

MICHIGAN STATE UNIVERSITY

**Report of
THE UNIVERSITY COMMITTEE ON CURRICULUM
to the Faculty Senate
October 11, 2016**

The effective date for new programs subject to Statewide Academic Program review is implemented in accordance with the Statewide Academic Program Review calendar.

MICHIGAN STATE UNIVERSITY
University Committee on Curriculum

October 11, 2016

TO: Faculty Senate

This report is prepared and distributed for the following purposes:

1. To report new academic programs, changes in academic programs, discontinuations of academic programs, new courses, permanent changes in courses, and deletions of courses.
2. To notify the initiating colleges, schools, and departments of approval by the University Committee on Curriculum of their requests for new academic programs, changes in academic programs, discontinuations of academic programs, new courses, permanent changes in courses, and deletions of courses. Any items not approved by the Faculty Senate will be reported to the appropriate college and department or school.
3. To provide information to members of the faculty in each department about academic programs and courses in all colleges, departments, and schools of the University.

Reports of the University Committee on Curriculum to the Faculty Senate are organized as follows:

PART I - NEW ACADEMIC PROGRAMS AND PROGRAM CHANGES:

Organized by colleges in alphabetical order. For a given college, academic units are organized in alphabetical order. For a given academic unit, degrees, majors, and specializations are organized in alphabetical order.

PART II - NEW COURSES:¹

Organized by academic units in alphabetical order; All-University courses appear last. For a given academic unit, courses are organized according to the names associated with course subject codes, in alphabetical order. Courses with the same subject code are in numerical order.

PART III - COURSE CHANGES:¹

Organized by academic units in alphabetical order; All-University courses appear last. For a given academic unit, courses are organized according to the names associated with course subject codes, in alphabetical order. Courses with the same subject code are in numerical order.

Not all of the above categories, and not all of the colleges and academic units, will necessarily appear in any given Senate Report.

¹One or more of the abbreviations that follow may be included in a course entry:

P: = Prerequisite monitored in SIS
C: = Corequisite
R: = Restriction
RB: = Recommended background
SA: = Semester Alias

MICHIGAN STATE UNIVERSITY

October 11, 2016

TO: Faculty Senate
FROM: University Committee on Curriculum
SUBJECT: New Academic Programs and Program Changes:
New Courses and Course Changes

PART I - NEW ACADEMIC PROGRAMS AND PROGRAM CHANGES

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

1. Change the requirements for the **Bachelor of Science** degree in **Agriculture, Food and Natural Resources Education** in the Department of Community Sustainability. The Teacher Education Council (TEC) approved this request at its September 12, 2016 meeting.

- a. Under the heading **Requirements for the Bachelor of Science Degree in Agriculture, Food and Natural Resources Education** make the following changes:

- (1) In item 3. a. delete the following courses:

ZOL	355	Ecology	3
ZOL	355L	Ecology Laboratory (W)	1

Add the following courses:

IBIO	355	Ecology	3
IBIO	355L	Ecology Laboratory (W)	1

Effective Spring 2017.

2. Change the requirements for the **Bachelor of Science** degree in **Environmental Studies and Sustainability** in the Department of Community Sustainability.

- a. Under the heading **Requirements for the Bachelor of Science Degree in Environmental Studies and Sustainability** make the following changes:

- (1) In item 3. a. delete the following course:

ZOL	355	Ecology	3
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Add the following course:

IBIO	355	Ecology	3
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- (2) In item 3. e. delete the following course:

ZOL	446	Environmental Issues and Public Policy	3
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Add the following course:

IBIO	446	Environmental Issues and Public Policy	3
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Effective Spring 2017.

