LYMAN BRIGGS

Lyman Briggs College

105C  Preparatory - Physics
Summer. 1(1-0) Interdepartmental with Physics. Administered by Lyman Briggs. RB: College Algebra
Preparation for the introductory physics sequence: mathematical concepts, notations, representations, effective problem solving techniques and study strategies.

106  Preparation for Science and Engineering Fall, (1-0) Interdepartmental with Engineering. Administered by Engineering. R: Open to freshmen. Approval of college.
Academic and environmental aspects to college success. Review of math and science fundamentals and development of writing skills. Introduction to Science, Technology, Engineering, and Mathematics (STEM) careers.

118  Calculus I  Fall, Spring. 4(4-0) P: (MTH 114 or MTH 116) or designated score on Mathematics Placement test RB: College Algebra and Trigonometry R: Open to students in the Lyman Briggs College. SA: LB 119 Not open to students with credit in MTH 132 or MTH 153H.
Limits, continuity, differentiation, integration, and elementary applications.

119  Calculus II  Fall, Spring. 4(4-0) P: LB 118 or MTH 132 or MTH 152H R: Open to students in the Lyman Briggs College. SA: LB 119 Not open to students with credit in MTH 133 or MTH 153H.
Continuation of LB 118. Integration techniques, elementary differential equations, parametric curves, polar coordinates, sequences and series, vectors, and vector operations.

133  Introduction to History, Philosophy, and Sociology of Science  Fall, Spring. 4(4-0) P: Designated score on English Placement test R: Open to students in the Lyman Briggs College or in the Science, Technology, Environment and Public Policy Specialization. SA: LBS 133 Not open to students with credit in RCAA 111 or WRA 101 or WRA 195H.
Introduction to the history, philosophy, and sociology of science, technology, the environment, and medicine. Instruction and practice in formal writing.

144  Biology I: Organismal Biology  Fall, Spring. 4(3-0) R: Open to students in the Lyman Briggs College. SA: LBS 144 Not open to students with credit in BS 162 or BS 172 or BS 182H or BS 192H.
Modern biology at the organismal level of integration. Principles of genetics, evolution, ecology, and organismal diversity as interactive units.

145  Biology II: Cellular and Molecular Biology  Fall, Spring. 5(3-4) P: (LB 144 or BS 162 and BS 172) or (BS 182H and BS 192H) and (LB 171 or CEM 141 or CEM 181H or CEM 151) R: Open to students in the Lyman Briggs College. SA: LBS 145 Not open to students with credit in BS 161 or BS 171 or BS 181H or BS 191H.
Modern biology, mainly at the cellular level of integration. Principles of cell structure and function used to explain processes of bioenergetics, protein synthesis, and development.

155  Introduction to Quantitative Science and Research  Fall. 3(2-3) P: (MTH 1825 or concurrently) or (MTH 103 or concurrently) R: Open to freshmen in the Lyman Briggs College.
Exploration of fundamental chemistry, biology, physics, mathematics and statistics. Quantitative analysis and research.

171  Principles of Chemistry I  Fall. 4(4-0) P: MTH 114 or (MTH 116 or concurrently) or (MTH 132 or concurrently) or (MTH 133 or concurrently) or (MTH 152H or concurrently) or (LB 118 or concurrently) or (LB 119 or concurrently) R: Open to students in the Lyman Briggs College. SA: LB 135.
Stoichiometry, quantum mechanics and interactions of light with matter, periodic trends, Lewis dot structures, molecular structure, polarity and intermolecular forces, valence bond theory, introduction to organic chemistry, enthalpy and heat transfer.

171L  Introductory Chemistry Laboratory I  Fall. 1(0-3) R: Open to students in the Lyman Briggs College. CB: LB 171 concurrently.
Determination of density and molecular weight. Stoichiometry, acid-base titration, redox titration. Reaction kinetics, thermochemistry, Beer's law, freezing point depression, and equilibrium constants.

172  Principles of Chemistry II  Spring. 3(4-0) P: LB 171 or CEM 141 or CEM 151 or CEM 181H R: Open to students in the Lyman Briggs College. CB: LB 172L concurrently.
Gases, properties of solutions, introduction to solid state chemistry, molecular orbital theory, chemical equilibria, chemical kinetics, acid-base equilibria, solubility equilibria, entropy, free energy, electrochemistry, redox reactions, nuclear chemistry.

172L  Principles of Chemistry II - Reactivity Laboratory  Spring. 1(0-3) P: (LB 171 or CEM 141 or CEM 152 or CEM 182H) and (LB 171L or CEM 161 or CEM 185H) R: Open to students in the Lyman Briggs College. CB: LB 172 concurrently.
Synthesis and characterization of chemical systems.

