

**CURRICULA****Class of 2009 and beyond (revised 08/2005)****Fall Semester Class-Lab-Credit Hours****FRESHMAN**

PHYS 121	General Physics I. Mechanics <sup>a</sup>	(4-3-4)
CHEM 111	Principles of Chemistry I	(4-0-4)
MATH 121	Calculus for Science and Engineering I	(4-0-4)
USFS 100	University First Seminar	(3-1-4)
PHED 101	Physical Education Activities	(0-3-0)
<b>Total</b>		<b>(15-6-15)</b>

**SOPHOMORE**

CHEM 223/323	Organic Chemistry	(3-0-3)
MATH 223	Calculus for Science and Engineering III	(3-0-3)
ENGR 225	Thermodynamics, Fluids, Heat & Mass Transfer	(4-0-4)
ECHE 260	Introduction to Chemical Systems	(3-0-3)
ECHE 151	Chemical Engineering at Case SAGES Seminar Course II <sup>f</sup>	(1-0-0) (3-0-3)
<b>Total</b>		<b>(17-0-16)</b>

**JUNIOR**

ECHE 360	Transport Phenomena	(4-0-4)
ECHE 367	Process Control	(4-0-4)
ENGR 210	Circuits and Instrumentation	(2-2-4)
CHEM 290	Advanced Chemical Laboratory Methods Breadth Elective Sequence I <sup>d</sup> <i>or</i> Humanities/Social Science Elective II	(1-6-3) (3-0-3)
<b>Total</b>		<b>(14-8-18)</b>

**SENIOR**

ECHE 398	Process Analysis and Design	(3-0-3)
ECHE 362	Chemical Engineering Laboratory Materials Elective <sup>c</sup> Breadth Elective Sequence II <sup>d</sup> Humanities/Social Science Elective IV	(0-4-4) (3-0-3) (3-0-3) (3-0-3)
<b>Total</b>		<b>(12-4-16)</b>

- a Selected students may be invited to take PHYS 125, 126 *General Physics I, II Honors* in place of PHYS 121, 122.
- b Science Elective I and II: Students must take any two of the following courses: PHYS 221 *General Physics III. Modern* (F, Sp), CHEM 224/234 *Organic Chemistry II* (Sp), CHEM 311 *Inorganic Chemistry I* (F), BIOL 300 *Dynamics of Biological Systems* (F, Sp), or BIOL 303 *Chemical Biology* (Sp).
- c One materials elective is required. Suggested courses include: EMSE 201 *Introduction to Materials Science and Engineering*, EMAC 270 *Introduction to Polymer Science* (F, Sp), EMAC 276 *Polymer Properties and Design* (F, Sp), EMSE 314 *Electrical, Magnetic, Optical Properties of Materials* (F), EMSE 316 *Applications of Ceramic Materials*, or course approved by the Chemical Engineering faculty.

**Spring Semester Class-Lab-Credit Hours****FRESHMAN**

PHYS 122	General Physics II. Electricity and Magnetism	(4-3-4)
ENGR 145	Chemistry of Materials	(4-0-4)
MATH 122	Calculus for Science and Engineering II	(4-0-4)
ENGR 131	Elementary Computer Programming SAGES Seminar Course I <sup>f</sup>	(2-2-3) (3-0-3)
PHED 102	Physical Education Activities	(0-3-0)
<b>Total</b>		<b>(17-8-18)</b>

**SOPHOMORE**

MATH 224	Science Elective I <sup>b</sup>	(3-0-3)
STAT 313	Differential Equations	(3-2-3)
ECHE 363	Statistics for Experimenters Thermodynamics of Chemical Systems Humanities/Social Science Elective I	(3-0-3) (3-0-3) (3-0-3)
<b>Total</b>		<b>(15-2-15)</b>

**JUNIOR**

ECHE 361	Separation Processes	(3-0-3)
ECHE 365	SAGES Dept. Seminar—Measurements Lab	(0-3-3)
ENGL 398N	Professional Communications <sup>e</sup>	(3-0-3)
ECHE 364	Chemical Reaction Processes Breadth Elective Sequence I <sup>d</sup> <i>or</i> Humanities/Social Science Elective II Humanities/Social Science Elective III	(3-0-3) (3-0-3) (3-0-3)
<b>Total</b>		<b>(15-3-18)</b>

**SENIOR**

ECHE 399	SAGES Capstone Design Project <sup>e</sup>	(3-0-3)
CHEM 336	Introductory Physical Chemistry II	(3-0-3)
ENGR 200	Statics and Strength of Materials Breadth Elective Sequence III <sup>d</sup> Science Elective II <sup>b</sup>	(3-0-3) (3-0-3) (3-0-3)
<b>Total</b>		<b>(15-0-15)</b>

Hours required for graduation: 131-133 (depending on breadth elective sequence).

- d A three-course (9 credit hours minimum) breadth sequence (approved by the Chemical Engineering faculty). Pre-approved sequences include: biochemical engineering, biomedical engineering, computing, electrochemical engineering, electronic materials processing, environmental engineering, management, polymer science, systems and control, and advanced study (BS/MS).
- e Register for the specific Chemical Engineering section.
- f Must take one course each from: USSY—Thinking about the symbolic world, USNA—Thinking about the natural world and USSO—Thinking about the social world. Specific seminar topics will change periodically.

**\*\*course electives from other departments subject to change**