COLLEGE OF ARTS AND LETTERS

1. Change the **Graduation Requirements for the Bachelor of Arts** degree in the **College of Arts and Letters**. The University Committee on Undergraduate Education (UCUE) approved this request at its September 8, 2016 meeting.
 - a. Under the heading **Graduation Requirements for the Bachelor of Arts Degree in the College of Arts and Letters** make the following changes:
 - (1) In item 2. e. Credit requirement renumber items (1) and (2) to items (2) and (3) respectively.
 - (2) Add the following item 2. e. (1):

No more than 9 credits that are used to satisfy the departmental or interdepartmental credit requirement for a primary major, second degree, or additional major in the College of Arts and Letters may also be used to satisfy the departmental or interdepartmental credit requirement for another primary major, second degree, or additional major in the College of Arts and Letters.
 - (3) Add the following item (2) (b) (vii):

A student who combines a major in Arabic with a major in another field is required to earn a minimum of 27 credits in Arabic courses.

Effective Spring 2017.

2. Change the **Graduation Requirements for the Bachelor of Fine Arts** degree in the **College of Arts and Letters**. The University Committee on Undergraduate Education (UCUE) approved this request at its September 8, 2016 meeting.
 - a. Under the heading **Graduation Requirements for the Bachelor of Fine Arts Degree in the College of Arts and Letters** make the following changes:
 - (1) In item 2. c. Credit requirement add the following new item (2):

No more than 9 credits that are used to satisfy the departmental or interdepartmental credit requirement for a primary major, second degree, or additional major in the College of Arts and Letters may also be used to satisfy the departmental or interdepartmental credit requirement for another primary major, second degree, or additional major in the College of Arts and Letters.

Effective Spring 2017.

3. Change the requirements for the **Bachelor of Arts** degree in **Film Studies** in the Department of English.
 - a. Under the heading **Requirements for the Bachelor of Arts Degree in Film Studies** make the following changes:
 - (1) In item 1., replace paragraph two with the following:

The University's Tier II writing requirement for the Film Studies major is met by completing one of the following courses: Film Studies 334, 400, 434, 435B, 460, 480, or 499. Those courses are referenced in item 3. below.

(2) In item 3. e. add the following courses:

FLM	335	Film Directing	3
FLM	411	Collaborative Documentary Design and Production (W)	3
FLM	435A	Creating the Fiction Film I	3
FLM	435B	Creating the Fiction Film II (W)	3
LL	250A	Topics in National Cinemas: German Cinema	3
RUS	250	Russian and Soviet Cinema	3

Delete the following course:

LL	250D	Topics in National Cinemas: Russian and Soviet Cinema	3
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Effective Spring 2017.

4. Change the requirements for the **Minor in Film Studies** in the Department of English.

a. Under the heading **Requirements for the Minor in Film Studies** make the following changes:

(1) In item 5. add the following courses:

FLM	211	Documentary History and Theory	3
FLM	255	Stars and Directors	3
RUS	250	Russian and Soviet Cinema	3

Delete the following course:

LL	250D	Topics in National Cinemas: Russian and Soviet Cinema	3
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Effective Spring 2017.

5. Change the requirements for the **Minor in Lesbian, Gay, Bisexual, Transgender, Queer and Sexuality Studies**:

a. Under the heading **Minor in Lesbian, Gay, Bisexual, Transgender, Queer and Sexuality Studies** make the following change:

(1) Add the following statement:

At least 9 credits counted towards the requirements for this minor must be unique. Unique credits must not be used to fulfill another university, college, or major requirement in the student's program.

Effective Spring 2017.

ELI BROAD COLLEGE OF BUSINESS

1. Change the requirements for the **Minor in Information Technology** in the Eli Broad College of Business.

a. Under the heading **Requirements for the Minor in Information Technology** make the following changes:

(1) In item 2. delete the following courses:

ITM	309	Business Information Systems and Technology	3
MI	331	Introduction to Interactive Media Development	3

Add the following courses:

ITM	209	Business Analytics and Information Systems	3
MI	231	Game and Interactive Media Development	3

Effective Spring 2017.

