illumination 1  
AREN 4010.....HVAC System Controls  
AREN 4035.....Architectural Structures 1  
AREN 4045.....Architectural Structures 2  
AREN 4110.....HVAC Design 1  
AREN 4130 .....Optical Design for Illumination and Solid-State Lighting  
AREN 4315.....Design of Masonry Structures  
AREN 4317.....Architectural Engineering Design  
AREN 4530 .....Advanced Lighting Design  
AREN 4540.....Exterior Lighting Systems  
AREN 4550.....Illuminations 2  
AREN 4560.....Luminous Radiative Transfer  
AREN 4570.....Building Electrical Systems Design 1  
AREN 4580.....Daylighting  
AREN 4590.....Computer Graphics in Lighting Engineering  
AREN 4830.....The Future of Solid State Lighting  
AREN 4890 .....Sustainable Building Design

ASEN 1000 .....Intro to ASEN  
ASEN 1400 .....Gateway to Space  
ASEN 1969 .....Pathway to Space  
ASEN 3112 .....Structures  
ASEN 3116 .....Introduction to Biomedical Engineering  
ASEN 3128 .....Aircraft Dynamics  
ASEN 3200 .....Orbital Mechanics/Attitude Dynamics and Control  
ASEN 3300 .....Aerospace Electronics and Communications  
ASEN 4010 .....Intro to Space Dynamics  
ASEN 4012 .....Aerospace Materials  
ASEN 4013 .....Foundations of Propulsion  
ASEN 4090 .....Global Positioning Systems Applications  
ASEN 4114 .....Automatic Control Systems  
ASEN 4123 .....Vibration Design  
ASEN 4128.....Human Factors in Engineering and Design  
ASEN 4138 .....Aircraft Design

## Chemical & Biological Engineering and Chemical Engineering

ASEN 4148 .....Spacecraft Design  
ASEN 4215 .....Descriptive Physical Oceanography  
ASEN 4216 .....Neural Signals and Functional Brain Imaging  
ASEN 4218 .....Large Space Structures Design  
ASEN 4222 .....Materials Science for Composite Manufacturing  
ASEN 4238 .....Computer Aided Control System Design  
ASEN 4248 .....Computer Aided Control System Design 2  
ASEN 4255 .....Environmental Aerodynamics  
ASEN 4338 .....Computer Analysis of Structures  
ASEN 4426 .....Neural Systems and Physiological Control  
ASEN 4519 .....Climate Change and Engineering

CHEN 1300.....Intro to Chemical Engineering  
CHEN 2840.....Independent Study  
CHEN 3660.....Energy Fundamentals  
CHEN 3838.....Special Topics  
CHEN 3840.....Independent Study  
CHEN 4440.....Materials (CBEN only)  
CHEN 4450.....Polymer Chemistry  
CHEN 4460.....Polymer Engineering  
CHEN 4630 .....Intellectual Property Law  
CHEN 4650 .....Particle Technology  
CHEN 4800 .....Bioprocess Engineering (Focus TE for CBEN; CHEN 3000+ TE for CHEN)  
CHEN 4801 .....Pharmaceutical Biotechnology (Focus TE for CBEN; CHEN 3000+ TE for CHEN)  
CHEN 4802 .....Tissue Engineering and Medical Devices (Focus TE for CBEN; CHEN 3000+ TE for CHEN)  
CHEN 4803 .....Metabolic Engineering (Focus TE for CBEN; CHEN 3000+ TE for CHEN)  
CHEN 4805 .....Biomaterials (CHEN only)  
CHEN 4820 .....Biochemical Separations (CHEN only)  
CHEN 4836 .....Nanomaterials  
CHEN 4838 .....Electrochemical Engineering  
CHEN 4838 .....Protein and Enzyme Engineering (Focus TE for CBEN; CHEN 3000+ TE for CHEN)  
CHEN 4840 .....Independent Study

COEN 1400 ..... Engineering Projects  
COEN 1410 ..... Engineering Projects  
COEN 1500..... Intro to Engineering  
COEN 3210 .....Climate Change and Engineering

CSCI 1200 .....The Art of Computational Thinking and Computer Programming (Python)  
CSCI 1300 .....Computer Science1: Starting Computing (C++)  
CSCI 2270.....Computer Science 2: Data Structures  
CSCI 2400.....Computer systems  
CSCI 2824.....Discrete Structures  
CSCI 3002.....Human-Centered Computing Foundations  
CSCI 3104.....Algorithms  
CSCI 3155.....Principles of Programming Languages  
CSCI 3202.....Introduction to Artificial Intelligence  
CSCI 3287.....Database and Information Systems

