

# LYMAN BRIGGS COLLEGE

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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 ap-

ply 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.

Lyman Briggs College offers two minors: Bioethics; and History, Philosophy and Sociology of Science. Lyman Briggs College also participates in two minors: Entrepreneurship and Innovation; and Science, Technology, Environment, and Public Policy.

Students who are enrolled in the environmental biology/microbiology and microbiology coordinate majors in Lyman Briggs College may elect the Minor in Food Processing and Technology. For additional information, refer to the *Minor 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 Student Success and Advising Office to discuss with a recruiter. 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 Lyman Briggs College 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 require-

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: Lyman Briggs College 321A, 321B, 322A, 322B, 323A, 323B, 324A, 324B, 325A, 325B, 326A, 326B, 327A, or 327B. Those courses are referenced in items 3. a. (5) and 3. a. (6) below.

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.

The following requirements of Lyman Briggs College for the Bachelor of Science de-

CORE PROGRAM .....

(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.
- Chemistry: One of the following groups of courses (8 to 10 credits):
  - (a) Lyman Briggs 171, 171L, 172, 172L.

  - (a) Lyman Briggs 171, 171L, 172, 172L.
    (b) Lyman Briggs 171, 171L; Chemistry 143
    (c) Lyman Briggs 171, 171L; Chemistry 143
    (d) Chemistry 141, 142, 161.
    (e) Chemistry 141, 143, 161.
    (f) Chemistry 141, 161, 251.
    (g) Chemistry 151, 152, 161.
    (h) Chemistry 181, 1821, 1851.

  - Chemistry 181H, 182H, 185H.
- Mathematics and Statistics: One of the following

groups of courses (6 to 8 credits):

- Lyman Briggs 118, 119.
  Lyman Briggs 118, Statistics and Probability 231.
  Mathematics 132, Statistics and Probability 231.
  Mathematics 132, Statistics and Probability 231. (b)

- Mathematics 152H, 153H.
- Physics: One of the following groups of courses (8 to 10 credits):

  - (a) Lyman Briggs 273, 274.(b) Physics 231, 232, 251, 252.(c) Physics 183, 184, 191, 192.
  - Physics 183B, 184B, 191, 192
  - Physics 191, 192, 193H, 294H.
- History, Philosophy and Sociology of Science: A total of 11 or 12 credits from the courses in groups (a), (b), and (c)
  - (a) One of the following courses: Lyman Briggs 133; Writing, Rhetoric and American Cultures 101.
  - One of the following courses: Lyman Briggs 321A, 322A, 323A, 324A, 325A, 326A, 327A.
- (c) One of the following courses: Lyman Briggs 321B, 322B, 323B, 324B, 325B, 326B, 327B.
  (6) Senior Seminar: Lyman Briggs 492 (4 credits).

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 require-

#### 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

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

Biochemistry (4 to 6 credits): One of the following, either (a) or (b): 

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 ΙB 

Other courses as approved by advisor. Integrative Biology (16 credits):

All of the following courses: 

One of the following courses:

Fundamentals of Entomology . . . . . . . . . . . . 3 ENT 404 ENT 422 ENT 470 FW 471 IRIO 306 IBIO

