LYMAN BRIGGS COLLEGE

Elizabeth H. Simmons,
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The Lyman Briggs College is a residential college that bridges the science and humanities through interdisciplinary teaching and research. It provides students with a fundamental core science education in mathematics, chemistry, biology, and physics. Additionally, the core program addresses historical, philosophical, and societal concerns and consequences of modern science, technology, the environment, and medicine. Advanced undergraduate courses in the student's major are taken in the respective departmental units of the College of Natural Science, College of Engineering, College of Agriculture and Natural Resources, and the University at large. The majority of Lyman Briggs students pursue programs leading to advanced graduate study in the natural sciences, or professional programs related to medicine, dentistry, veterinary medicine, allied health, education or law. Many other students plan to enter careers in teaching at the secondary level, science writing, product representation, industry, or government service upon completion of their Bachelor of Science degree.

As a residential college, Lyman Briggs College has classrooms, laboratories, faculty offices, academic advisor offices, and administrative offices located in Holmes Hall, where all first year and many upper-level Lyman Briggs students live and learn. Because of this residential organization, students are able to develop a strong living-learning community identity by integrating academic and personal development, with faculty, staff and their peers in residence. Students are encouraged to balance their academic lives with social, cultural, athletic, service-learning, and leadership opportunities on campus and in the greater East Lansing community.

Students admitted to Michigan State University are admissible to Lyman Briggs College based initially on application date. There are no additional academic or program requirements for freshman admissions. Enrollment in the college is limited; therefore students are encouraged to apply early. Applicants should indicate their intention to become a part of the Lyman Briggs College on the Michigan State University Application for Admissions. If a student has already submitted an application and would like to apply to Lyman Briggs College, she/he should contact the Office of Admissions directly as early as possible.

Students work closely with their academic advisors and faculty in developing an individualized academic plan. All students enter the program as 'no major' status and may declare a major as early as summer orientation or by the time they have earned 56 credit hours.

Students who are enrolled in the environmental biology/microbiology and microbiology coordinate majors in Lyman Briggs College may elect the Specialization in Food Processing and Technology. For additional information, refer to the *Specialization in Food Processing and Technology* statement in the *Department of Food Science and Human Nutrition* statement in the *College of Agriculture and Natural Resources* section of this catalog.

Admission as a Freshman to Lyman Briggs College

Any student who meets the general requirements for admission to the university as shown in the *Undergraduate Education* section of this catalog may enroll in Lyman Briggs College, pending available space.

Transfer Students

All students in good academic standing in Lyman Briggs College may transfer at any time to other programs at Michigan State University for which they are eligible, in order to accommodate changing academic needs and interests.

Students who wish to transfer into Lyman Briggs College should contact the Academic and Student Affairs Office to make an appointment to consult with the Admissions Coordinator. Space in Lyman Briggs College is limited.

UNDERGRADUATE PROGRAM

The Lyman Briggs College program leads to the Bachelor of Science Degree.

Requirements for the Bachelor of Science Degree in Lyman Briggs College

1. The University requirements for bachelor's degrees as described in the *Undergraduate Education* section of this University catalog; 120 credits, including general elective credits, are required for the Bachelor of Science degree in Lyman Briggs College.

   Students who are enrolled in the College of Natural Science may complete the alternative track to Integrative Studies in Biological and Physical Sciences that is described in item 1. under the heading *Graduation Requirements* in the College statement. Certain courses referenced in requirement 3. below are equivalent to courses in the alternative track and, therefore, may be used to satisfy the alternative track.

   The completion of the Lyman Briggs College mathematics and statistics requirement [referenced in item 3.c.(4) below] may also satisfy the University mathematics requirement.

   The completion of Lyman Briggs 133 or one of the approved alternatives [referenced in requirement 3.a.(5)(a) below] may also be counted toward the University Tier I writing requirement.