## Chemical & Biological Engineering and Chemical Engineering

CSCI 3302.....Intro to Robotics  
CSCI 3308.....Software Engineering Methods and Tools  
CSCI 3434.....Theory of Computation  
CSCI 3656.....Numerical Computation  
CSCI 3702.....Cognitive Science  
CSCI 3753.....Operating Systems  
CSCI 4000..... Entrepreneurship in Computing  
CSCI 4113.....UNIX System Administration  
CSCI 4229.....Computer Graphics  
CSCI 4239.....Advanced Computer Graphics  
CSCI 4273.....Network Systems  
CSCI 4302.....Advanced Robotics  
CSCI 4308.....Software Engineering project 1  
CSCI 4314.....Algorithmsfor Modern Biology  
CSCI 4318.....Software Engineering Project 2  
CSCI 4446.....Chaotic Dynamics  
CSCI 4448.....Object Oriented Analysis and Design  
CSCI 4555.....Compiler Construction  
CSCI 4576.....High Performance Scientific Computing  
CSCI 4586.....High Performance Scientific Computing 2  
CSCI 4593.....Computer Organization  
CSCI 4753.....Computer Performance Modeling  
CSCI 4809.....Computer Animation  
CSCI 4830 .....Special Topics: Sustainable Computing

CVEN 1317.....Intro to CVEN  
CVEN 2012.....Intro to Geomatics  
CVEN 2121.....Analytical Mechanics 1  
CVEN 3022.....Construction Surveying  
CVEN 3032.....Photogrammetry  
CVEN 3111.....Analytical Mechanics 2  
CVEN 3246.....Introduction to Construction  
CVEN 3256.....Construction Equipment and Methods  
CVEN 3323.....Hydraulic Engineering  
CVEN 3414.....Fundamentals of Environmental Engineering  
CVEN 3424.....Water and Waste-Water Treatment  
CVEN 3434.....Introduction to Applied Ecology  
CVEN 3525.....Structural Analysis  
CVEN 3602.....Transportation Systems  
CVEN 3698.....Engineering Geology  
CVEN 3708.....Geotechnical Engineering 1  
CVEN 3718.....Geotechnical Engineering 2  
CVEN 4147.....Systems Approach to Global Engineering  
CVEN 4323.....Water Resource Engineering Design  
CVEN 4333.....Engineering Hydrology  
CVEN 4353.....Groundwater Engineering  
CVEN 4383.....Groundwater Modeling  
CVEN 4404.....Water Chemistry

## Chemical & Biological Engineering and Chemical Engineering

CVEN 4414.....Water Chemistry Lab  
CVEN 4424.....Environmental Organic Chemistry  
CVEN 4434.....Environmental Engineering Design  
CVEN 4474.....Hazardous and Industrial Waste Management  
CVEN 4484.....Intro to Environmental Microbiology  
CVEN 4511.....Finite Element Analysis  
CVEN 4525.....Analysis of Framed Structures  
CVEN 4535.....Construction Materials  
CVEN 4537.....Numerical Methods in Civil Engineering  
CVEN 4545.....Steel Design  
CVEN 4554.....Fund of Air Quality Mgmt  
CVEN 4555.....Reinforced Concrete Design  
CVEN 4565.....Timber Design  
CVEN 4594.....Water Reuse and Reclamation  
CVEN 4700.....Sustainability and the Built Environment  
CVEN 4718.....Mechanics and Dynamics of Glaciers  
CVEN 4728.....Foundation Engineering

ECEN 1100 .....Intro to ECEN  
ECEN 1400 .....Introduction to Digital and Analog Electronics  
ECEN 1500 .....Sustainable Energy  
ECEN 2250 .....Circuits/Electronics 1  
ECEN 2260 .....Circuits/Electronics 2  
ECEN 2270.....Electronics Design Lab  
ECEN 2350 .....Digital Logic  
ECEN 2410 .....Renewable Sources and Efficient Electrical Energy Systems  
ECEN 2420 .....Wireless Electronics for Communication  
ECEN 2703 .....Discrete Mathematics for Computer Engineers  
ECEN 3030 .....Electrical/Electronic Circuits Non-Major  
ECEN 3170 .....Energy Conservation 1  
ECEN 3250.....Circuits/Electronics 3  
ECEN 3300 .....Linear Systems  
ECEN 3303 .....Intro to Robotics  
ECEN 3320 .....Semiconductor Devices  
ECEN 3350.....Programming Digital Systems  
ECEN 3360.....Digital Design Lab  
ECEN 3400 .....Electromagnetic Fields and Waves  
ECEN 3410 .....Electromagnetic Waves and Transmission  
ECEN 3810 .....Introduction to Probability Theory  
ECEN 4106 .....Photonics  
ECEN 4116 .....Intro to Optical Communications  
ECEN 4120 .....Neural Network Design  
ECEN 4138 .....Control Systems Analysis  
ECEN 4167 .....Energy Conservation 2  
ECEN 4224 .....High Speed Digital Design  
ECEN 4242 .....Communication Theory  
ECEN 4324 .....Fundamentals of Microsystem Packaging  
ECEN 4341.....Bioelectromagnetics

