

TECHNICAL ELECTIVE OPTIONS FOR CHEMICAL ENGINEERING UNDERGRADUATE PROGRAMS

It is intended that technical electives, which must be upper level courses, be taken in the junior or senior years, as indicated in the curricula. This is to ensure that students receive the maximum benefit from the courses. When the specific case supports it, exceptions can be made to allow taking technical electives at an earlier point in the curriculum.

Note: This list is not exhaustive. Each semester other potential technical electives are offered at OU, sometimes on a one-time-only basis. Students should check the course catalog and announcements. Students should obtain adviser approval before enrolling in any course NOT on this list for technical elective credit.

CH E STANDARD OPTION

(Technical Elective I & II)

CH E 4980 Senior Research
CH E 3960 Honors Reading
CH E 3980 Honors Research
CH E 5163 Catalysis
CH E 5183 Graduate Transport Phenomena
CH E 5203 Bioengineering Principles
CH E 5243 Biochemical Engineering
CH E 5273 Biomedical Engineering
CH E 5293 Transport in Biological Systems
CH E 5453 Polymer Science
CH E 5463 Polymer Processing
CH E 5480 Biology for Engineers
CH E 5480 Biosensors
CH E 5480 Cellular Tissue Engineering
CH E 5480 Cellular Aspects of Tissue Regeneration
CH E 5480 Economic Decisions in the Process Industry
CH E 5480 Financial Risk & Investment Planning
CH E 5480 Industrial & Environmental Transport Process
CH E 5480 Nanostructured Materials
CH E 5480 Modern Thermodynamics
CH E 5480 Seminar in Selected Topics
CH E 5480 Tissue Engineering
CH E 5523 Advanced Mathematical Methods
CH E 5643 Natural Gas Utilization
CH E 5673 Colloids and Surface Science
CH E 5843 Advanced Chemical Engineering
Thermodynamics
CH E 6723 Advanced Kinetics and Reaction Engineering

Additional Technical Elective I & II selections on back of page for Standard Option

CH E PRE-MEDICAL/BIOMEDICAL ELECTIVES

(Technical Electives I & II)

(Use ONLY selections from this column for this option)

Biomedical students must take CHE 5203 as one of their technical elective selections.

Pre-medical students must take one of the two ZOO courses listed below as one of their technical elective selections.

CH E 5203 Bioengineering Principles
CH E 5243 Biochemical Engineering
CH E 5293 Transport in Biological Systems
CH E 5373 Tissue Engineering
CH E 5480 Biosensors

AME 5213 Bioengineering Principles
AME 5213 Biomechanics I
AME 5223 Biomechanics II
AME 5233 Biomaterials
AME 5253 Implantable Devices
AME 5710 Neural Engineering

ECE 4823 Engineering Principles of the Human Body
ECE 5823 Bioinstrumentation
ECE 5843 Medical Imaging Systems
ECE 5973 Computational Bioengineering
ECE 6813 Advanced Topics in Biomedical Engineering

ZOO 3113 Cell Biology
ZOO 3333 Genetics

Additional Technical Elective I & II selections for Standard Option

Aerospace and Mechanical Engineering (Technical Elective I & II)

AME 3363 Design of Thermal Fluid Systems
AME 4253 Implantable Devices
AME 5203 Bioengineering Principles
AME 5213 Biomechanics I (Biosolids)
AME 5223 Biomechanics II (Biofluids)
AME 5233 Biomaterials
AME 5253 Implantable Devices
AME 5293 Transport in Biological Systems
AME 5413 Process in Fluid Mechanics
AME 5710 Topics in Solid Mechanics-Neural Engr
AME 5720 Topics in Fluid Mechanics
AME 5973 Computational Heat and Fluid Flow
AME 5953 Turbulence I
AME 5983 Computational Fluid Dynamics

Civil Engineering and Environmental Science (Technical Elective I & II)

C E 3213 Water Resources Engineering
C E 3243 Water and Wastewater Treatment Design
C E 4114 Aquatic Chemistry
C E 4263 Hazardous and Solid Waste Management
C E 5244 Water and Waste Treatment
C E 5923 Air Pollution Control Engineering

Electrical and Computer Engineering (Technical Elective I & II)

ECE 4973 Engineering Principles of the Body
ECE 4990 Res. & Design Experience in Bioengineering
ECE 5823 Bioinstrumentation
ECE 5843 Medical Imaging Systems
ECE 6813 Advanced Topics in Biomedical Engineering

Engineering (Technical Elective I & II)

ENGR 3293 Applied Engineering Statistics

Petroleum and Geological Engineering (Technical Elective I & II)

PE 3113 Production Engineering
PE 5603 Introto Natural Gas Engr & Management
PE 5613 Natural Gas Engineering
PE 5623 Natural Gas Processing

NON-ENGINEERING Technical Electives

Chemistry and Biochemistry (Technical Elective II)

CHEM 3653 Introduction to Biochemistry
CHEM 3753 Introduction to Biochemical Methods
CHEM 4023 Instrumental Methods in Chemical Analysis
CHEM 5453 Polymer Science
CHEM 5753 Principles of Biochemistry I
CHEM 5853 Principles of Biochemistry II
CHEM 6813 Introduction to Biochemical Methods

CHEM 6823 Protein, Nucleic Acids, & Gene Expression
CHEM 6833 Structure & Function of Membranes & Hormones
CHEM 6843 Enzyme Mechanisms & Metabolic Regulation
CHEM 6853 Protein Structure & Function

Management (Technical Elective II)

MGT 3523 Production/Operations Management

Mathematics (Technical Elective II)

MATH 3333 Linear Algebra I
MATH 4413 Intermediate Ordinary Differential Equations
MATH 4753 Applied Statistical Methods
MATH 3423 Physical Math II
MATH 4163 Intro Partial Differential Equations

Meteorology (Technical Elective II)

METR 5103 Boundary Layer Meteorology
METR 5344 Computational Fluid Dynamics I

Microbiology (Technical Elective II)

MBIO 3113 Cell Biology
MBIO 3813 Fundamentals of Microbiology
MBIO 3812 Fundamentals of Microbiology Laboratory
MBIO 4833 Basic Immunology
MBIO 4843 Introduction of Molecular Biology
MBIO 5620 Investigations in Microbiology
MBIO 5812 Applications of Molecular Biology Laboratory
MBIO 5833 Industrial & Applied Microbiology
MBIO 5843 Introduction to Molecular Biology
MBIO 5893 Genetics and Plasmids & Bacterial Viruses

Physics (Technical Elective II)

PHYS 3113 Quantum Physics
PHYS 3223 Modern Physics for Engineers

Zoology (Technical Elective II)

ZOO 3101 Principles of Physiology Lab (take with 3103)
ZOO 3103 Principles of Physiology (take with 3101)
ZOO 3113 Cell Biology
ZOO 3201 Animal Development Lab
ZOO 3203 Animal Development
ZOO 3333 Genetics
ZOO 4123 Vertebrate Physiology
ZOO 4244 Animal Histology
ZOO 4853 Neurobiology of Memory
ZOO 4913 Quantitative Biology
ZOO 5153 Endocrine Physiology
ZOO 5203 Mechanisms of Development
ZOO 5293 Cytology Ultrastructure
ZOO 5343 Developmental Genetics
ZOO 5364 Transmission Electron Microscopy
ZOO 5374 Scanning Electron Microscopy