2. Change the requirements for the **Graduate Certificate in Human Resource Management and Development** in the Department of Management. The University Committee on Graduate Studies (UCGS) approved this request at its September 12, 2016 meeting.

a. Under the heading **Admission** replace item 3. with the following:

have three or more years of full-time managerial experience in a supervisory role in the private or public sector.

b. Under the heading **Requirements for the Graduate Certificate in Human Resource Management and Development** make the following changes:

(1) In item 1. add the following course:

MGT	802	Strategic Analysis	1
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Delete the following course:

MGT	801	Analyzing Your Organization	1
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(2) Replace item 3. with the following:

Students are expected to maintain a cumulative grade-point average of 3.0 in all courses in the certificate and a 2.0 grade in each course in order for the course to count towards the program.

Effective Spring 2017.

3. Change the requirements for the **Graduate Certificate in Leadership and Managing Teams** in the Department of Management. The University Committee on Graduate Studies (UCGS) approved this request at its September 12, 2016 meeting.

a. Under the heading **Admission** replace item 3. with the following:

have three or more years of full-time managerial experience in a supervisory role in the private or public sector.

b. Under the heading **Requirements for the Graduate Certificate in Leadership and Managing Teams** make the following changes:

(3) In item 1. add the following course:

MGT	802	Strategic Analysis	1
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Delete the following course:

MGT	801	Analyzing Your Organization	1
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(4) Replace item 3. with the following:

Students are expected to maintain a cumulative grade-point average of 3.0 in all courses in the certificate and a 2.0 grade in each course in order for the course to count towards the program.

Effective Spring 2017.

4. Change the requirements for the **Master of Science** degree in **Management, Strategy, and Leadership** in the Department of Management. The University Committee on Graduate Studies (UCGS) approved this request at its September 12, 2016 meeting.

a. Under the heading **Requirements for the Master of Science Degree in Management, Strategy, and Leadership** make the following changes:

(1) Add the following statement to the introductory paragraph:

Students must work closely with their advisor to ensure courses are taken in the correct sequence.

(2) In item 1. delete the following courses:

MGT	802	Strategic Analysis	1
MGT	888	Communication Strategies for Business	2

(3) In item 1. change the credits of MGT 801 from '1' to '2'.

(4) Renumber item 2. to item 3.

(5) Add the following item 2.:

Students are expected to maintain a cumulative grade-point average of 3.0 in all courses in the program and a 2.0 grade in each course in order for the course to count towards the program.

Effective Spring 2017.

5. Change the requirements for the **Minor in Retail Management** in the Department of Management.
- a. Under the heading **Requirements for the Minor in Retail Management** make the following changes:

- (1) Delete items 1. and 2. and replace with the following:

Students must complete a minimum of 18 credits from the following:

- | | | | |
|----|--|--|---|
| 1. | One of the following courses (3 credits): | | |
| | MGT 315 | Managing Human Resources and Organizational Behavior | 3 |
| | MGT 325 | Management Skills and Processes | 3 |
| 2. | Both of the following courses (6 credits): | | |
| | ADV 481 | Retail Strategy Analysis | 3 |
| | MGT 460 | Capstone for Management Majors (W) | 3 |
| 3. | One of the following courses (3 credits): | | |
| | MKT 351 | Retail Management | 3 |
| | SCM 371 | Procurement and Supply Management | 3 |

- (2) Renumber item 3. to item 4. and delete the following course:

MGT 325	Management Skills and Processes	3
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Effective Spring 2017.

6. Change the requirements for the **Minor in Sports Business Management** in the Department of Management.

- a. Under the heading **Requirements for the Minor in Sports Business Management** make the following changes:

- (1) Change the total credits from '15' to '18'.

