172 Principles of Chemistry II - Reactivity Laboratory Spring, 1(0-3) P:M: (LBS 171 or CEIM 141 or CEIM 151 or CEM 181H) and (LBS 171L or CEM 161 or CEM 185H) R: Open only to students in Lyman Briggs School. SA: LBS 266 Not open to students with credit in CEM 142 or CEM 152 or CEM 182H.

Spectroscopy, coordination chemistry, solubility and stability constants. Electrochemistry, main group chemistry, atmospheric chemistry, and organometallic chemistry, Polymers and biochemistry.

172L Principles of Chemistry II - Reactivity Laboratory Spring, 1(0-3) P:M: (LBS 171 or CEIM 141 or CEM 152 or CEM 182H) and (LBS 171L or CEM 161 or CEM 185H) and (LBS 172 or concurrently) R: Open only to students in Lyman Briggs School. SA: LBS 266L Not open to students with credit in CEM 162 or CEM 186H.

Synthesis and characterization of chemical systems.

220 Calculus III Fall, Spring, 5(5-0) P:M: (LBS 119 or MTH 133) R: Open only to students in Lyman Briggs School. Not open to students with credit in MTH 234 or MTH 236 or MTH 254H or MTH 255H.

Continuation of LBS 118. Further applications of one variable calculus. Infinite series. Ordinary differential equations.

246 Experimental Projects in Biology Spring, 1 to 3 credits. A student may earn a maximum of 5 credits in all enrollments for this course. P:M (LBS 145) or (BS 111 and BS 111L) or (LBS 149H and LBS 159H) and completion of Tier I writing requirement. R: Open only to students in Lyman Briggs School.

Experiments and field studies. Selected problems in biology such as cell structure and metabolism, diversity, stability, evolution of natural communities, and reproductive biology.

271 Physics I Fall, Spring, 3(3-0) P:M: MTH 132 or LBS 118 or MTH 152H R: Open only to students in Lyman Briggs School. SA: LBS 164 Not open to students with credit in PHY 181B or PHY 183 or PHY 183B or PHY 193H or PHY 231 or PHY 231B or PHY 231C.

Basic physics principles, problem solving techniques, Mechanical systems, elementary thermodynamics, vibrations and waves. Atoms and nuclei.

271L Physics Laboratory I Fall, 1(0-3) P:M: LBS 271 or concurrently R: Open only to students in Lyman Briggs School. SA: LBS 164L Not open to students with credit in PHY 191 or PHY 251.

Techniques and instruments in the physics laboratory. Selected experiments in classical and modern physics.

272 Physics II Spring, 3(3-0) P:M: (LBS 118 or MTH 133 or MTH 153H) and LBS 271 R: Open only to students in Lyman Briggs School. SA: LBS 267 Not open to students with credit in PHY 182B or PHY 184 or PHY 184B or PHY 232 or PHY 232B or PHY 294H or PHY 232C.

Principles of electromagnetic theory, special relativity, quantum physics, optics, atomic and subatomic physics.
272L  Physics Laboratory II
Spring. 1(0-3) P:M: LBS 271L and (LBS 272 or concurrently) R: Open only to students in Lyman Briggs School. SA: LBS 267L Not open to students with credit in PHY 192 or PHY 292. Directed studies involving at least two Lyman Briggs School curricular areas: biology, chemistry, physics, mathematics, history, philosophy, and sociology of science.

290A  Directed Study-Multidisciplinary
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open to undergraduate students in the Lyman Briggs School or approval of school. Directed studies involving at least two Lyman Briggs School curricular areas: biology, chemistry, physics, mathematics, history, philosophy, and sociology of science.

290B  Directed Study--Biology
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to students in Lyman Briggs School. Directed studies in biology.

290C  Directed Study--Chemistry/Physics
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to students in Lyman Briggs School. Directed studies in chemistry and physics.

290D  Directed Study--Mathematics
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to students in Lyman Briggs School. Directed studies in mathematics.

290E  Directed Study--Science and Technology Studies
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to students in Lyman Briggs School. Directed study in science and technology studies.

290F  Directed Study--Computing
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to students in Lyman Briggs School. Directed studies in computing.

332  Technology and Culture
Fall. 4(4-0) Interdepartmental with American Studies. Administered by Lyman Briggs School. P:M: Completion of Tier I writing requirement. R: Open only to juniors or seniors in Lyman Briggs School. History of technology with special emphasis on the interaction of technical innovation and other elements of culture.

333  Topics in History of Science
Fall, Spring. 4(4-0) A student may earn a maximum of 8 credits in all enrollments for this course. P:M: Completion of Tier I writing requirement. R: Open only to juniors or seniors in Lyman Briggs School. Various themes or periods in physical/biological science. May emphasize patterns of theory development, changes in explanatory aims and standards or interaction of social and cultural factors with scientific ideas, practices, instrumentation or experimentalism.

334  Science, Technology and Public Policy
Spring. 4(4-0) P:M: Completion of Tier I writing requirement. R: Open only to sophomores or juniors or seniors in Lyman Briggs School. Science and technology in public policy formation considered from the perspectives of the history, philosophy, and sociology of science and technology.

