

# MICHIGAN STATE UNIVERSITY

December 1, 2011

## MEMORANDUM

TO: Dr. Douglas Estry, Associate Provost for Undergraduate Education  
and Dean of Undergraduate Studies

FROM: Dr. Linda O. Stanford, Associate Provost for Academic Services

RE: Request for a New Coordinate Major in Lyman Briggs College –  
Actuarial Science

For Transmittal to the University Committee on Undergraduate Studies

The request referenced above is being sent to the University Committee on Undergraduate Studies in accordance with the *Bylaws for Academic Governance*, 4.4.

### Response Requested:

Please ask the committee to consider the request referenced above and provide consultative commentary. Please mail the related materials referenced under the heading Attachments at the end of this memorandum to the committee members.

After receiving the committee's consultative response, the Provost will make a determination to forward or not to forward the request to the University Committee on Curriculum for its approval of curriculum and degree requirements.

If you have any questions, please call Joy Speas, University Curriculum Administrator, at 5-8420.

Thank you.

### Attachments:

1. Request to Establish a New Academic Program form dated October 14, 2011: Coordinate Major in Actuarial Science, Lyman Briggs College and attachments.



**University  
Curriculum and  
Catalog**

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East Lansing, MI  
48824-1046

517-355-8420  
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**LYMAN BRIGGS COLLEGE**

1. Request to recognize the **Actuarial Science** major leading to the Bachelor of Science degree in the Department of Mathematics as a **Coordinate Major in Lyman Briggs College**.

Effective Summer 2012.

<b>View a Program</b>		<b>Main Menu</b>
Joy Speas, RO	Friday, 10/14/2011	
<b>Program Name: LB Actuarial Science</b> <b>Degree: BS Sequence Number: 1</b>	Program Request ID: 2077	
<b>Effective Dates: Spring 2012 - Open Status: Interim Initial Action: New</b>		
<b>Requested Date: 10/11/2011 7:39:36 AM</b>		
<p><b>1. Department/School/College:</b> 28546 .... Lyman Briggs College</p> <p><b>2. Name of Program:</b> LB Actuarial Science</p> <p><b>3. Name of Degree:</b> BS</p> <p><b>4. Type of Program:</b> Major <i>(Coordinate)</i></p> <p><b>5. Effective Start Semester:</b> <del>Spring 2012</del> <i>Summer</i></p> <p><b>6. Target student audience for the program:</b> LBC Students</p> <p><b>7. Enrollment:</b> <b>What is the expected enrollment per year:</b> 15 <b>What is the minimum enrollment acceptable:</b> 1</p> <p><b>8. Source of budget for the program:</b> To align academic planning and curricular change, ALL requests for NEW funds must be included in the College's annual planning letter. Provost approval of new funds and the effective date for the new program must align. If funding is not approved, then the program request will not be forwarded to Faculty Senate.  Internal reallocation  If new funds, was this request included in the College's annual planning letter? Indicate yes or no. If no, then this is a department or college fund reallocation (If the program is implemented, no additional resources are required.).</p> <p><b>9. Projected Costs as compared to other programs in unit:</b> Same</p> <p><b>10. Staff requirement:</b> How many additional staff will be required: 0  Who will provide the primary instruction. Describe any external linkages(industry, government, etc.):</p>		

**11. Will additional equipment be required:**

Approximate cost: 0

Source of funding:

**12. Will additional library materials be required:**

Approximate cost: 0

Source of funding: None

**13. Will additional space be required:**

Type:

Approximate amount:

**14. If the program requirements contain a named concentration, do you wish for the concentration to be noted on the student's transcript?:**

No

**15. Detailed Description:****UNIVERSITY REQUIREMENTS (24 credits)**

		<u>Credits</u>
Tier I Writing	LB 133 - Introduction to History, Philosophy, and Sociology of Science	4
Tier II Writing	Satisfied by completing the Lyman Briggs College History, Philosophy and Sociology of Science and Senior requirements listed below.	4
IAH 201-210*	Integrative Studies Arts and Humanities (IAH)	4
IAH 211-241*	Integrative Studies Arts and Humanities (IAH)	4
ISS 200-level course*	Integrative Studies in Social, Behavioral & Economic Sciences (ISS)	4
ISS 300-level course*	Integrative Studies in Social, Behavioral & Economic Sciences (ISS)	4

\*National, International, & Multicultural Diversity - Students must include at least one "N" course and one "I" course in their Integrative Studies programs. A "D" course may meet either an "N" or an "I" requirement, but not both.

Mathematics, Biological and Physical Sciences

Satisfied by the Lyman Briggs College requirements in Mathematics, Biological and Physical Sciences (see below).

**LYMAN BRIGGS COLLEGE REQUIREMENTS (42-47 credits)**

*Biological Sciences (9 cr.)*

Complete ONE of the following groups of courses

LB 144 and 145	Biology I: Organismal Biology and Biology II: Cellular and Molecular Biology	9
BS 161, BS 162, BS 171, and BS 172	Cell and Molecular Biology, Organismal and Population Biology, Cell and Molecular Biology Laboratory, and Organismal and Population Biology Laboratory	10

Chemistry (8-9 cr.)

