

Chemical Engineering Proposed Curriculum Changes

CHANGES TO DEGREE REQUIREMENTS

OLD

Chemistry/Biology Elective (3) Any upper - division chemistry or biology course approved by the advisor

- Engineering/Technical Electives (6) Upper - division engineering or other approved courses. These electives should generally be Chemical Engineering or other engineering program courses at the 300 - , 400 - or 500 - level. Advanced courses in chemistry, biology, mathematics, and computer science are encouraged. Chemical Engineering technical elective courses include ChE 463, 464, 470, 472, 473, 474, 475, and 489. Consult the semester schedule and your advisor for the availability of other technical electives of interest.

NEW

Engineering/Technical Electives (9) Upper - division engineering or other approved courses. These electives should be Chemical Engineering, other engineering, chemistry, biology, mathematics, physics or computer science courses at the 300 - , 400 - or 500 - level.

JUSTIFICATION: The old requirements allow a student to take 3 chemistry courses as electives, but not 3 chemical engineering courses. We would like to make it three upper division or graduate courses in engineering or science.

COURSE PRE-REQUISITE CHANGES

OLD

ChE 461, Chemical Plant Design, Economics, and Management I, 3 cr, 1 cl hr, 6 lab hrs

Prerequisites: ~~ES 316 or consent of instructor~~

Offered fall semester

A two - semester sequence of courses in which a design project is used to illustrate principles and processes of chemical plant design, economics, and management. Lecture topics include intellectual property, capital and operating cost estimation, energy conservation, design optimization and scaling of chemical processes. Use of commercially available process simulation software emphasized.

NEW

ChE 461, Chemical Plant Design, Economics, and Management I, 3 cr, 1 cl hr, 6 lab hrs

Prerequisites: CHE 351 and CHE 352

Offered fall semester

A two - semester sequence of courses in which a design project is used to illustrate principles and processes of chemical plant design, economics, and management. Lecture topics include intellectual property, capital and operating cost estimation, energy conservation, design optimization and scaling of chemical processes. Use of commercially available process simulation software emphasized.

JUSTIFICATION: ChE 461 is the senior capstone course, which, in theory, could be taken by a sophomore based on the pre-reqs. Since the course requires design of chemical reactors, separation units, heat transfer equipment, etc., we would like to make the junior level ChE courses pre-reqs.

Mechanical Engineering Course Catalog changes:

Master of Science in Mechanical Engineering

- **Specialization in Mechatronic Systems and Robotics**

Old Master of Science in Mechanical Engineering

- **Specialization in Mechatronics Systems Engineering**

Mechanical Engineering Courses:

Old

MENG 421, Finite Element Analysis and Design, 3 cr, 2 cl hrs, 3 lab hrs

Prerequisites: MENG 304 passed with grade C or better;

Introduction to finite element analysis for structural, heat transfer, and fluid-flow systems. Use of computer-aided design (CAD) to address engineering design problems. Laboratory devoted to CAD operations and its use in complex design problems.

New

MENG 421, Finite Element Analysis and Design, 2 cr, 2 cl hrs

Prerequisites: MENG 304 passed with grade C or better, MATH 337 or consent of instructor;

Introduction to the theory of finite element analysis for structural and heat transfer analysis. Use of finite element analysis in engineering design.

MENG 421L, Finite Element Analysis and Design Lab, 1 cr, 3 lab hrs

Corerequisite: MENG 421;

Application of finite element computer codes to solve complex engineering design problems.