- (2) Replace item 1. with the following:

All of the following courses (12 credits):

- | | | |
|----------|--|---|
| MGT 315 | Managing Human Resources and Organizational Behavior | 3 |
| | or | |
| MGT 325 | Management Skills and Processes | 3 |
| MGT 460 | Capstone for Management Majors (W) | 3 |
| MGT 479 | Sports Business Management | 3 |
| MGT 493A | Sports Business: Internship | 3 |
| | or | |
| MGT 493B | Sports Business: Fieldwork Seminar | 3 |

- (3) Change item 2. to 'Two of the following courses (6 credits):' and delete the following course:

MI 300	Media Policy and Economics	3
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Effective Spring 2017.

7. Change the requirements for the **Graduate Certificate in Strategic Management** in the Department of Management. The University Committee on Graduate Studies (UCGS) approved this request at its September 12, 2016 meeting.
 - a. Under the heading **Admission** replace item 3. with the following:

have three or more years of full-time managerial experience in a supervisory role in the private or public sector.
 - b. Under the heading **Requirements for the Graduate Certificate in Strategic Management** make the following changes:
 - (1) In item 2. add the following course:

MGT	842	Leading Strategic Change	2
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Delete the following course:

MGT	875	Change Management	2
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 - (2) Replace item 3. with the following:

Students are expected to maintain a cumulative grade-point average of 3.0 in all courses in the certificate and a 2.0 grade in each course in order for the course to count towards the program.

Effective Spring 2017.

COLLEGE OF EDUCATION

1. Change the requirements for **Teacher Certification** in the College of Education. The Teacher Education Council (TEC) approved this request at its September 12, 2016 meeting.
 - a. Under the heading **Admission to the Teacher Certification Program** replace the entire entry with the following:

Information about current admission requirements and the admission application process can be found at <http://education.msu.edu/academics/undundergradu/apply-teacher-prep.asp>. MSU undergraduates generally apply during the first semester of the sophomore year, although they may apply later.

To be considered for admission to the Teacher Certification Program, an applicant must:

 1. Have earned a minimum of 28 credits.
 2. Have earned a cumulative grade point average of at least 2.5.
 3. Have successfully completed any required developmental course work.
 4. Have disclosed any prior convictions or civil infractions and provided required court documents as necessary.
 5. Have passed all portions of the Michigan Test for Teacher Certification (MTTC) Professional Readiness Examination (PRE) or meet established criteria using approved alternative pass measures.
 6. Have completed all aspects of the application process before the published deadline.

In addition to general admission requirements, applicants applying for admission to the Teacher Certification Program with a major in Special Education must also complete one or two supervised pre-admission experiences, totaling at least 42 hours, with children or youth who have special needs. Prospective Special Education students are encouraged to talk with Special Education faculty about the relative merits of various sites for securing the required experience. Applicants to the Special Education program must submit forms verifying completion of the experience along with a complete admission application (see <http://education.msu.edu/academics/undundergradu/apply-teacher-prep.asp>). Only students who have completed the required experience will be considered for admission to the Special Education major.

Persons who already hold baccalaureate degrees from Michigan State University or other recognized institutions of higher learning are required to follow the process for Post-Bachelors students (see <http://education.msu.edu/certification/postba/post-bachelor-application.asp>). Contact the College of Education Student Affairs Office for more information.

Persons are selected for admission based on a holistic evaluation of criteria that include, but are not limited to, cumulative grade point average, test results, and dispositions for teaching.

- b. Under the heading **Prerequisites for Admission to the Internship Year Studies Program** in item 3. b. 6. delete the following statement:

Elementary Education candidates who request internship placements in grades 6-8 must pass appropriate subject matter major/minor tests in addition to the Elementary Education test.

- c. Under the heading **Undergraduate Professional Education Course Requirements for Secondary Teacher Certification** make the following change in item 1. b.

In the first note, replace the second sentence with the following:

Students with a disciplinary major in music education must complete Teacher Education 150, Teacher Education 250, Teacher Education 302, and Music 277 to be considered for admission to the Music Education student teaching experience.

- d. Under the heading **Language Arts Teaching Major for Elementary Teacher Certification** make the following changes:

- (1) In item 1. a. delete the note: Special Education majors must take Linguistics 200 or 401.

