

DEPARTMENT OF CHEMICAL ENGINEERING
UNIVERSITY OF NORTH DAKOTA
ELECTIVES FOR BSChE DEGREE -- EFFECTIVE SPRING SEMESTER 2003

Chemical Engineering Elective* (three credits minimum) - any 300-, 400-, or 500-level chemical engineering course not required for the BSChE degree. A maximum of six (6) credits of ChE 337 - Cooperative Education may be used to meet requirements for the BSChE degree. Courses offered by other engineering departments may be accepted to meet this requirement, but approval by the student's advisor must be obtained prior to registration.

Advanced Chemical Science Elective* (six credits minimum) -- Choose from:

Chem 330 - Quantitative Analysis (4)	Chem 455 - Spectroscopy and Structure (3)
Chem 333 - Introduction to Environmental, Clinical, & Forensic Chemical Analysis (4)	Chem 461 - Instrumental Analysis (5)
Chem 342 - Organic Chemistry II (4)	Chem 463 - Advanced Synthesis Lab (3)
Chem 342L - Organic Chemistry II Lab (1)	Chem 464 - Physical Chemistry I (3)
Chem 454 - Inorganic Chemistry (3)	BiCh 301 - Biochemistry Lecture (3)
	MBio 302 - General Microbiology Lecture (2)

Other courses offered by the Department of Chemical Engineering, the Department of Chemistry, the Department of Biochemistry and Molecular Biology and the Department of Microbiology and Immunology must receive approval of students advisor prior to registration.

Engineering Science Elective* (three credits minimum) -- Choose from:

Engr 202 - Dynamics (3)	ME 301 - Materials Science (3)
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Technical Elective I (six credits minimum) -- Choose from:

All courses acceptable for Chemical Engineering Elective, Advanced Chemical Science Elective and Engineering Science Elective	Math -- any regularly offered 300- or 400-level course having Math 166 or higher as a prerequisite
AtSc -- any regularly offered 300- or 400-level course having Math 166 or higher or Phys 252 or higher as a prerequisite	ME 401 - Dynamic Systems Analysis (3)
Biol 341/341L - Cell Biology/Laboratory (3/1)	ME 413 - Engineering Materials (2)
CE 431, 432 - Environmental Engineering I, II (3 each)	ME 426 - Mechanical Vibrations (3)
CE 434 - Environmental Engineering Lab (4)	ME 429 - Introduction to Finite Element Analysis (3)
CE 435 - Hazardous Waste Management (3)	ME 445 - Energy Technology (3)
CE 444 - Contracts and Specifications (3)	ME 446 - Gas Turbines (3)
CSci -- any regularly offered 300- or 400-level course	ME 449 - Internal Combustion Engines (3)
EE -- any regularly offered 300- or 400-level course	ME 451 - Heating and Air Conditioning (3)
Geol/GeoE -- any regularly offered 300- or 400-level course	ME 454 - Refrigeration (3)
	ME 462 - Introduction to Nuclear Engineering (3)
	Phys -- any regularly offered 300- or 400-level course having Phys 252 or higher as a prerequisite

Other courses in departments listed above must receive approval of student's advisor prior to registration.

*Courses selected to meet this elective must be taken for a letter grade (except those offered only on S/U basis). Chemical engineering courses taken as technical electives also must be taken for letter grades.

Technical Elective II (three credits minimum) -- Choose from:

All courses acceptable for Technical Elective I
Acct 315 - Business in the Legal Environment (3)
Acct 316 - Business Law (3)
Acct 416 - Advanced Business Law (3)
Econ 303 - Money and Banking (3)
Econ 305 - Principles of Banking (3)
Econ 308 - Intermediate Microeconomic Theory (3)
Econ 309 - Intermediate Macroeconomic Theory and Policy (3)
Econ 311 - Business Cycles and Forecasting (3)
Econ 330 - Business and Economic History (3)
Econ 331 - Comparative Economic Systems (3)
Econ 338 - International Economics (3)
Econ 355 - Government Regulation of Business (3)
Econ 400 - History of Economic Thought (3)
Econ 438 - International Money and Finance (3)
Entr 301 - Accounting and Financial Concepts for Entrepreneurs (3)
Entr 302 - Marketing and Management Concepts for Entrepreneurs (3)
Entr 385 - Venture Initiation (3)
Entr 386 - Venture Growth (3)

Fin 310 - Principles of Financial Management (3)
Fin 360 - Capital Market Financing and Investment Strategies (3)
Fin 430 - International Financial Management (3)
Mgmt 300 - Principles of Management (3)
Mgmt 301 - Production Management (3)
Mgmt 305 - Managerial Concepts (3)
Mgmt 309 - Quantitative Approaches to Management Decisions (3)
Mgmt 310 - Organizational Behavior (3)
Mgmt 400 - Organizational Theory and Analysis (3)
Mgmt 405 - Entrepreneurship and Small Business Management (3)
Mgmt 409 - Union-Management Relations (3)
Mgmt 420 - Multinational Management (3)
Mrkt 301 - Principles of Marketing (3)
Mrkt 325 - International Marketing (3)
Mrkt 425 - Current Perspectives in Global Marketing (3)
PSci 432 - Public Policy Making Processes (3)
SpSt - any regularly offered 300- or 400-level course

Minors

Requirements for the BSChE degree include a number of credits of both chemistry and mathematics. It is possible, using the required courses as a base, to meet the requirements for a minor in chemistry, mathematics or statistics using courses that meet elective requirements in the BSChE program.

Minor in chemistry -- requires a minimum of 20 semester credits including one year of general/inorganic chemistry with laboratory, a semester of analytical chemistry with laboratory and one year of organic chemistry with laboratory. The BSChE degree requires: Chem 121/121L and 122/122L – General Chemistry I and II with laboratory (8 cr); Chem 341/341L – Organic Chemistry I with laboratory (5 cr); and Chem 465 – Physical Chemistry II(3 cr). The requirements for a minor in chemistry can be met by completing either Chem 330 – Quantitative Analysis (4 cr) or Chem 333 – Introductory Environmental, Clinical, and Forensic Chemical Analysis (4 cr) and either Chem 342/342L – Organic Chemistry II with laboratory (5 cr) or BiCh 301 – Biochemistry Lecture.

Minor in mathematics -- requires 20 semester credits including Math 165, 166 and 265 – Calculus I, II and III (which are required for the BSChE).

Minor in statistics -- Plan A requires Math 165, 166 and 265 – Calculus I, II and III (which are required for the BSChE); Math 421, 422 – Statistical Theory I, II; plus three credits from a list that includes ChE 515 – Design of Engineering Experiments.