   The University's Tier II writing requirement for the Major and Coordinate Majors in Lyman Briggs College is met by completing Lyman Briggs College 492 and one of the following courses: English 473A; History 425; Lyman Briggs College 332, 333, 334, 335, 336, 355. Those courses are referenced in items 3. a. (5) and 3. a. (6) below.
2. The requirements of Lyman Briggs College for the Bachelor of Science degree, referenced in item 3. a. below.

   The credits earned in certain courses referenced in requirement 3. below may be counted toward College requirements as appropriate.
3. The following requirements of Lyman Briggs College for the Bachelor of Science degree:

CREDITS

a. CORE PROGRAM . . . . . 46 to 55

(1) **Biology:** One of the following **groups** of courses (8 to 10 credits):
- (a) Lyman Briggs 144, 145.
- (b) Biological Science 181H, 191H, 182H, 192H.
- (c) Biological Science 161, 171, 162, 172.

(2) **Chemistry:** One of the following **groups** of courses (8 to 10 credits):
- (a) Lyman Briggs 171, 171L, 172, 172L.
- (b) Lyman Briggs 171, 171L; Chemistry 143
- (c) Lyman Briggs 171, 171L; Chemistry 251.
- (d) Chemistry 141, 142, 161.
- (e) Chemistry 141, 143, 161.
- (f) Chemistry 141, 161, 251.
- (g) Chemistry 151, 152, 161.
- (h) Chemistry 181H, 182H, 185H.

(3) **Mathematics and Statistics:** One of the following **groups** of courses (6 to 8 credits):
- (a) Lyman Briggs 118, 119.
- (b) Lyman Briggs 118; Statistics and Probability 231.
- (c) Mathematics 132, 133.
- (d) Mathematics 132; Statistics and Probability 231.
- (e) Mathematics 152H, 153H.

(4) **Physics:** One of the following **groups** of courses (6 to 8 credits):
- (a) Lyman Briggs 273, 274.
- (b) Physics 231, 232, 251, 252.
- (c) Physics 183, 184.
- (d) Physics 181B, 182B, 251, 252.
- (e) Physics 231B, 232B, 251, 252.
- (f) Physics 183B, 184B.
- (g) Physics 193H, 294H.

(5) **History, Philosophy and Sociology of Science**: A total of 11 or 12 credits from the courses in groups (a), (b), and (c) below. In addition to completing one course from each of the three groups, the student must complete **one** of the following courses from group (b) or group (c): English 483; History 425; Lyman Briggs 332, 333, 334, 335, 336, 355.
- (a) One of the following courses: Lyman Briggs 133; Writing, Rhetoric and American Cultures 110, 115, 120, 125, 130, 135, 140, 145, 150, 195H.
- (b) One of the following courses: Lyman Briggs 331, 332, 333, 334, 335, 336, 355.
- (c) One of the following courses: Lyman Briggs 330, 331, 332, 333, 334, 335, 336, 355, 490E; English 473A; History 425.

Each of the following courses may be used to meet **either** requirement 3.a.(5)(b) *or* requirement 3.a.(5)(c), but not both of those requirements: Lyman Briggs 331, 332, 333, 334, 335, 355.

(6) **Senior Seminar**: Lyman Briggs 492 (4 credits).

b. MAJOR or COORDINATE MAJOR.

Each student must complete the requirements of a Major or a Coordinate Major. The Major or Coordinate Major must be chosen from the lists of options below. **Both** the Major or Coordinate Major *and* the related courses must be approved by the student's academic advisor. With the approval of the appropriate Lyman Briggs College Curriculum Coordinator or Undergraduate Director, courses other than those that are listed as requirements for a Major or Coordinate Major may be used to satisfy degree requirements.