- (2) In item 2. a. delete the following course:

ENG	327	Introduction to Playwriting	3
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- (3) In item 3. b. delete the following courses:

AMS	210	Introduction to Popular Culture	4
ENG	332	Historical Approaches to Film	3
FLM	331	Contemporary Film and Media Theory	3

- (4) In item 3. c. delete the following courses:

ASN	464	Studies in the Literature of Asia and the Asian Diaspora (W)	3
ENG	265	Classical Myths and Literature	3

- (5) In item 4. change the credits from '1 to 4' to '3 to 4' and add the following courses:

TE	430	Introduction to Arts in the Classroom	3
TE	431	Learning Through Drama	3
TE	432	Learning Through Movement	3

- e. Under the heading **Integrated Science Teaching Major for Elementary Teacher Certification** make the following changes:
 - (1) In item 1. change 'ZOL 355' to 'IBIO 355'.
 - (2) In item 5. change the 'SME' subject to 'ISE'.
- f. Under the heading **Mathematics Teaching Major for Elementary Teacher Certification** make the following change in item 1.:
 - (1) Change 'SME 430' to 'MTHE 430'.

Effective Spring 2017.

COLLEGE OF ENGINEERING

- 1. Change the requirements in the **Bachelor of Science** degree in **Computer Engineering** in the Department of Electrical and Computer Engineering.

The optional concentration in the Bachelor of Science degree in Computer Engineering is noted on the student's academic record when the requirements for the degree have been completed.

- a. Under the heading **Requirements for the Bachelor of Science Degree in Computer Engineering** make the following changes:
 - (1) In item 3. c. **Core** add the following additional requirement:
 - (2) At least 3 credits from the following:

ECE	305	Electromagnetic Fields and Waves I	4
ECE	313	Control Systems	3
ECE	366	Introduction to Signal Processing	3
 - (2) In item 3. c. **Focus Track** change the credits from '12' to '9'.
 - (3) In item 3. c. **Recommended Electives** add the following course:

ECE	456	Introduction to Communication and Network Security	3
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- b. Under the heading **Biomedical Engineering Concentration** make the following changes:
 - (1) In item 2. add the following course:

ECE	449	Fundamentals of Acoustics	3
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 - (2) In item 3., change the course number of 'BE 445' to 'BE 444'.

Effective Fall 2017.

2. Change the requirements in the **Bachelor of Science** degree in **Electrical Engineering** in the Department of Electrical and Computer Engineering.

The optional concentration in the Bachelor of Science degree in Electrical Engineering is noted on the student's academic record when the requirements for the degree have been completed.

- a. Under the heading **Requirements for the Bachelor of Science Degree in Electrical Engineering** make the following changes:

- (1) In item 3. d. **Communications/Signal Processing** add the following course:

ECE	456	Introduction to Communication and Network Security	3
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- (2) In item 3. d. **Biomedical Engineering** add the following course:

ECE	449	Fundamentals of Acoustics	3
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- b. Under the heading **Biomedical Engineering Concentration** make the following changes:

- (1) In item 2. add the following course:

ECE	449	Fundamentals of Acoustics	3
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- (2) In item 3., change the course number of 'BE 445' to 'BE 444'.

Effective Fall 2017.

COLLEGE OF NATURAL SCIENCE

1. Change the requirements for the **Master of Arts** degree in **Biomedical Laboratory Science** in the Biomedical Laboratory Diagnostics Program. The University Committee on Graduate Studies (UCGS) approved this request at its September 12, 2016 meeting.

- a. Under the heading **Admission** delete the last paragraph.