## Chemical & Biological Engineering and Chemical Engineering

ECEN 4375 .....Microstructures Laboratory  
ECEN 4423 .....Chaotic Dynamics  
ECEN 4517 .....Renewable and Power Electronics Laboratory  
ECEN 4532 .....Digital Signal Processing Laboratory  
ECEN 4553 .....Introduction to Compiler Construction  
ECEN 4555 .....Principles of Energy Systems and Design  
ECEN 4583 .....Software System Development  
ECEN 4593 .....Computer Organization  
ECEN 4606 .....Undergraduate Optics Laboratory  
ECEN 4613 ..... Embedded System Design  
ECEN 4616 .....Optoelectric System Design  
ECEN 4623 .....Real Time Embedded Systems  
ECEN 4632 .....Introduction to Digital Filtering  
ECEN 4633 .....Hybrid Embedded System  
ECEN 4634 .....Microwave and RF Lab  
ECEN 4638 .....Control Systems Lab  
ECEN 4643 .....SW Engineering Concurrent Systems  
ECEN 4652 .....Communication Laboratory  
ECEN 4653 .....Real-Time Digital media  
ECEN 4743.....SW Engineering of Distributed Systems  
ECEN 4753 .....Computer Performance Modeling  
ECEN 4797 .....Introduction to Power Electronics  
ECEN 4811 .....Neural Signals and Functional Brain Imaging  
ECEN 4821 .....Neural Systems and Physiological Control  
ECEN 4827 .....Analog IC Design  
ECEN 4831 .....Brains, Minds, Computers  
ECEN 5017.....Special Topics: Power Electronics for Electric Vehicles  
ECEN 5107.....Electric Power Grid

EMEN 4405 .....Systems Engineering

ENEN 4321 .....Oil and Gas Processing  
ENEN 4405 .....Systems Engineering  
ENEN 4600 .....Energy Engineering Projects

EVEN 1000 .....Intro to EVEN  
EVEN 4100 .....Environmental Sampling and Analysis  
EVEN 4404 .....Water Chemistry  
EVEN 4414 .....Water Chemistry Lab  
EVEN 4434 .....Environmental Engineering Design  
EVEN 4464 .....Environmental Engineering Process  
EVEN 4484 .....Intro to Environmental Microbiology

GEEN 1017.....CAD  
GEEN 1400.....Engineering Projects  
GEEN 2400.....Engineering Projects for the Community  
GEEN 2851.....Statics for Engineers

## Chemical & Biological Engineering and Chemical Engineering

MCEN 1025.....CAD  
MCEN 2023.....Statics and Structures  
MCEN 2063.....Mechanics of Solids  
MCEN 3017.....Circuits  
MCEN 3023.....Component Design  
MCEN 3030.....Computational methods  
MCEN 3032.....Thermodynamics 2  
MCEN 4026.....Manufacturing processes and Systems  
MCEN 4032 .....Sustainable Energy  
MCEN 4043.....System Dynamics  
MCEN 4115.....Mechatronics and Robotics 1  
MCEN 4117.....Anatomy and Physiology for Engineers  
MCEN 4123.....Vibration Analysis  
MCEN 4124.....Mechanical Behavior of Materials  
MCEN 4127 .....Biomedical Ultrasound  
MCEN 4131.....Air Pollution Control Engineering  
MCEN 4135 .....Wind Energy and Wind Turbine Design  
MCEN 4137 .....Anatomy and Physiology 2  
MCEN 4141 .....Indoor Air Pollution  
MCEN 4151 .....Flow Visualization  
MCEN 4152 .....Intro to Combustion  
MCEN 4154 .....Biocolloids and Biomembranes  
MCEN 4173 .....Finite Element Analysis  
MCEN 4194 .....Electrochemical Energy Conversion and Storage  
MCEN 4228 .....Design of Coffee  
MCEN 4228 ..... Intro of Microfluidics

## GENERAL (NON-ENGINEERING) TECH ELECTIVES

ACCT 3220 .....Corporate Financial Reporting 1  
ACCT 3230 .....Corporate Financial Reporting 2  
ACCT 3320 .....Cost Management  
ACCT 4240 .....Advanced Financial Accounting  
ACCT 4250 .....Financial Statement Analysis  
ACCT 4330 .....Advanced Cost Management  
ACCT 4540 .....Accounting Information Systems  
ACCT 4620 .....Auditing and Assurance Services  
ACCT 4800 .....Accounting for Gov and Nonprofit Orgs

ANTH 2010 .....Introduction to Physical Anthropology  
ANTH 2020 .....Introduction to Physical Anthropology 2  
ANTH 2030 .....Lab in Physical Anthropology 1  
ANTH 2040 .....Lab in Physical Anthropology 2  
ANTH 2070 .....Bones, Bodies, and Disease  
ANTH 2210 .....Lab in Archaeological Methods  
ANTH 3000 .....Primate Behavior  
ANTH 3010 .....The Human Animal  
ANTH 4000 .....Quantitative Methods