Complete ONE of the following groups of courses

LB 171, 171L, 172, and 172L	Principles of Chemistry I, LB 171L Introductory Chemistry Laboratory I, LB 172 Principles of Chemistry II, and Principles of Chemistry II - Reactivity Laboratory	9
CEM 141, 142, and 161	General Chemistry, General and Inorganic Chemistry, and Chemistry Laboratory I	8
CEM 151, 152, and 161	General and Descriptive Chemistry, Principles of Chemistry, and Chemistry Laboratory I	8

Physics (8-10 cr.)

Complete ONE of the following groups of courses

LB 273 and 274	Physics I and Physics II	8
PHY 183 and 184	Physics for Scientists and Engineers I and Physics for Scientists and Engineers II	8

Mathematics (6-7 cr.)

Complete ONE of the following groups of courses

LB 118 and 119	Calculus I and Calculus II	8
MTH 132 and 133	Calculus I and Calculus II	7

History, Philosophy & Sociology of Science (7-8 cr.)

Complete TWO of the following courses

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, Science, Technology (W)	4
LB 355	Philosophy of Technology (W)	4
LB 490E	Advanced Directed Study--History, Philosophy, Sociology of Science (W)	3-4
ENG 473A	Literature and Medicine	3
HST 425	American and European Health Care since 1800	4
SOC 368	Science, Technology and Society	3

Senior Seminar (4 cr.)

LB 492		4
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Students may consult with a Lyman Briggs advisor regarding a possible substitution for the Lyman Briggs Senior Seminar for this major.

**MAJOR REQUIREMENTS (55-57 credits)**

Complete ONE of the following courses (3 or 4 cr.)

LB 220	Calculus III	4
MTH 234	Multivariable Calculus	4
MTH 254H	Honors Multivariable Calculus	3

Complete ONE of the following courses (3 cr.)

MTH 235	Differential Equations	3
MTH 255H	Honors Differential Equations	3
MTH 340	Ordinary Differential Equations I	3

Complete ONE of the following courses (1 cr.)

MTH 490	Directed Studies	1
MTH 491B	Teamwork Experience	1
Complete ALL of the following courses (21 cr.)		
MTH 309	Linear Algebra I	3
MTH 360	Theory of Mathematical Interest	3
MTH 458	Financial Mathematics for Actuaries	3
STT 441	Probability and Statistics I: Probability	3
STT 455	Actuarial Models I	3
STT 456	Actuarial Models II	3
STT 459	Construction and Evaluation of Actuarial Models	3
Complete ONE of the following courses (3 cr.)		
MTH 457	Introduction to Financial Mathematics	3
STT 442	Probability and Statistics II: Statistics	3
Complete ONE of the following courses (3 cr.)		
MTH 491A	Actuarial Internship	3
MTH 496	Capstone in Mathematics	3
Complete ALL of the following courses (18 cr.)		
ACC 230	Survey of Accounting Concepts	3
EC 201	Introduction to Microeconomics	3
EC 202	Introduction to Macroeconomics	3
FI 311	Financial Management	3
FI 321	Theory of Investments	3
FI 379	Financial Derivatives	3
Complete ONE of the following courses (3 or 4 cr.)		
CSE 131	Technical Computing and Problem Solving	3
CSE 231	Introduction to Programming I	4

**16. Are there admissions requirements for this program?:**

Grade or grade-point average requirements and if so in which course(s), portfolio requirement, audition, essay, etc. If there are not admission requirements other than those required by the University policy indicate "none".

None

**DEPARTMENT LEVEL APPROVAL STATUS**

Approved: Lyman Briggs College  
10/12/2011 8:54:47 AM by Kelly Millenbah for Elizabeth H. Simmons, Dean

**SIGNOFFS STATUS**

Signed Off: Department of Mathematics  
10/14/2011 12:04:07 AM by Ronald Powers for Yang Wang, Chairperson

Comments: Change following: Complete ONE of the following courses (3 cr.) MTH 457 Introduction to Financial Mathematics 3 STT 442 Probability and Statistics II: Statistics 3 This requirement is going to change for BS Actuarial Science -Spring 2012. It will become only STT 442 and not STT 442 or MTH 457. STT 442 is a course that counts towards the Society of Actuaries Validation by Education Experience (VEE) requirement.

**COLLEGE LEVEL APPROVAL STATUS**

Approved: Lyman Briggs College  
10/14/2011 8:09:18 AM by Kelly Millenbah for Elizabeth H. Simmons, Dean

## 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:

a. CORE PROGRAM ..... CREDITS  
46 to 58

- (1) **Biology:** One of the following groups of courses  
(8 to 10 credits):

- (a) Lyman Briggs 144, 145.
- (b) Lyman Briggs 148H, 149H, 158H, 159H.
- (c) Biological Science 110, 111, 111L.

- (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 11 credits):

- (a) Lyman Briggs 118, 119.
- (b) Lyman Briggs 118; Statistics and Probability 231.
- (c) Mathematics 132, 133, 234.
- (d) Mathematics 132, 133; Statistics and Probability 231.
- (e) Mathematics 152H, 153H.

- (4) **Physics:** One of the following groups of courses  
(6 to 8 credits):

- (a) Lyman Briggs 271, 271L, 272, 272L.
- (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  
Fisheries and Wildlife  
Entomology

(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:

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  
Microbiology  
Nutritional Sciences  
Physical Science—Interdepartmental  
Physics  
Physiology  
Plant Biology  
Statistics  
Zoology

*Actuarial Science*