IBIO 360 IBIO IBIO 384 402 PLB

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				(a) (b)	STT ) MTH MTH	118 231 132 133	Calculus II 4	
		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			(2	(24	STT ne course 4 to 26 c Ecolo ZOL	redits): gy:	each of the following 7 areas	
		IBIO   303   Oceanography					ZOL ) Geold GLG	355L gy: 201	Ecology Laboratory         1           The Dynamic Earth         4	
	(7)	MMG 425         Microbial Ecology         3           PLB 441         Plant Ecology         3           PLB 443         Restoration Ecology         3           Cellular and Molecular Biology (3 or 4 credits):         3				(c)	ENT PLB ZOL	404 418 306	r Phylogenetic Biology:         4           Fundamentals of Entomology         4           Plant Systematics         3           Invertebrate Biology         4	
	(,,	One of the following courses:  FSC 440 Food Microbiology				(d) (e)	) Bioch BMB		Basic Biochemistry 4	
		IBIO 320 Developmental Biology				(f)	FW		Stream Ecology3	
		IBIO 425 Cells and Development (W)				(g)	) Econo	omics:	Introductory Microbiology 3	
		MMG 413         Virology         3           MMG 421         Prokaryotic Cell Physiology         3           MMG 425         Microbial Ecology         3			(3			e from e	Introduction to Microeconomics 3 each of the following three groups	
		MMG 431 Microbial Genetics					to 11 cre ) FOR SOC	464 452	Forest Resource Economics (W) 3 Environment and Society 3	
		MMG 445         Microbial Biotechnology (W)         3           MMG 451         Immunology         3           MMG 461         Molecular Pathogenesis         3				(b)	) FW	424	Population Analysis and Management 4	
		MMG 463 Medical Microbiology3 PSL 310 Physiology for Pre-Health Professionals4				(c)	FW FW FW	444 410 417	Conservation Biology	
2.	Compute	PSL 431 Human Physiology I	30				Stude Socio	ents who logy 45	o elect Sociology 452 must also complete i2L to meet requirement 4. a. (3) (a).	
	a. Am	inimum of 30 credits from the courses listed below including: All of the following courses (24 credits):		5.	a. A	minim	num of 31	I credits	s from the courses listed below including:	31
	( )	CSE 231 Introduction to Programming I			`	LE		Calc	culus III	
		CSE 320 Computer Organization and Architecture 3 CSE 330 Algorithms and Data Structures 3 CSE 410 Operating Systems 3			(2	or	in chem	istry ar	in chemistry courses, in physics courses, and physics courses approved by the stu- advisor. At least 20 of the 27 credits must	
		CSE 410 Operating Systems				be	in cours	es at th	e 300 level or above, and at least 14 of the e in <b>either</b> chemistry courses <b>or</b> physics	
	(2)	At least two of the following courses (6 credits): CSE 420 Computer Architecture				со	urses an	nd must udents	meet the conditions specified below: who elect to complete at least 14 cred-	
		CSE 422 Computer Networks					e labora	tory cre	courses, at least 4 of the 14 credits must edits at the 300–400 level.	
		CSE 450 Translation of Programming Languages 3 CSE 452 Organization of Programming Languages 3					s in phy	sics co	who elect to complete at least 14 cred- curses, at least 6 of the 14 credits must be s, and at least 3 of the 14 credits must be	
		CSE 472 Computer Graphics         .3           CSE 480 Database Systems         .3		6.	History	la , <b>Phil</b> e	boratory osophy	credits	s. ociology of Science	24
3.	Earth Sci	enceinimum of 27 credits from the courses listed below including:	27	lowing with History, Philosophy, and Sociology of Science content ap-						
	(1) (2)	At least 14 credits in courses at the 300–400 level. At least 8 credits in earth science courses outside the Department of Earth and Environmental Sciences.			the Lym	an Bri	iggs Coll	ege gra	academic advisor. Courses used to fulfill iduation requirements and LB 492 may not ements. A minimum of four courses from	
	(3)			Lyman Briggs must be selected. Additional courses outside of Lyman Briggs may be used with advisor approval.				ted. Additional courses outside of Lyman		
	areas (15 to 22 credits).  (a) Astronomy and Astrophysics  AST 207 The Science of Astronomy				CSUS	463	Food F	ight: Po	ironmental Thought and Sustainability 3 plitics of Food	
		(b) Geology of the Solid Earth GLG 201 The Dynamic Earth					Literatu	ire and	I and Natural Resource Policy in Michigan 3 Medicine	
		GLG 321 Mineralogy and Geochemistry 4 GLG 351 Structural Geology and Tectonics 4 GLG 361 Petrology (W) 4			GEO HST	435 420	Geogra History	aphy of of Sex	Health and Disease	
		GLG 401 Plate Tectonics (W)				425 486	Biotech	nnology	European Health Care since 18004 r in Agriculture: Applications and ues	
		GLG 491 Field Geology – Summer Camp (W) 6 (c) Paleobiology GLG 431 Sedimentology and Stratigraphy (W) 4				446 304	Enviror Lesbia	nmental n, Gay,	I Issues and Public Policy	
		GLG 433 Vertebrate Paleontology 4 GLG 434 Evolutionary Paleobiology 4					Science	e and th	lity Studies	
		PLB 335 Plants Through Time			LB	322A	Advand Hun	ces in S nanities	Science and Technology- Arts and s (W)4	
		GEO 203 Introduction to Meteorology					Soc	ial Scie	Science and Technology- ences (W)	
		GEO 402 Agricultural Climatology			LB	323B	Scienc	e in a G	Global Context- Aris and Humaniles (W) 4 Sex, Gender, Sexuality- Arts and	
		GLG 421 Environmental Geochemistry 4 (e) Geomorphology CSS 470 Soil Resources					Hun Science	nanities e and S	S (W)	
		GEO 407 Regional Geomorphology of the United States					Scienc	e and th	he Environment- Arts and Humanities (W) 4 he Environment- Social Sciences (W)4	
		GEO 408 Soil Geomorphology Field Study 4 Geography 206 and 206L, combined, may be substitu-			LB LB	326A 326B	Medicii Medicii	ne and	Health- Arts and Humanities (W) 4 Health- Social Sciences (W) 4	
4.	Environm	ted for one of the courses listed above.	41		LB	327B	Scienti	fic Prac	ctice- Arts and Humanities (W)	
	a. A m	inimum of 41 credits from the courses listed below including: One of the following <b>groups</b> of courses (8 or 10 credits):	••			490E 351	of S	cience	ect Study- History, Philosophy, Sociology (W)	4

PHL	380	Nature of Science
PHL	462	Philosophy of Mind
PHL	480	Philosophy of Science
SOC	368	Science, Technology, and Society
SOC	452	Advanced Seminar in Environmental Sociology
SOC	475	Health and Society

#### MINOR IN BIOETHICS

The Minor in Bioethics, which is administered by Lyman Briggs College, is available as an elective to students who are enrolled in bachelor's degree programs at Michigan State University. The minor is designed to prepare students to engage with the evolving set of ethical issues in biomedicine that they will encounter in their careers or their daily lives. The minor's interdsciplinary character fosters students' abilities to understand and question health care systems from a wide variety of intellectual viewpoints. Such interdisciplinary study also promotes communication across disciplinary boundaries.