## Chemical & Biological Engineering and Chemical Engineering

ANTH 4060 .....Nutrition and Anthropology  
ANTH 4070 .....Methods in Biological Anthropology  
ANTH 4110 .....Human Evolutionary Biology  
ANTH 4120 .....Advanced Physical Anthropology  
ANTH 4130 .....Advanced Osteology  
ANTH 4150 .....Human Ecology: Biological Aspects  
ANTH 4170 .....Primate Evolutionary Biology  
ANTH 4240 .....Geoarchaeology  
ANTH 4330 .....Human Ecology: Archaeological Aspects  
ANTH 4380 .....Lithic Analysis and Replication  
ANTH 4610 .....Medical Anthropology

APPM 1710 .....Application to games Development 1  
APPM 2750 .....Java: Training, Mathematical Algorithms, and Mobile Apps  
APPM 3010 .....An Introduction to Nonlinear Systems: Chaos  
APPM 3050 .....Scientific Computing in Matlab  
APPM 3170 .....Discrete Applied Mathematics  
APPM 3310 .....Matrix Methods and Applications  
APPM 3350 .....Advanced Engineering Calc  
APPM 3570 .....Applied Probability  
APPM 4120 .....Introduction to Operations Research  
APPM 4350 ..... Methods in Applied Math: Fourier Series  
APPM 4360 .....Methods in Applied Math: Complex Variables  
APPM 4380 .....Modeling in Applied Mathematics  
APPM 4390 .....Modeling in Mathematical Biolog  
APPM 4440 .....Undergraduate Applied Analysis 1  
APPM 4450 .....Undergraduate Applied Analysis 2  
APPM 4520 .....Introduction to Mathematical Statistics  
APPM 4540 .....Introduction to Time Series  
APPM 4560 .....Markov Processes, Queues & Monte Carlo Sim  
APPM 4570 .....Statistical Methods  
APPM 4580 .....Statistical Applications: Software and Methods  
APPM 4590 .....Statistical Modeling  
APPM 4650 .....Intermediate Numerical Analysis 1  
APPM 4660 .....Intermediate Numerical Analysis 2  
APPM 4720 .....Open Topics in Applied Mathematics

ASEN 3519 .....The Politics of Space

ASTR 1000 .....General Astronomy - the Solar System (was ASTR 1110)  
ASTR 1010 .....Intro to Astronomy 1  
ASTR 1020 .....Intro to Astronomy 2  
ASTR 1030 .....Accelerated Introduction Astronomy 1  
ASTR 1040 .....Accelerated Introduction Astronomy 2  
ASTR 1200 ..... General Astronomy - Stars and Galaxies (was ASTR 1120)  
ASTR 1400 .....Gateway to Space  
ASTR 2010 .....Modern Cosmology  
ASTR 2020 .....Space Astronomy and Exploration

## Chemical & Biological Engineering and Chemical Engineering

ASTR 2030 .....Black Holes  
ASTR 2600 .....Computational techniques  
ASTR 3300 .....Extraterrestrial Life  
ASTR 3510 .....Observations and Instrumentation 1  
ASTR 3520 .....Observations and Instrumentation 2  
ASTR 3560 .....Astronomical Instrumentation Lab  
ASTR 3710 .....Formation and Dynamics of Planetary Systems  
ASTR 3720 .....Plants and Their Atmospheres  
ASTR 3730 .....Astrophysics 1 - Stellar and Interstellar  
ASTR 3740 .....Cosmology and Relativity  
ASTR 3750 .....Planets, Moons, and Rings  
ASTR 3760 .....Solar and Space Physics  
ASTR 3800 .....Introduction to Scientific Data Analysis and Computing  
ASTR 3830 .....Astrophysics 2 - Galactic and Extragalactic  
ASTR 4330 .....Cosmochemistry  
ASTR 4800 .....Space Science: Practice and Policy

ATOC 3050 .....Principles of Weather  
ATOC 3070.....Introduction to Oceanography  
ATOC 3180.....Aviation Metrology  
ATOC 3300.....Analysis of Climate and Weather Observation  
ATOC 3500.....Air Chemistry and Pollution  
ATOC 3600.....Principles of Climate  
ATOC 3720.....Planets and Their Atmospheres  
ATOC 4200 .....Biogeochemical Oceanography  
ATOC 4215.....Oceanography  
ATOC 4500 .....Special Topics in Atmospheric and Oceanic Sciences  
ATOC 4455 .....Mountain Meteorology  
ATOC 4720.....Intro to Atmospheric Physics and Dynamics  
ATOC 4750.....Desert Meteorology and Climate  
ATOC 4770 .....Wind Energy Meteorology