181  Introduction to Science, Technology, the Environment and Public Policy  Fall. 3(3-0) Interdepartmental with Fisheries and Wildlife and James Madison College. Administered by Fisheries and Wildlife.
Relation of science and technology to ethics and public policy. Environmental law and public policy. Managing fish, water and wildlife resources at state, national, and international levels. Science and technology in developing countries. Impacts of military technology on environmental policy.

181H  Honors Cell and Molecular Biology  Spring. 3(3-0) Interdepartmental with Biochemistry and Molecular Biology and Biological Chemistry and Microbiology and Molecular Genetics. Administered by Biological Science. P: (CEM 141 or concurrently) or (CEM 151 or concurrently) or (CEM 161H or concurrently) or (BS 149H or BS 110) R: Open to students with credit in BS 161 or LB 145.
Physicochemical and molecular organization of cells as the unifying framework for genetics, evolution, and the social relevance of biology.

182H  Honors Organismal and Population Biology  Fall. 3(3-0) Interdepartmental with Biological Science and Integrative Biology and Plant Biology. Administered by Biological Science. SA: BS 148H, BS 110 Not open to students with credit in LB 144.
Diversity and basic properties of organisms, with emphasis on genetic principles, ecological interactions, and the evolutionary process. Historical approach to knowledge discovery.

191H  Honors Cell and Molecular Biology Laboratory  Spring. 2(1-3) Interdepartmental with Biochemistry and Molecular Biology and Biological Chemistry and Microbiology and Molecular Genetics. Administered by Biological Science. P: BS 181H or concurrently SA: BS 159H Not open to students with credit in LB 145.
Basic techniques of cellular and molecular biology including experimental design and hypothesis formulation; biochemistry, molecular biology and genetics.

192H  Honors Organismal and Population Biology Laboratory  Fall. 2(1-3) Interdepartmental with Biological Science and Integrative Biology and Plant Biology. Administered by Biological Science. P: BS 182H or concurrently SA: BS 158H, BS 110 Not open to students with credit in LB 144.
Nature and process of organismal biology, including experimental design and statistical methods, hypothesis testing, genetics, ecology, and evolution.

220  Calculus III  Fall, Spring. 4(4-0) P: LB 119 or MTH 133 or MTH 153H R: Open to students in the Lyman Briggs College. SA: LBS 220
Continuation of LB 119. Differential calculus of functions of two or three variables. Double and triple integrals. Line and surface integrals.
Lyman Briggs—LB

240 Bioethics: Theories and Methods
Fall, Summer. 2(2-0) RB: Completion of Tier I Writing Requirement
Interdisciplinary survey of key theories and methods in bioethics. Topics include aging, cultural diversity, and health care policy.

268 Introduction to Health Care Policy and Organization
Summer. 3(3-0) P: Completion of Tier I Writing Requirement
Introductory theories, concepts, and processes for policy, organization, and administration in health care.

270 Medical Terminology
Summer. 2(2-0) RB: (PSL 250 or PSL 310 or PSL 431) and junior or senior status.
Medical terminology, focusing on human systems, anatomy and physiology, fundamental word building principles, and phonetic pronunciations.

273 Physics I
Fall. 4(3-3) P: LB 118 or MTH 132 or MTH 152H R: Open to students in the Lyman Briggs College. SA: LBS 271, LBS 271L, LBS 164 Not open to students with credit in PHY 183 or PHY 231 or PHY 193h or PHY 191 or PHY 251.
Basic physics principles and problem solving techniques. Mechanical systems (Newton’s laws, momentum and energy conservation, rotational motion, gravity), elementary thermodynamics, oscillations and waves, and atomic nuclei. Laboratory techniques, instrumentation, and selected experiments in classical and modern physics.

274 Physics II
Spring. 4(3-3) P: LB 273 or PHY 183 or PHY 183B or PHY 193h or PHY 233B RB: LB 119 or MTH 133 or MTH 153H R: Open to students in the Lyman Briggs College. SA: LBS 267, LBS 272, LBS 272L Not open to students with credit in PHY 184 or PHY 232 or PHY 294h or PHY 192 or PHY 252.
Basic physics principles and problem solving techniques. Principles of electromagnetic theory, circuits, special relativity, quantum physics, optics, atomic and subatomic physics. Laboratory error analysis and selected experiments in classical and modern 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 to students in the Lyman Briggs College. SA: LBS 290D
Directed studies in mathematics.

290E Directed Study--History, Philosophy, and Sociology of Science
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open to students in the Lyman Briggs College. SA: LBS 290E
Directed study in history, philosophy, and sociology of science.

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 to students in the Lyman Briggs College. SA: LBS 290F
Directed studies in computing.

304 Lesbian, Gay, Bisexual, Transgender, Queer (LGBTQ) and Sexuality Studies
Spring. 3(3-0) Interdepartmental with Residential College in the Arts and Humanities and Women’s Studies. Administered by Women’s Studies. R: Not open to freshmen. SA: WS 204
Interdisciplinary study of the history, politics, theories, science, cultures, and communities of lesbian, gay, transgender, queer, and intersex people including a global perspective.