Students wishing to pursue careers in health-related fields may find the minor particularly appealing. In addition, students pursuing academic programs outside health-related fields often find that the minor complements their major. With the approval of the department and college that administer the student's degree program, the courses that are used to satisfy the requirements for the minor may also be used to satisfy the requirements for the bachelor's degree.

**CREDITS** 

#### Requirements for the Minor in Bioethics

				(
1.			llowing courses (3 credits):	
	LB	240	Bioethics: Theories and Methods	
2	LB	440	Bioethics Capstone	1
2.	Compi	ete 15 (	credits from at least four courses. No more than 8 credits	
			he same discipline. Students should work with the advisor	
	ANP	270	e substitution requests.	
	ANP	270	Women and Health: Anthropological and International Perspectives.	2
	ANP	370	Culture. Health, and Illness	
	ANP	423	Psychological Anthropology	
	ANP	425	Issues in Medical Anthropology	
	ANP	471	The Anthropology of Alternative Medicine	
	ANS	427	Environmental Toxicology and Society	
	CEP	470	Disability in a Diverse Society	3
	EC	498	Economics of Health Care (W)	3
	ENG	473A	Literature and Medicine	3
	EPI	390	Disease in Society: An Introduction to Epidemiology	
	050	405	and Public Health	
	GEO HNF	435 375	Geography of Health and Disease	
	HNF	375 406	Global Foods and Culture	
	HST	420	History of Sexuality since 18th Century	
	HST	425	American and European Health Care since 1800	
	KIN	445	Sport and Physical Activity in Society (W)	
	LB	324A	Science and Sex, Gender, Sexuality – Arts and	
			Humanities (W)	4
	LB	324B	Science and Sex, Gender, Sexuality – Social	
			Sciences (W)	
	LB	326A	Medicine and Health – Arts and Humanities (W)	
	LB LB	326B 355	Medicine and Health – Social Sciences (W)	7
	MC	351	Philosophy of Technology (W)	1
	PHL	344	Ethical Issues in Health Care	4
	PHL	380	Nature of Science	
	PHL	444	Philosophical Issues in Biomedicine	
	PHL	480	Philosophy of Science	4
	PHL	485	Philosophy of Social Science	3
	PSY	280	Abnormal Psychology	
	PSY	320	Health Psychology	
	REL SOC	385 368	Religion, Health, and Healthcare	
	SOC	368 451	Science, Technology and Society	4
	SOC	475	Health and Society	3
	SW	472	Social Work in Health Care	
	WS	304	Lesbian, Gay, Bisexual, Transgender, Queer	
			(LBGTQ) and Sexuality Studies	3

### 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

CREDITS

A minimum of 20 credits in 300–400 level courses chosen from the following with History, Philosophy, and Sociology of Science content approved by the student's HPS academic advisor. A minimum of three courses from Lyman Briggs must be selected. Additional courses outside of Lyman Briggs may be used with advisor approval.

CCLIC	240	History of Carries and Thoroph and Containability	2
CSUS	310	History of Environmental Thought and Sustainability	3
CSUS	463 464	Food Fight: Politics of Food	3
		Environmental and Natural Resource Policy in Michigan	3 3 3 3 3
ENG	473A	Literature and Medicine	3
FW	439	Conservation Ethics	3
GEO	435	Geography of Health and Disease	3
HST	420	History of Sexuality since the 18th Century	4
HST	425	American and European Health Care since 1800	4
HRT	486	Biotechnology in Agriculture: Applications and Ethical	2
IDIO	4.40	Issues	3
IBIO	446	Environmental Issues and Public Policy	3
LB	304	Lesbian, Gay, Bisexual, Transgender, Queer (LGBTQ)	2
ı D	2244	and Sexuality Studies	3 4
LB	321A		4
LB LB		Science and the Public- Social Sciences (W)	4
		Advances in Science and Technology- Arts and Humanities (W)	4
LB LB		Advances in Science and Technology- Social Sciences (W)	4
LB	323B	Science in a Global Context- Arts and Humanities (W)	4
LB	323B 324A		4
LB	324A 324B		4
LB	325A		4
	325A 325B		4
LB LB	325B 326A	Science and the Environment- Social Sciences (W)	4
LB	326B		4
LB	327A	Medicine and Health- Social Sciences (W)	4
LB	327A	Scientific Practice- Arts and Humanities (W)	4
LB	490E	Advanced Direct Study- History, Philosophy, Sociology	4
LD	490L	of Science (W)	1 to 4
MC	350	Evolution and Society	4
MC	351	Science and Social Policy.	4
PHL	380	Nature of Science	3
PHL	462	Philosophy of Mind	3
PHL	480	Philosophy of Science	4
SOC	368	Science, Technology, and Society	4
SOC	452	Advanced Seminar in Environmental Sociology	2
SOC	475	Health and Society	3
300	413	Health and Society	3

#### 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:

- 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.
- 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.