BCOR 2000.....Accounting and Financial Analysis  
BCOR 2200.....Introductory Finance  
BCOR 2300.....Adding Value with Management  
BCOR 2400.....Fundamentals of Marketing  
BCOR 2500.....Introduction to Operations and Information Management

BSLW 4120.....Advanced Business Law

BUSM 2001.....Principles of Marketing and Management (OLD COURSE)  
BUSM 2010.....Principles of Marketing  
BUSM 2011.....Principles of Management  
BUSM 2002.....Principles of Accounting and Finance (OLD COURSE)  
BUSM 2020.....Principles of Accounting  
BUSM 2021.....Principles of Finance  
BUSM 3001.....Management and Innovation (OLD COURSE)  
BUSM 3010.....Managing Innovation I



## Chemical & Biological Engineering and Chemical Engineering

BUSM 3011.....Managing Innovation II  
BUSM 3002.....Business & Financial Analytics (OLD COURSE)  
BUSM 3020.....Business & Financial Analytics I  
BUSM 3021.....Business & Financial Analytics II  
BUSM 3003.....Introduction to Entrepreneurship (OLD COURSE)  
BUSM 3030.....Introduction to Entrepreneurship  
BUSM 4001..... Professional Business Plan Development (OLD COURSE)  
BUSM 4010.....Professional Business Plan Development

CHEM 4011.....Modern Inorganic Chemistry  
CHEM 4021.....Inorganic Laboratory  
CHEM 4141 .....Environmental Water and Soil Chemistry  
CHEM 4171.....Instrumental Analysis  
CHEM 4181.....Instrumental Anal Lab 2  
CHEM 4251 .....Materials Chemistry and Properties  
CHEM 4261 .....Organic Materials: Structures and Functions  
CHEM 4271 .....Chemistry of Solar Energy  
CHEM 4431.....Physical Chem with Biochem Applications 2  
CHEM 4531.....Physical Chemistry 2  
CHEM 4581.....Physical Chemistry Lab 1  
CHEM 4591.....Physical Chemistry Lab 2  
CHEM 4611.....Survey of Biochemistry  
CHEM 4621.....Genome Databases  
CHEM 4700 .....Foundations of Biochem  
CHEM 4720 .....Metabolic Pathways and Human Disease  
CHEM 4740 .....Expression and Transmission of Genetic Information  
CHEM 4751.....Current Topics in Biochemical Research  
CHEM 4761.....Biochem Lab  
CHEM 4791.....Bioorganic Chem in Biotech

CSCI 3352 .....Biological Networks

CVEN 5834 .....International Environmental Impact Assessment

EBIO 1230 .....Lab  
EBIO 1240 .....Lab  
EBIO 2040 .....Ecology  
EBIO 2070 .....Genetics  
EBIO 2090.....Tropical Island and marine Ecology  
EBIO 3040 .....Conservation Biology  
EBIO 3080.....Evolutionary Biology  
EBIO 3170.....Arctic and Alpine Ecology  
EBIO 3175 .....Arctic and Alpine Ecology Lab  
EBIO 3190 .....Tropical marine Ecology  
EBIO 3240.....Animal behavior  
EBIO 3270 .....Ecosystem Ecology  
EBIO 3400 .....Microbiology  
EBIO 3630 .....Parasitology

## Chemical & Biological Engineering and Chemical Engineering

- EBIO 3770 .....Animal Diversity- vert
  - EBIO 3850 .....Animal Diversity – Invert
  - EBIO 4020 .....Stream Biology
  - EBIO 4030.....Limnology
  - EBIO 4060 .....Landscape Ecology
  - EBIO 4080.....Freshwater Phycology
  - EBIO 4090.....Coral Reef Ecology
  - EBIO 4100 .....Advanced Ecology
  - EBIO 4110.....Advanced Ecology
  - EBIO 4140 .....Plant Ecology
  - EBIO 4160 .....Intro to Biogeochemistry
  - EBIO 4290 .....Molecular systematics
  - EBIO 4410 .....Biometry
  - EBIO 4440.....Animal Developmental Diversity
  - EBIO 4500 .....Plant diversity and evolution
  - EBIO 4510 .....Plant anatomy and development
  - EBIO 4520 .....Plant Systematics
  - EBIO 4530 .....Plant Biology
  - EBIO 4550 .....Plant Eco-Evo devo
  - EBIO 4660 .....Insect Biology
  - EBIO 4740 .....Bio of Amphibians and Reptiles
  - EBIO 4750 .....Ornithology
  - EBIO 4760 .....Mammalogy
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- ECON 3818 .....Intro to Statistics with computer applications
  - ECON 4231 .....Applied Economic Analysis and Public Policy
  - ECON 4697 .....Industrial Organization and Regulation
  - ECON 4808 .....Introduction to Mathematical Economics
  - ECON 4818 .....Intro to Econometrics
  - ECON 4838 .....Microcomputer applications in Economics
  - ECON 4848 .....Applied Econometrics
  - ECON 4858 .....Financial Econometrics
  - ECON 4868 .....Simulation Modeling in Microeconomics
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- EMEN 4030 ..... Project Management System
  - EMEN 4050 .....Leadership and professional Skills
  - EMEN 4100 .....Business Methods and Economics
  - EMEN 4110 .....Supply Chain Management
  - EMEN 4120 .....Managing Business Processes
  - EMEN 4800 .....Entrepreneurial Marketing
  - EMEN 4820 .....Entrepreneurial Product Design
  - EMEN 4825 .....Entrepreneurial Business Plan Preparation
  - EMEN 4830.....Fundamentals of System Engineering
  - EMEN 5830.....Fundamentals of System Engineering
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- ENVD 1004 .....Intro to Environmental Design Theory
  - ENVD 1052 .....Design and Communication I