Majors:
Biology
Computer Science
Earth Science
Environmental Science and Management
Physical Science
History, Philosophy and Sociology of Science

Coordinate Majors:

(1) College of Agriculture and Natural Resources:
- Animal Science
- Entomology
- Fisheries and Wildlife
- Food Science

(2) College of Engineering:
- Computer Science
  Students are admitted to this Coordinate Major after they have reached junior standing and have met certain other requirements specified by Lyman Briggs College .

(3) College of Natural Science:
- Actuarial Science
- Astrophysics
- Biochemistry and Molecular Biology
- Biochemistry/Biotechnology
- Biological Science—Interdepartmental
- Biomedical Laboratory Science
- Chemical Physics
- Chemistry
- Computational Chemistry
- Computational Mathematics
- Diagnostic Molecular Science
- Earth Science—Interdepartmental
- Environmental Biology/Microbiology
- Environmental Biology/Plant Biology
- Environmental Biology/Zoology
- Environmental Geosciences
- Genomics and Molecular Genetics
- Geological Sciences
- Human Biology
- Mathematics
- Mathematics, Advanced
- Microbiology
- Neuroscience
- Nutritional Sciences
- Physical Science—Interdepartmental
- Physics
- Physiology
- Plant Biology
- Statistics
- Zoology

Majors

CREDITS

1. **Biology**. 41

a. A minimum of 41 credits from the courses listed below including:

(1) *Organic Chemistry* (6 credits):
Both of the following courses:
- CEM 251 Organic Chemistry I. 3
- CEM 252 Organic Chemistry II 3

(2) *Biochemistry* (4 to 6 credits):
One of the following, either (a) or (b):
- (a) BMB 401 Comprehensive Biochemistry 4
- (b) BMB 461 Advanced Biochemistry I. 3
  BMB 462 Advanced Biochemistry II 3

(3) *Advanced Experiential Biology* (6 credits):
The following course:
- LB 348 Research Experiences in Biology 3

At least 3 credits from the following:
- LB 490B Advanced Directed Study – Biology . . . . . 1 to 4
- LB 493 Field Experience. . . . . 1 to 4
- LB 494 Undergraduate Research . . . . . 1 to 4

Other courses as approved by advisor.

(4) *Integrative Biology* (16 credits):
All of the following courses:
- IBIO 341 Fundamental Genetics 4
- IBIO 355 Ecology 3
- IBIO 445 Evolution (W). 3
- MMG 301 Introductory Microbiology 3
- MMG 409 Eukaryotic Cell Biology 3

(5) *Organismal Diversity* (3 or 4 credits):
One of the following courses:
- ENT 404 Fundamentals of Entomology 3
- ENT 422 Aquatic Entomology 3
- ENT 470 General Nematology 3
- FW 471 Icthyology 4
- IBIO 306 Invertebrate Biology 4

IBIO 328 Comparative Anatomy and Biology of Vertebrates (W) . . . 4
IBIO 360 Biology of Birds . . . 4
IBIO 365 Biology of Mammals . . . 4
IBIO 384 Biology of Amphibians and Reptiles (W) . . . 4
PLB 402 Biology of Fungi . . . 4
PLB 418 Plant Systematics . . . 3
PLB 424 Algal Biology . . . 4
Other courses as approved by advisor.

(6) *Ecology, Evolution, and Behavioral Biology* (3 or 4 credits):
One of the following courses:
CSS 442 Agricultural Ecology . . . 3
FW 417 Wetland Ecology and Management . . . 3
FW 420 Stream Ecology . . . 3
FW 431 Ecophysiology and Toxicology of Fishes . . . 3
FW 439 Conservation Ethics . . . 3
FW 444 Conservation Biology . . . 3
FW 463 Wildlife Disease Ecology . . . 3
FW 472 Limnology . . . 3
GLG 434 Evolutionary Paleobiology . . . 4
IBIO 303 Oceanography . . . 4
IBIO 313 Animal Behavior . . . 3
IBIO 415 Ecological Aspects of Animal Behavior (W) . . 3
IBIO 440 Field Ecology and Evolution . . . 4
MMG 425 Microbial Ecology . . . 3
PLB 441 Plant Ecology . . . 3
PLB 443 Restoration Ecology . . . 3