321A Science and the Public - Arts and Humanities (W)
On Demand. 4(4-0) P: Completion of Tier I Writing Requirement R: Open to students in the Lyman Briggs College or in the Science, Technology, Environment and Public Policy Minor.
Interdisciplinary study of the relationship between science and society, public engagement with science and technology, public expressions of scientific knowledge, and science in culture. Emphasis on scholarship in the arts and humanities.

321B Science and the Public - Social Sciences (W)
On Demand. 4(4-0) P: Completion of Tier I Writing Requirement R: Open to students in the Lyman Briggs College or in the Science, Technology, Environment and Public Policy Minor.
Interdisciplinary study of the relationship between science and society, public engagement with science and technology, public expressions of scientific knowledge, and science in culture. Emphasis on scholarship in the social sciences.

322B Advances in Science and Technology - Social Sciences (W)
On Demand. 4(4-0) P: Completion of Tier I Writing Requirement R: Open to students in the Lyman Briggs College or in the Science, Technology, Environment and Public Policy Minor.
Interdisciplinary study of how and why humans have transformed their environments, as well as changes in people’s attitudes about nature and wilderness over time. Emphasis on scholarship and methodologies from the arts and humanities.

323A Science in a Global Context - Arts and Humanities (W)
On Demand. 4(4-0) P: Completion of Tier I Writing Requirement R: Open to students in the Lyman Briggs College or in the Science, Technology, Environment and Public Policy Minor.
Explores scientific practice and relevance in a global context. Emphasis on scholarship from the arts and humanities.

323B Science in a Global Context - Social Sciences (W)
On Demand. 4(4-0) P: Completion of Tier I Writing Requirement R: Open to students in the Lyman Briggs College or in the Science, Technology, Environment and Public Policy Minor.
Explores scientific practice and relevance in a global context. Emphasis on scholarship from the social sciences.

324A Science and Sex, Gender, Sexuality - Arts and Humanities (W)
On Demand. 4(4-0) P: Completion of Tier I Writing Requirement R: Open to students in the Lyman Briggs College or in the Science, Technology, Environment and Public Policy Minor.
Interdisciplinary study of sex, gender, and sexuality in relation to science and/or medicine. Emphasis on scholarship and methodologies from the arts and humanities.

324B Science and Sex, Gender, Sexuality - Social Sciences (W)
On Demand. 4(4-0) P: Completion of Tier I Writing Requirement R: Open to students in the Lyman Briggs College or in the Science, Technology, Environment and Public Policy Minor.
Interdisciplinary study of sex, gender, and sexuality in relation to science and/or medicine. Emphasis on scholarship and methodologies from the social sciences.

325A Science and the Environment - Arts and Humanities (W)
On Demand. 4(4-0) P: Completion of Tier I Writing Requirement R: Open to students in the Lyman Briggs College or in the Science, Technology, Environment and Public Policy Minor.
Interdisciplinary study of the environments, as well as changes in people’s attitudes about nature and wilderness over time. Emphasis on scholarship and methodologies from the arts and humanities.
Science and the Environment - Social Sciences (W)
On Demand. 4(4-0) P: Completion of Tier I Writing Requirement R: Open to students in the Lyman Briggs College or in the Science, Technology, Environment and Public Policy Minor.

Interdisciplinary study of the interrelationship between human systems and natural systems, including human drivers of environmental impact and solutions to environmental problems. Emphasis on scholarship and methodologies from the social sciences.

Medicine and Health - Arts and Humanities (W)
On Demand. 4(4-0) P: Completion of Tier I Writing Requirement R: Open to students in the Lyman Briggs College or in the Science, Technology, Environment and Public Policy Minor.

Interdisciplinary study of health and medicine. Emphasis on scholarship and methodologies from the arts and humanities.

Medicine and Health - Social Sciences (W)
On Demand. 4(4-0) P: Completion of Tier I Writing Requirement R: Open to students in the Lyman Briggs College or in the Science, Technology, Environment and Public Policy Minor.

Interdisciplinary study of health and medicine. Emphasis on scholarship and methodologies from the social sciences.

Scientific Practice - Arts and Humanities (W)
On Demand. 4(4-0) P: Completion of Tier I Writing Requirement R: Open to students in the Lyman Briggs College or in the Science, Technology, Environment and Public Policy Minor.

Motivations and methodologies of the scientific endeavor, as well as the institutions that support it. Historical perspectives on the development of scientific practice, ethical implications of scientific work, and the impact of cultural practices, norms, and identities on scientific innovation. Emphasis on scholarship and methodologies from the arts and humanities.