## Chemical & Biological Engineering and Chemical Engineering

ENVS 3001 .....Sustainable Solutions  
ENVS 3040 ..... Conservation Biology  
ENVS 3434 .....Intro to Applied Ecology  
ENVS 3600 .....Principles of Climate  
ENVS 4160 .....Intro to Biogeochemistry  
ENVS 4201 .....Biometeorology  
ESBM 3700 .....Entrepreneurial Environments  
ESBM 4570 .....Entrepreneurial Finance  
ESBM 4820 .....Engineering Entrepreneurship  
ESBM 4826 .....Exp. Sem-social Entrepreneurship: Designing a Better World

EVEN 5834 .....International Environmental Impact Assessment

FNCE 3010 .....Corporate Finance  
FNCE 4000 ..... Financial Institutions Management  
FNCE 4030 .....Investment and Portfolio Management  
FNCE 4040 .....Derivative Securities  
FNCE 4050 .....Capital Investment Analysis  
FNCE 4832 .....Microfinance

GEEN 3830 .....Engineering Math

GEOG 1001 .....Environ Systems 1- Climate and Vegetation  
GEOG 1011 .....Environ Systems 2 - Landscapes and Water  
GEOG 2053 .....Mapping a Changing World  
GEOG 3053 .....Cartography: Visualization and Information Design  
GEOG 3251 .....Mountain Geography  
GEOG 3301 .....Analysis of Climate and Weather Observation  
GEOG 3351 .....Biogeography  
GEOG 3511 .....Introduction to Hydrology  
GEOG 3601 .....Principles of Climate  
GEOG 3692 ..... Introduction to Global Public Health  
GEOG 4023 .....Introduction to Quantitative Methods in Human Geography  
GEOG 4043 .....Cartography 2: Interactive and Multimedia Mapping  
GEOG 4093 .....Remote Sensing of the Environment  
GEOG 4103 .....Introduction to Geographic Information Science  
GEOG 4201 .....Biometeorology  
GEOG 4203 .....Geographic Information Science: Modeling Applications  
GEOG 4241 .....Principles of Geomorphology  
GEOG 4251 .....Fluvial Geomorphology  
GEOG 4261 .....Glaciers and Permafrost  
GEOG 4271 .....The Arctic Climate System  
GEOG 4303 .....GIS Programming for Spatial Analysis  
GEOG 4311 .....Watershed Biogeochemistry  
GEOG 4321 .....Hydrology  
GEOG 4331 .....Mountain Snow Climatology  
GEOG 4371 .....Forest Geography: Principles and Dynamics  
GEOG 4401 .....Soils Geography

## Chemical & Biological Engineering and Chemical Engineering

GEOG 4501 .....Water Res and Water Man of Western U  
GEOL 1010 .....Introduction to Geology 1  
GEOL 1020 .....Introduction to Geology 2  
GEOL 1030 .....Introduction to Geology Laboratory 1  
GEOL 1040 .....Geology of Colorado  
GEOL 1060 .....Global Change an Earth Science Perspective  
GEOL 1150 .....Water, Energy and the Environment  
GEOL 1170 .....Our Deadly Planet  
GEOL 1180 .....Our Microbial Planet  
GEOL 2001 .....Planet Earth  
GEOL 2005 ..... Intro to Earth Materials  
GEOL 2100 .....Environmental Geology  
GEOL 2700 .....Introduction to Field Geography  
GEOL 3010 .....Introduction to Mineralogy  
GEOL 3020 .....Petrology  
GEOL 3023 .....Statistics for Earth Sciences  
GEOL 3030 .....Introduction to Hydrogeology  
GEOL 3040 .....Global Change: The Recent Geological Record  
GEOL 3050 .....GIS for Geologists  
GEOL 3070 .....Introduction to Oceanography  
GEOL 3120 .....Structural Geology  
GEOL 3130 .....Global Warming  
GEOL 3300 .....Extraterrestrial Life  
GEOL 3320 .....Introduction to Geochemistry  
GEOL 3410 .....Paleobiology  
GEOL 3430 .....Sedimentology and Stratigraphy  
GEOL 3500.....Earth Resources and the Environment  
GEOL 3540.....Intro to Hydrocarbon Geology  
GEOL 3720 .....Evolution of Life: The Geological Record  
GEOL 3820 .....The Fluid Earth  
GEOL 3950 .....Natural Catastrophes and Geologic Hazards  
GEOL 4060 .....Oceanography  
GEOL 4070 .....Paleoclimatology  
GEOL 4093 .....Remote Sensing of the Environment  
GEOL 4130 .....Principals of Geophysics  
GEOL 4160 .....Introduction to Biogeochemistry  
GEOL 4215.....Geochonoloty and Thermochronology  
GEOL 4241 .....Principles of Geomorphology  
GEOL 4270 .....Marine Chemistry  
GEOL 4330 .....Cosmochemistry  
GEOL 4474 .....Vertebrate paleontology  
GEOL 4550.....Petroleum Reservoir modeling  
GEOL 4670.....Isotope Geology  
GEOL 4711 .....Igneous and Metamorphic Field Geology  
GEOL 4712 .....Structural Field Geology  
GEOL 4714 .....Field Geophysics  
GEOL 4715 .....Field Tech in Surficial Geol and Geohydrology  
GEOL 4716 .....Environmental Field Geochemistry