(7) *Cellular and Molecular Biology* (3 or 4 credits):
One of the following courses:
FSC 440 Food Microbiology . . . 3
IBIO 320 Developmental Biology . . . 4
IBIO 408 Histology . . . 4
IBIO 425 Cells and Development (W) . . . 4
MMG 404 Human Genetics . . . 3
MMG 413 Virology . . . 3
MMG 421 Prokaryotic Cell Physiology . . . 3
MMG 425 Microbial Ecology . . . 3
MMG 431 Microbial Genetics . . . 3
MMG 433 Microbial Genomics . . . 3
MMG 445 Microbial Biotechnology (W) . . . 3
MMG 451 Immunology . . . 3
MMG 461 Molecular Pathogenesis . . . 3
MMG 463 Medical Microbiology . . . 3
PSL 310 Physiology for Pre-Health Professionals . . . 4
PSL 431 Human Physiology I . . . 4
Other courses as approved by advisor.

2. **Computer Science** . . . 30
a. A minimum of 30 credits from the courses listed below including:
(1) All of the following courses (24 credits):
CSE 231 Introduction to Programming I . . . 4
CSE 260 Discrete Structures in Computer Science . . . 4
CSE 320 Computer Organization and Architecture . . . 3
CSE 330 Algorithms and Data Structures . . . 3
CSE 410 Operating Systems . . . 3
CSE 460 Computability and Formal Language Theory . 3
LB 220 Calculus III . . . 4
(2) At least two of the following courses (6 credits):
CSE 420 Computer Architecture . . . 3
CSE 422 Computer Networks . . . 3
CSE 435 Software Engineering . . . 3
CSE 440 Introduction to Artificial Intelligence . . . 3
CSE 450 Translation of Programming Languages . . . 3
CSE 452 Organization of Programming Languages . . . 3
CSE 472 Computer Graphics . . . 3
CSE 480 Database Systems . . . 3

3. **Earth Science** . . . 27
a. A minimum of 27 credits from the courses listed below including:
(1) At least 14 credits in courses at the 300–400 level.
(2) At least 8 credits in earth science courses outside the Department of Geological Sciences.
(3) At least *one* course in **each** of the following 5 earth science areas (15 to 22 credits).
(a) Astronomy and Astrophysics
AST 207 The Science of Astronomy . . . 3
(b) Geology of the Solid Earth
GLG 201 The Dynamic Earth . . . 4
GLG 321 Mineralogy and Geochemistry . . . 4
GLG 351 Structural Geology and Tectonics . . . 4
GLG 361 Petrology (W) . . . 4
GLG 401 Plate Tectonics (W) . . . 4
GLG 481 Reservoirs and Aquifers . . . 3
GLG 491 Field Geology – Summer Camp (W) . . . 6
(c) Paleobiology
GLG 431 Sedimentology and Stratigraphy (W) . . 4
GLG 433 Vertebrate Paleontology . . . 4
GLG 434 Evolutionary Paleobiology . . . 4
PLB 335 Plants Through Time . . . 3
(d) Environmental Geosciences and Meteorology
GEO 203 Introduction to Meteorology . . . 3
GEO 401 Geography of Plants of North America . . . 3
GEO 402 Agricultural Climatology . . . 3
GEO 405 Weather Analysis and Forecasting . . . 4
GLG 421 Environmental Geochemistry . . . 4
(e) Geomorphology
CSS 470 Soil Resources . . . 3
GEO 407 Regional Geomorphology of the United States . . . 3
GEO 408 Soil Geomorphology Field Study . . . 4
Geography 206 and 206L, combined, may be substituted for one of the courses listed above.