- b. Under the heading **Requirements for the Master of Arts Degree in Biomedical Laboratory Science** make the following changes:

- (1) In item 1. change the total credits from '8 or 9' to '10 or 11' and delete the following courses:

BLD	801	Biomedical Laboratory Diagnostics Seminar	1
BLD	821	Advanced Clinical Laboratory Practice	1

Add the following courses:

BLD	801	Biomedical Laboratory Diagnostics Seminar	2
BLS	805	Communication in the Sciences	2

- (2) In item 2. change the total credits from '16' to '14' and add the following courses:

BLD	821	Advanced Clinical Laboratory Practice	1
BLD	832	Molecular Pathology Laboratory	2
BLD	838	Clinical Context of Blood Product Management	1
BLD	852	Immunodiagnosics Laboratory	2
BLD	853	Advanced Flow Cytometry	2
BLD	861	Emerging Infections, Emerging Technology	2
BLD	870	Clinical Mass Spectrometry Theory	2
BLD	871	Applied Clinical Mass Spectrometry	2
BLD	872	Clinical Mass Spectrometry Laboratory	2

Effective Fall 2017.

2. Change the requirements for the **Master of Science** degree in **Biomedical Laboratory Operations** in the Biomedical Laboratory Diagnostics Program. The University Committee on Graduate Studies (UCGS) approved this request at its September 12, 2016 meeting.
- a. Under the heading **Admission** add the following after sentence one:
- Applicants must submit official transcripts, three letters of recommendation, a letter of intent or purpose statement, a brief resume, and General Record Examination (GRE) scores. For applicants in which English is not their first language, the Test of English as a Foreign Language (TOEFL) must be taken.
- b. Under the heading **Requirements for the Master of Science Degree in Biomedical Laboratory Operations** make the following changes:
- (1) In item 1. change the total credits from '6' to '8' and add the following course:
BLD 805 Communication in the Sciences 2
 - (2) Delete item 2. and renumber items 3. and 4. respectively to items 2. and 3.
 - (3) Change the credits in item 2. from '17' to '14'.
 - (4) Add the following item 4.:
Complete 6 credits of electives as approved by the guidance committee.

Effective Fall 2017.

3. Change the requirements for the **Master of Science** degree in **Clinical Laboratory Sciences** in the Biomedical Laboratory Diagnostics Program. The University Committee on Graduate Studies (UCGS) approved this request at its September 12, 2016 meeting.
- a. Under the heading **Admission** replace the first paragraph with the following:
- Regular admission to the Master of Science in Clinical Laboratory Science requires completion of a bachelor of science degree, with a minimum grade-point average of 3.0. Applicants must submit official transcripts, three letters of recommendation, a letter of intent or purpose statement, a brief resume, and the General GRE (Graduate Record Exam) score. For applicants in which English is not their first language, the Test of English as a Foreign Language (TOEFL) must be taken. Certification as a medical technologist/clinical laboratory scientist is preferred, but not required, for admission to the master's degree program in clinical laboratory sciences. Scholastic record, experience, personal qualifications and career goals are taken into consideration to determine the applicant's acceptability.
- b. Under the heading **Requirements for the Master of Science Degree in Clinical Laboratory Sciences** make the following changes:
- (1) Under the heading **Requirements for Both Plan A and Plan B** replace the entire entry with the following:
 1. All of the following courses:
BLD 801 Biomedical Laboratory Diagnostics Seminar 2
BLD 805 Communication in the Sciences 2
BLD 811 Fundamentals of Scientific Research 1
 2. At least 4 credits of 800-level Biomedical Laboratory Diagnostics courses approved by the student's academic advisor.
 3. One course in biochemistry or cell biology as approved by the guidance committee.

4. One 400-level or 800-level course in statistics as approved by the guidance committee.
5. Not more than 9 credits in 400-level courses. All 400-level courses must be approved by the guidance committee.

Effective Fall 2017.

4. Establish a **Bachelor of Science** degree in **Integrative Biology** in the Department of Integrative Biology. The University Committee on Undergraduate Education (UCUE) recommended approval of this request at their January 28, 2016 meeting.

a. **Background Information:**

As never before, biology is assuming center stage in world events. Global warming, health and disease, sustainable life-styles and many more issues are the concern of all citizens of the world. To reflect this, the former Department of Zoology changed its name to the Department of Integrative Biology. The name change was driven by the current composition of our faculty and the need to develop a more integrated biology program to serve the needs of our students, both undergraduate and graduate.