## Chemical & Biological Engineering and Chemical Engineering

GEOL 4717 .....Field Seminar in Geology and Tectonics

GEOL 4721.....Field Methods in Active Tectonics

INBU 4200 .....International Financial management

IPHY 2420.....Nutrition for Health and Performance

IPHY 2500 .....Perspectives in Health

IPHY 3060 .....Cell Physiology

IPHY 3410 .....Introduction to Human Anatomy

IPHY 3415 .....Human Anatomy Laboratory

IPHY 3430 .....Intro to Human Physiology

IPHY 3435 .....Human Physiology Laboratory

IPHY 3440 .....Clinical Nutrition

IPHY 3450 .....Comparative Animal Physiology

IPHY 3460 .....Comparative Vertebrate Anatomy

IPHY 3470 .....Human Phys 1

IPHY 3480 .....Human Phys 2

IPHY 3490 .....Intro to Epidemiology

IPHY 3660 .....Dynamics of Motor Learning

IPHY 3800 .....Forensic Biology

IPHY 3810 .....Forensic Biology Laboratory

IPHY 4200 .....Physiological Genetics and Genomics

IPHY 4440 .....Endocrinology

IPHY 4470 .....Biology of Human Reproduction

IPHY 4480 .....Comparative Reproduction

IPHY 4540 .....Biomechanics

IPHY 4580 .....Sleep Physiology

IPHY 4600 .....Immunology

IPHY 4650 .....Exercise Physiology

IPHY 4720 .....Neurophysiology

IPHY 4730 .....Motor Control

LING 3100 .....Language Sound Structures

LING 3005.....Cognitive Science

LING 4420 .....Morphology and Syntax

MATH 3001.....Analysis

MATH 3110.....Introduction to Theory of Numbers

MATH 3120.....Functions and Modeling

MATH 3140.....Abstract Algebra 1

MATH 3170.....Combinatorics 1

MATH 3210.....Euclidean and Non-Euclidean Geometries

MATH 4000.....Foundations of Mathematics

MATH 4001.....Analysis 2

MATH 4120.....Introduction to Operations Research

MATH 4140.....Abstract Algebra 2

MATH 4200.....Intro to Topology

MATH 4230.....Geometry of Curves and Surfaces

## Chemical & Biological Engineering and Chemical Engineering

MATH 4330.....Fourier Analysis  
MATH 4440.....Mathematics and Coding and Cryptography  
MATH 4450.....Introduction to Complex Variables  
MATH 4470.....Partial Differential Equations 1  
MATH 4510.....Introduction to Probability Theory  
MATH 4540.....Introduction to Time Series  
MATH 4650.....Intermediate Numerical Analysis  
MATH 4660.....Intermediate Numerical Analysis 2  
MATH 4730.....Set Theory