335  The Natural Environment: Perceptions and Practices
Fall of even years, Spring. 4(4-0) Interdepartmental with American Studies. Administered by Lyman Briggs School. P:M: (LBS 133) or completion of Tier I writing requirement R: Open to students in the Lyman Briggs School or in the American Studies major or in the Science, Technology, Environment and Public Policy Specialization. American attitudes toward the natural environment and related public and private institutions.

336  Gender, Science, Technology (W)
Spring. 4(4-0) P:M: (LBS 133) or completion of Tier I writing requirement RB: LBS 144 and LBS 145 R: Open to students in the Lyman Briggs School or in the Bioethics, Humanities, and Society Specialization. Approval of school. Significance of gender in relation to science, technology, the environment, and medicine.

347  Advances in Applied Biology
Fall. 3(2-3) P:M: (LBS 145) or (BS 111 or concurrently and BS 111L) or (LBS 149H or concurrently and LBS 159H) and completion of Tier I writing requirement. R: Open only to juniors or seniors in Lyman Briggs School. Advances in cell and molecular biology and application: plant and animal breeding, environment, and therapeutics.

355  Philosophy of Technology
Spring. 4(4-0) Interdepartmental with Philosophy. Administered by Lyman Briggs School. P:M: Completion of Tier I writing requirement. R: Open only to sophomores or juniors or seniors in Lyman Briggs School or the Department of Philosophy. Examination of the desirability of technology, its social forms, and its alternatives. Conventional productivist, ecological progressive, and radical humanist outlooks.

368  Science, Technology and Society
Fall. 3(3-0) Interdepartmental with Sociology. Administered by Sociology. RB: (LBS 133) or some familiarity with basic concepts and methods in sociology. R: Not open to freshmen or sophomores. Role of science and technology in social change. Values and ethics in contemporary perspectives, controversies, and cases. Science and technology as forms of knowledge.

415  Methods of Theoretical Physics
Spring of odd years. 4(4-0) Interdepartmental with Physics. Administered by Lyman Briggs School. P:M: ((MTH 234 or concurrently) or (LBS 220 or concurrently) or (MTH 254H or concurrently)) and (LBS 271 or PHY 183 or PHY 193H) and (LBS 272 or PHY 184 or PHY 294H) RB: (MTH 235 or concurrently) or (MTH 255H or concurrently) Mathematical methods as applied to physical problems in mechanics, electromagnetism, and thermodynamics. Topics include multiple integration, vector calculus, Fourier series, ordinary and partial differential equations, eigenvector problems, coordinate transformations, and complex analysis. Applications include Newtonian mechanics, rigid body dynamics, heat flow, electrostatics, harmonic motion, and wave propagation.

425  American and European Health Care since 1800
Spring. 4(4-0) Interdepartmental with History. R: Open only to seniors in Lyman Briggs School. Social and cultural transformation in health care delivery since 1800, primarily in North America and western Europe. Therapeutic revolutions. Medical education and professionalization. Social and alternative medicine. Managed care.

483  Literature and Medicine
Spring. 3(3-0) Interdepartmental with English. R: Open only to seniors in Lyman Briggs School. Social and cultural transformation in health care delivery since 1800, primarily in North America and western Europe. Therapeutic revolutions. Medical education and professionalization. Social and alternative medicine. Managed care.

490A  Advanced Directed Study--Multidisciplinary
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open to juniors or seniors in the Lyman Briggs School. Directed advanced studies involving at least two Lyman Briggs School curricular areas: biology, chemistry, physics, mathematics, history, philosophy, sociology of science, and computing.

490B  Advanced Directed Study--Biology
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to juniors or seniors in the Lyman Briggs School. Directed advanced studies in biology.
490C  Advanced Directed Study--Chemistry or Physics
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to juniors or seniors in Lyman Briggs School.
Directed advanced studies in chemistry or physics.

490D  Advanced Directed Study--Mathematics
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Not open to freshmen or sophomores. Open only to Lyman Briggs School majors.
Directed advanced studies in mathematics.

490E  Advanced Directed Study--Science and Technology Studies
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to juniors or seniors in Lyman Briggs School.
Directed advanced studies in science and technology studies.

492  Senior Seminar
Fall, Spring. 4(4-0) RB: (LBS 239 or LBS 330 or LBS 331 or LBS 332 or LBS 333 or LBS 334 or LBS 335 or LBS 355 or LBS 490E or HST 425) or completion of Tier I Writing requirement R: Open only to juniors or seniors in Lyman Briggs School.
Selected problems in the study of science and technology as human activities, using philosophical, historical, literary, social science or interdisciplinary perspectives or methods. Development and defense of thesis paper.

493  Field Experience
Fall, Spring. 1 to 10 credits. A student may earn a maximum of 10 credits in all enrollments for this course. R: Open only to juniors or seniors in Lyman Briggs School.
Experiential learning related to the public or private practice of science and technology.