105C Preparatory - Physics
Preparation for the introductory physics sequence: mathematical concepts, notations, representations, effective problem solving techniques and study strategies.

106 Preparation for Science and Engineering

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: LBS 118 Not open to students with credit in MTH 152H or MTH 153H.

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: LBS 118 Not open to students with credit in MTH 152H or MTH 153H.

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 RCAH 111 or WRA 101 or WRA 195H.

144 Biology I: Organismal Biology
Fall, Spring. 4(3-3) 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.

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.

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.

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: LBS 171 Not open to students with credit in CEM 141 or CEM 151 or CEM 181H. C: LB 171 concurrently.

171L Introductory Chemistry Laboratory I
Fall. 1(0-3) R: Open to students in the Lyman Briggs College. SA: LBS 171 Not open to students with credit in BS 171 or LB 145.

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. SA: LBS 172L concurrently.

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.

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 BS 162 or LB 144.

191H Honors Cell and Molecular Biology Laboratory
Spring. 2(1-3) Interdepartmental with Biological Science and Integrative Biology and Plant Science and Microbiology and Molecular Genetics. Administered by Biological Science. SA: BS 181H or concurrently: SA: BS 159H. BS 111L Not open to students with credit in BS 171 or LB 145.

220 Calculus III
Fall, Spring. 4(4-0) P: LB 118 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.

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 atom c nuclei. Laboratory techniques, instrumentation, and selected experiments in classical and modern physics.

274 Physics II
Spring 4(3-3) P: LB 273 or PHY 163 or PHY 163B or PHY 193H or PHY 233B R/B: 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.

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 students in the Lyman Briggs College. SA: LBS 290A.
Directed studies involving at least two Lyman Briggs College 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 to students in the Lyman Briggs College. SA: LBS 290B.
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 to students in the Lyman Briggs College. SA: LBS 290C.
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 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, Summer 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.

290G Directed Study–History, Philosophy, and Sociology of Science
Fall, Spring, Summer 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 290G.
Directed study in history, philosophy, and sociology of science.

304 Lesbian, Gay, Bisexual, Transgender, Queer (LGBTQ) and Sexuality Studies
Spring 3(0-0) 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.

330 Topics in History, Philosophy, and Sociology of Science (W)
Fall, Spring, Summer of odd years. 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.

331 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.

332 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.

333 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.

334 Science, Technology, and Public Policy (W)
Fall of 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.

335 The Natural Environment: Perceptions and Practices (W)
Fall of even years, 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 335.
American attitudes toward the natural environment and related public and private institutions.

336 Gender, Sexuality, Science, Technology (W)
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 336.
Significance of gender in relation to science, technology, the environment, and medicine.

347 Advances in Applied Biology
Fall, Spring, Summer 3(1-4) P: (LB 145 or (BS 161 and BS 171)) or (BS 181H and BS 191H)) and Completion of Tier I Writing Requirement R: Open to students in the Lyman Briggs College. SA: LBS 347.
Advances in cell and molecular biology and application: plant and animal breeding, environment, and therapeutics.

348 Research Experiences in Biology
Fall, Spring 3(1-4) A student may earn a maximum of 6 credits in all enrollments for this course. P: ((LB 144 and LB 145) or (BS 161 and BS 162 and BS 171 and BS 172) or (BS 181H and BS 182H and BS 191H and BS 192H)) and (LB 119 or STT 231) and Completion of Tier I writing requirement R: Open to undergraduate students in the Lyman Briggs College.
Laboratory, data science, or field research in basic or applied molecular, cellular, or organismal biology. Field trips required.

355 Philosophy of Technology (W)
Spring, 4(4-0) Interdepartmental with Philosophy. Administered by Lyman Briggs. P: (LB 133) or completion of Tier I writing requirement R/B: PHL 200 R: Open to students in the Department of Philosophy or in the Lyman Briggs College. SA: LBS 355.
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: (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.


**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


**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 483


**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.

**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.

**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.

**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.

**Undergraduate Research**

Fall, Spring. 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.