4. **Environmental Sciences and Management** . . . 41
a. A minimum of 41 credits from the courses listed below including:
(1) One of the following **groups** of courses (8 or 10 credits):
(a) LB 118 Calculus I . . . 5
STT 231 Statistics for Scientists . . . 3
(b) MTH 132 Calculus I . . . 3
MTH 133 Calculus II . . . 4
STT 231 Statistics for Scientists . . . 3
(2) One course from each of the following 7 areas (24 to 26 credits):
(a) Ecology:
ZOL 355 Ecology . . . 3
ZOL 355L Ecology Laboratory . . . 1
(b) Geology:
GLG 201 The Dynamic Earth . . . 4
(c) Taxonomy or Phylogenetic Biology:
ENT 404 Fundamentals of Entomology . . . 4
PLB 418 Plant Systematics . . . 3
ZOL 306 Invertebrate Biology . . . 4
(d) Biochemistry:
BMB 401 Basic Biochemistry . . . 4
(e) Aquatic Systems:
FW 420 Stream Ecology . . . 3
(f) Microbiology:
MMG 301 Introductory Microbiology . . . 3
(g) Economics:
EC 201 Introduction to Microeconomics . . . 3
(3) One course from **each** of the following three groups (9 to 11 credits):
(a) FOR 464 Forest Resource Economics (W) . . . 3
SOC 452 Environment and Society . . . 3
(b) FW 424 Population Analysis and Management . . . 4
FW 444 Conservation Biology . . . 3
(c) FW 410 Upland Ecosystem Management . . . 3
FW 417 Wetland Ecology and Management . . . 3
Students who elect Sociology 452 must also complete Sociology 452L to meet requirement 4. a. (3) (a).

5. **Physical Science** . . . 31
a. A minimum of 31 credits from the courses listed below including:
(1) The following course:
LB 220 Calculus III . . . 4
(2) At least 27 credits in chemistry courses, in physics courses, or in chemistry and physics courses approved by the student's academic advisor. At least 20 of the 27 credits must be in courses at the 300 level or above, and at least 14 of the 27 credits must be in **either** chemistry courses **or** physics courses and must meet the conditions specified below:
For students who elect to complete at least 14 credits in chemistry courses, at least 4 of the 14 credits must be laboratory credits at the 300–400 level.
For students who elect to complete at least 14 credits in physics courses, at least 6 of the 14 credits must be in modern physics, and at least 3 of the 14 credits must be laboratory credits.

6. **History, Philosophy and Sociology of Science** . . . 24
a. A minimum of 24 credits in 300–400 level science and technology studies courses approved by the student's academic advisor. Courses in the Lyman Briggs College CORE PROGRAM and Lyman Briggs 492 may not be used to satisfy this requirement. Courses outside Lyman Briggs College may be used to satisfy this requirement.

MINOR IN HISTORY, PHILOSOPHY AND SOCIOLOGY OF SCIENCE

The Minor in History, Philosophy and Sociology of Science, which is administered by Lyman Briggs College, is designed to increase students understanding of the epistemological foundations and ethical elements of science while learning more of the history of some areas of science and appreciating the complex ways that science is connected to other social institutions and practices.

The minor is available as an elective to students who are enrolled in a bachelor's degree program in Lyman Briggs College at Michigan State University. Students majoring in History, Philosophy and Sociology of Science in Lyman Briggs College are not eligible for the minor. With the approval of the college, the courses

that are used to satisfy the minor may also be used to satisfy the requirements for the bachelor's degree.

Students who plan to complete the requirements for the minor should consult an undergraduate advisor in Lyman Briggs College.