MCDB 1161.....From Dirt to DNA: Phage Genomics Laboratory I  
MCDB 2150.....Principles of Genetics  
MCDB 2161.....From DNA to Genes, Phage Genomics Laboratory II  
MCDB 3135 .....Cell Biology  
MCDB 3140.....Cell Biology Laboratory  
MCDB 3145.....Molecular Cell Biology II  
MCDB 3150 .....Biology of the Cancer Cell  
MCDB 3160 .....Infectious Disease  
MCDB 3280 .....Molecular Cell Physiology  
MCDB 3333 .....Biomedical Innovations and Discoveries  
MCDB 3350 .....Fertility, Sterility, and Early Mammalian Development  
MCDB 3501 .....Structural Methods for Biological Macromolecules  
MCDB 3650 .....The Brain – From Molecules to Behavior  
MCDB 3651 .....The Brain: Dysfunction to Disease  
MCDB 3700 .....Poisons in Cell Biology and Society  
MCDB 4101 .....Editing Genomes with CRISPER-Cas9 Discovering Gene Function  
MCDB 4202 .....The Python Project  
MCDB 4300 .....Immunology  
MCDB 4310.....Microbial Genetics and Physiology  
MCDB 4314.....Algorithms for Molecular Biology  
MCDB 4330.....Bacterial Disease Mechanisms  
MCDB 4350.....Microbial Diversity and the Biosphere  
MCDB 4361.....Evolution and Development  
MCDB 4410.....Human Molecular Genetics  
MCDB 4422 .....Molecular Biology of Free Radicals: Role(s) in Oxidative Stress, Signaling, Disease, Aging  
MCDB 4425.....Cellular Stress Responses: Molecular Mechanisms, Physiology, and Human Diseases  
MCDB 4426.....Cell Signaling and Developmental Regulation  
MCDB 4427 .....Biology of the Visual System  
MCDB 4444.....The Cellular Basis of Disease  
MCDB 4471.....Mechanisms of Gene Regulation in Eukaryotes  
MCDB 4520.....Bioinformatics and Genomics  
MCDB 4550.....Cellular and Molecular Motion, A Biophysical Approach  
MCDB 4615.....Biology of Stem Cells  
MCDB 4621.....Genome Databases: Mining and Management  
MCDB 4650.....Developmental Biology  
MCDB 4680.....Mechanisms of Aging  
MCDB 4750.....Animal Virology  
MCDB 4777.....Molecular Neurobiology

## Chemical & Biological Engineering and Chemical Engineering

MCDB 4790.....Experimental Embryology

MCDB 4810.....Insane in the Membrane: The Biology and Biophysics of the Membrane

MGMT 3030.....Critical Leadership Skills

MGMT 4090.....IT and Business Strategy

MGMT 4110.....Supply Chain Management

MGMT 4120.....Managing Business Processes

MKTG 3150.....Sales Management

MKTG 3250..... Buyer Behavior

MKTG 3350..... Marketing Research

MKTG 4250.....Product Strategy

MKTG 4350.....Services Marketing Strategy

MKTG 4500.....Advertising Management

MKTG 4550.....Advertising and Promotion Management

MKTG 4650.....Institutional Relationships and Strategy

MKTG 4800.....Marketing Policies and Strategies

NAVR 3030 .....Naval Engineering Systems I

NAVR 3040 .....Weapons and Systems Analysis

NAVR 4030 .....Navigation

PHYS 2130 .....General Physics 3

PHYS 2150 .....Experimental Physics

PHYS 2170 .....Foundations of Modern Physics

PHYS 2210..... Classical Mechanics and Math Methods 1

PHYS 3210..... Classical Mechanics and Math Methods 2

PHYS 3220..... Quantum Mechanics and Atomic Physics 1

PHYS 3310..... Principles of Electricity and Magnetism 1

PHYS 3320..... Principles of Electricity and Magnetism 2

PHYS 3330..... Electronics for the Physical Sciences

PHYS 4130 .....Biol Electron Microscopy: Prin & and Recent Adv

PHYS 4150 .....Plasma Physics

PHYS 4230 .....Thermodynamics and Statistical Mechanics

PHYS 4340 .....Introduction to Solid State Physics

PHYS 4410 .....Quantum Mechanics and Atomic Physics 2

PHYS 4420 .....Nuclear and Particle Physics

PHYS 4510 .....Optics

PSYC 2012.....Biological Psychology 1

PSYC 3005.....Cognitive Science

PSYC 3102.....Behavioral genetics

PSYC 3303.....Abnormal Psychology

PSYC 4021.....Psych and Neuroscience of Exercise

PSYC 4052.....Behavioral Neuroscience

PSYC 4142..... Brain Injury, Plasticity and Recovery: From Neuron to Behavior

PSYC 4145.....Advanced Cognitive Psychology

PSYC 4155.....Cognitive Neuroscience

## Chemical & Biological Engineering and Chemical Engineering

PSYC 4175 .....Computational Cognitive Neuroscience  
STAT 3100 .....Applied Probability  
STAT 3400 .....Applied Regression  
STAT 4000 .....Statistical Methods and Applications 1 (Replaces APPM 4570)  
STAT 4100 .....Markov Processes  
STAT 4400 .....Advanced Statistical Modeling  
STAT 4430 .....Spatial Statistics  
STAT 4520 .....Intro to Mathematical Statistics  
STAT 4540 .....Intro to Time Series  
STAT 4610 .....Statistical Learning  
STAT 4630 .....Computational Bayesian Statistics  
STAT 4680 .....Statistical Collaboration  
STAT 4690 .....Advanced Statistical Collaboration  
STAT 4700 .....Philosophy of Statistics