Scientific Practice - Social Sciences (W)
On Demand. 4(4-0) P: Completion of Tier I Writing Requirement R: Open to students in the Lyman Briggs College or in the Science, Technology, Environment and Public Policy Minor.

Explores the motivations and methodologies of scientific endeavors and the relationships between science and other major human institutions such as religion, politics, government, and the economy. Emphasis on scholarship and methodologies from the social sciences.

Topics in History, Philosophy, and Sociology of Science (W)
Fall, Spring. 4(4-0) P: (LB 133) or completion of Tier I writing requirement R: Open to students in the Lyman Briggs College or in the Science, Technology, Environment and Public Policy Specialization. SA: LBS 330

Topics in history, philosophy, and sociology of science, technology, the environment, and medicine.

Literature and Science (W)
Fall, Spring. 4(4-0) P: (LB 133) or completion of Tier I writing requirement R: Open to students in the Lyman Briggs College. SA: LBS 331

Representations of science, technology, the environment, and medicine in texts drawn from science fiction, Gothic, and utopian literature, or mainstream writings.

Technology and Culture (W)
Fall, Spring. 4(4-0) Interdepartmental with American Studies. Administered by Lyman Briggs. P: (LB 133) or completion of Tier I writing requirement R: Open to students in the Lyman Briggs College or in the American Studies major or in the Science, Technology, Environment and Public Policy Specialization. SA: LBS 332

History of technology with special emphasis on the interaction of technical innovation and other elements of culture.

Topics in History of Science (W)
Fall, Spring. 4(4-0) P: (LB 133) or completion of Tier I writing requirement R: Open to students in the Lyman Briggs College or in the Science, Technology, Environment and Public Policy Specialization. SA: LBS 333

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.

Science, Technology, and Public Policy (W)
Fall odd years, Spring. 4(4-0) P: (LB 133) or completion of Tier I writing requirement R: Open to students in the Lyman Briggs College or in the Science, Technology, Environment and Public Policy Specialization. SA: LBS 334

Formation, implementation, and evaluation of public policy related to science, technology, the environment, and medicine.

The Natural Environment: Perceptions and Practices (W)
Fall, Spring. 4(4-0) Interdepartmental with American Studies. Administered by Lyman Briggs. P: (LB 133) or completion of Tier I writing requirement R: Open to students in the Lyman Briggs College or in the Science, Technology, Environment and Public Policy Specialization. SA: LBS 335

An examination of the desirability of technology, its social forms, and its alternatives. Conventional productive, ecological progressive, and radical humanist outlooks.

Science, Technology and Society
Fall. 4(4-0) Interdepartmental with Sociology. Administered by Sociology. RB: (LB 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.

American and European Health Care since 1800
Spring. 4(4-0) Interdepartmental with History. Administered by History. P: Completion of Tier I writing requirement R: Not open to freshmen.


Bioethics Capstone
Fall, Spring. 1(1-0) P: LB 240 RB: Completion of 9 credits in the bioethics minor. R: Open to juniors or seniors in the Bioethics, Humanities, and Society Minor.

Selective topics in bioethics. Analysis of key issues and problems. Case studies.
459 Science, Technology, Environment and Public Policy Capstone
Fall, Spring. 3(3-0) Interdepartmental with James Madison College. Administered by James Madison College. P: (FW 181 or approval of college) and completion of Tier I writing requirement

473A Literature and Medicine
Spring. 3(3-0) Interdepartmental with English. Administered by English. P: Completion of Tier I Writing Requirement R: Not open to freshmen or sophomores. SA: ENG 463

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 students in the Lyman Briggs College. SA: LBS 490A
Directed advanced studies involving at least two Lyman Briggs College 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 to students in the Lyman Briggs College. SA: LBS 490B
Directed advanced studies in biology.

490E Advanced Directed Study--History, Philosophy, Sociology of Science (W)
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. P: (LB 133) or completion of Tier I writing requirement R: Open to students in the Lyman Briggs College or in the Science, Technology, Environment and Public Policy Specialization. SA: LBS 490E
Directed advanced studies in history, philosophy, sociology of science, technology, the environment, or medicine.

492 Senior Seminar (W)
Fall, Spring. 4(4-0) P: (LB 330 or LB 331 or LB 332 or LB 333 or LB 334 or LB 335 or LB 336 or LB 355 or LB 490E) or approval of college) and completion of Tier I writing requirement R: Open to juniors or seniors in the Lyman Briggs College or in the Science, Technology, Environment and Public Policy Specialization. SA: LBS 492
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, Summer. 1 to 10 credits. A student may earn a maximum of 10 credits in all enrollments for this course. R: Open to students in the Lyman Briggs College. SA: LBS 493
Experiential learning related to the public or private practice of science and technology.

494 Undergraduate Research
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Approval of college; application required. SA: LBS 494
Faculty-guided undergraduate research.