Requirements for the Minor in History, Philosophy and Sociology of Science

Complete 15 to 16 credits from the following:

				CREDITS
1.	Two of the following courses (8 credits):			
	LB	330	Topics in History, Philosophy, and Sociology of Science (W)	4
	LB	331	Literature and Science (W)	4
	LB	332	Technology and Culture (W)	4
	LB	333	Topics in History of Science (W)	4
	LB	334	Science, Technology, and Public Policy (W)	4
	LB	335	The Natural Environment: Perceptions and Practices (W)	4
	LB	336	Gender, Sexuality, Science, Technology (W)	4
	LB	355	Philosophy of Technology (W)	4
	LB	490E	Advanced Directed Study in History, Philosophy, and Sociology of Science (W)	4
2.	Two of the following courses (7 or 8 credits):			
	ENG	473A	Literature and Medicine	3
	ESA	430	Environmental and Natural Resource Law	3
	ESA	440	Environmental and Natural Resource Policy in Michigan	3
	GEO	435	Geography of Health and Disease	3
	HST	416	History of the Atomic Bomb and Nuclear Culture	3
	HST	420	History of Sexuality since the 18th Century	3
	HST	425	American and European Health Care since 1800	4
	HRT	486	Biotechnology in Agriculture: Applications and Ethical Issues	3
	LB	330	Topics in History, Philosophy, and Sociology of Science (W)	4
	LB	331	Literature and Science (W)	4
	LB	332	Technology and Culture (W)	4
	LB	333	Topics in History of Science (W)	4
	LB	334	Science, Technology, and Public Policy (W)	4
	LB	335	The Natural Environment: Perceptions and Practices (W)	4
	LB	336	Gender, Sexuality, Science, Technology (W)	4
	LB	355	Philosophy of Technology (W)	4
	LB	490E	Advanced Directed Study in History, Philosophy, and Sociology of Science (W)	4
	MC	350	Evolution and Society	4
	MC	351	Science and Social Policy	4
	MC	459	Science, Technology, Environment and Public Policy Capstone (N)	3
	PHL	380	Nature of Science	3
	PHL	462	Philosophy of Mind	3
	PHL	480	Philosophy of Science	4
	PHL	484	Philosophy of Biological Science	3
	PHL	485	Philosophy of Social Science	3
	SOC	368	Science, Technology, and Society	3
	SOC	452	Environment and Society	3
	SOC	452L	Internship in Environment and Society	1
	SOC	475	Sociology of Health Care Systems	3
	SOC	476	Social Psychology of Health	3
	ZOL	446	Environmental Issues and Public Policy	3

Courses used to fulfill requirement 1. above may not be used to fulfill this requirement. Other courses may be used in fulfillment of this requirement with the approval of the student's academic advisor.

LYMAN BRIGGS COLLEGE 3 + 4 OPTION

Lyman Briggs College, in collaboration with the MSU College of Osteopathic Medicine, offers an opportunity for selected Lyman Briggs College students to earn a baccalaureate degree after satisfactory completion of a minimum of 90 credits at Michigan State University and a minimum of 30 credits through subsequent enrollment at the Michigan State University College of Osteopathic Medicine. Only students who matriculate as first-year students at Lyman Briggs College may pursue this option. Students interested in this option should consult with their college academic advisor during their first year in the college.

Admission to the MSU College of Osteopathic Medicine component of this program is limited to a small number of students who complete the specified university and college requirements and who fulfill admission requirements for the MSU College of Osteopathic Medicine Doctor of Osteopathic Medicine program.

All students in this program will complete a minimum of 90 credits at Michigan State University in the Lyman Briggs College Biology major. The requirements for the program are as follows:

1. Completion of all the Michigan State University graduation requirements, including integrative studies and general education.
2. Completion of the Lyman Briggs College graduation requirements including mathematics, chemistry, biology, physics, and history, philosophy and sociology of science.
3. Be pursuing the curriculum for the Lyman Briggs College Biology major.
4. Completion of a minimum of 30 credits at the MSU College of Osteopathic Medicine in the preclerkship component of the Doctor of Osteopathic Medicine degree program.

Upon satisfactory completion of the specified 120 credits, students in this program will be eligible for the Bachelor of Science degree in Lyman Briggs College with a major in Biology.