ECHM 100. Intro to Chemical Engr. 2 Credits. (1 Lec, 1 Lab) F
COREQUISITE: M 151Q or above. An introduction to engineering measurements, computations, problem solving, and experimental design. Discussion of the breadth of opportunities in chemical and biological engineering. Cross-listed with EBIO 100.

ECHM 201. Elementary Principles of Chemical and Biological Engineering. 4 Credits. (3 Lec) F,S

ECHM 205CS. Energy and Sustainability. 3 Credits. (3 Lec) F,S
Students from all academic backgrounds explore an array of renewable and non-renewable energy sources and energy conversion systems. Contemporary and contentious energy related issues are presented, and course participants will formulate strategies to address them.

ECHM 215. Elementary Principles of Chemical and Biological Engineering I. 3 Credits. (3 Lec) F

ECHM 216. Elementary Principles of Chemical and Biological Engineering II. 3 Credits. (3 Lec) S
3 cr. LEC 3 PREREQUISITE: ECHM 215, M 172Q, consent of instructor. Energy balances and combined energy-material balances. Discussion of contemporary issues in engineering and the impact of engineering solutions in a global, economic, environmental and societal context.

ECHM 290R. Undergraduate Research. 1-6 Credits. (1-6 Ind; max unlimited) F,S
PREREQUISITE: Consent of instructor. Directed undergraduate research/creative activity which may culminate in a written work or other creative project. May be repeated.

ECHM 291. Special Topics. 1-4 Credits. (1-4 Lec; 12 cr max) On Demand
PREREQUISITE: None required but some may be determined necessary by each offering department. Courses are not required in any curriculum for which there is a particular one-time need, or given on a trial basis to determine acceptability and demand before requesting a regular course number.

ECHM 292. Independent Study. 1-3 Credits. (1-3 Ind; 6 cr max) On Demand
Maximum 6 cr. PREREQUISITE: Consent of instructor and approval of the Associate Dean. Directed research and study on an individual basis.

ECHM 307. Chem Eng Thermodynamics I. 3 Credits. (3 Lec) F
PREREQUISITE: ECHM 201, M 273Q. Application of the laws of thermodynamics to vapor-liquid phase equilibrium, liquid-liquid phase equilibrium, and chemical reaction equilibrium.

ECHM 321. Chemical Engineering Fluid Mechanics Operations. 3 Credits. (3 Lec) F,S

ECHM 322. Chemical Engineering Heat Transfer Operations. 3 Credits. (3 Lec) F

ECHM 323. Chemical Engineering Mass Transfer Operations. 3 Credits. (3 Lec) S
PREREQUISITE: ECHM 307, ECHM 322. Theory and equipment for fundamental chemical engineering operations involving mass transfer. Equipment design and computations of operational rates.

ECHM 328. Chemical Engineering Reactor Design. 3 Credits. (3 Lec) S
PREREQUISITE: ECHM 307, M 274. Application of the chemical kinetics of homogeneous and heterogeneous reactions to the design of chemical processing equipment.
ECHM 510. Reaction Engineering/Modeling. 3 Credits. (3 Lec) S alternate years, to be offered odd years.

ECHM 533. Transport Phenomena. 3 Credits. (3 Lec) S

ECHM 534. Mass Transfer. 3 Credits. (3 Lec) On Demand
PREREQUISITE: ECHM 424. Mass transfer theory, transport in liquids, porous solids, interfacial effects, related mathematical techniques and application.

ECHM 535. Viscous Fluid Dynamics. 3 Credits. (3 Lec) On Demand

ECHM 575. Research or Prof Paper/Project. 1-4 Credits. (1-4 Ind; 6 cr max) On Demand
Maximum 6 cr. PREREQUISITE: Graduate standing. A research or professional dealing with a topic in the field. The topic must have been mutually agreed upon by the student and his or her major advisor and graduate committee. Directed research and study on an individual basis.

ECHM 590. Master's Thesis. 1-10 Credits. (1-10 Ind; 10 cr max) F,S,Su
PREREQUISITE: Master's standing.

ECHM 591. Special Topics. 1-3 Credits. (1-3 Lec; 12 cr max) On Demand
Maximum 12 cr. PREREQUISITE: Upper division courses and others as determined for each offering. Courses not required in any curriculum for which there is a particular one-time need, or given on a trial basis to determine acceptability and demand before requesting a regular course number.

ECHM 592. Independent Study. 1-3 Credits. (1-3 Ind; 6 cr max) On Demand
Maximum 6 cr. PREREQUISITE: Graduate standing, consent of instructor, approval of department head and Dean of Graduate Studies. Directed research and study on an individual basis.

ECHM 594. Seminar. 1 Credit. (1 Sem; 4 cr max) F
Maximum 4 cr. PREREQUISITE: Graduate standing or seniors by petition. Course prerequisites as determined for each offering. Topics offered at the graduate level which are not covered in regular courses. Students participate in preparing and presenting discussion material. Cross-Listed with EBIO 594.

ECHM 598. CHBE Grad Internship. 1-3 Credits. (1-3 Ind; 6 cr max) F,S,Su
Maximum 6 cr. PREREQUISITE: Graduate standing, consent of advisor and approval of department head. An individualized assignment arranged with an agency, business, or other organization to provide guided experience in the field.

ECHM 690. Doctoral Thesis. 1-10 Credits. (1-10 Ind; 10 cr max) F,S,Su
PREREQUISITE: Doctoral standing.

ECHM 590. Master's Thesis. 1-10 Credits. (1-10 Ind; 10 cr max) F,S,Su
PREREQUISITE: Master's standing.
Font Notice

This document should contain certain fonts with restrictive licenses. For this draft, substitutions were made using less legally restrictive fonts. Specifically:

Times was used instead of Adobe Garamond Pro.

The editor may contact Leepfrog for a draft with the correct fonts in place.