These same concerns have driven the development of the new Bachelor of Science in Integrative Biology. MSU has a long history of offering successful undergraduate programs, and the Integrative Biology department wishes to expand their offerings. The new degree closely with national goals in life science education. In 2011 and again in 2015, the American Association for the Advancement of Science (AAAS) outlined core life science concepts in a call to action for the revision of biology undergraduate education (AAAS, 2011 and 2015). The new degree aligns with all five of these conceptual areas: evolution; pathways and transformations of energy and matter; information flow, exchange, and storage; structure and function; and systems. (Reference: American Association for the Advancement of Science (2011 and 2015). Vision and Change in Undergraduate Biology Education: A Call to Action, Washington, DC.)

Because of its broad, but focused base, it is anticipated that the Bachelor of Science in Integrative Biology will provide an additional entry for students into many professional (medical, dental, allied health, etc.) programs as well as many graduate programs.

To best serve our large and diverse undergraduate population, the Department of Integrative Biology will offer three bachelor's degrees – the new Bachelor of Science degree in Integrative Biology, our original Bachelor of Science degree in Zoology and our Bachelor of Science degree in Environmental Biology/Zoology. The proposed Bachelor of Science in Integrative Biology differs from our current bachelor's in Zoology in that it provides a broader foundation in the biological sciences, requiring courses in physiology, plant biology, microbiology, morphology, biochemistry and cell biology in addition to a core curriculum in genetics, ecology and evolution. These align well with the core concepts specified by AAAS above. The new major is similar to biology degrees offered at our peer institutions.

We will continue to offer the Bachelor of Science degree in Zoology which will now contain four concentrations – Animal Behavior/Neurobiology; Ecology, Evolution and Organismal Biology; Marine Biology; and Zoo and Aquarium Science. While there is some course overlap, the degrees have different requirements and prepare students for different career paths. Bachelor of Science zoology majors often come to MSU because they want to focus on Zoology. The Bachelor of Science degree in Environmental Biology/Zoology is particularly geared to students who will seek employment working with environmental issues often through government agencies, providing them with appropriate skillsets attractive to potential employers.

b. **Academic Programs Catalog Text:**

The Bachelor of Science degree in Integrative Biology provides students with an integrated foundation in biology and its underpinnings in chemistry, math, and physics. It prepares students for graduate and professional study and provide the skillsets necessary to enter the workforce.

Requirements for the Bachelor of Science Degree in Integrative Biology

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

The University's Tier II writing requirement for the Integrative Biology major is met by completing two of the following courses: Integrative Biology 328, 353, 355L, 425, 445, 483. Those courses are referenced in item 3. below. These courses may also fulfill requirements in items 3. g. and 3. h. below.

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 may be used to satisfy the alternative track.

2. The requirements of the College of Natural Science for the Bachelor of Science degree.

The credits earned in certain courses referenced in requirement 3. below may be counted toward College requirements as appropriate.

3. The following requirements for the major:

				CREDITS
a.	One of the following groups of courses (9 or 10 credits):			
(1)	BS	161	Cell and Molecular Biology	3
	BS	162	Organismal and Population Biology	3
	BS	171	Cell and Molecular Biology Laboratory	2
	BS	172	Organismal and Population Biology Laboratory	2
(2)	BS	181H	Honors Cell and Molecular Biology	3
	BS	182H	Honors Organismal and Population Biology	3
	BS	191H	Honors Cell and Molecular Biology Laboratory	2
	BS	192H	Honors Organismal and Population Biology Laboratory	2
(3)	LB	144	Biology I: Organismal Biology	4
	LB	145	Biology II: Cellular and Molecular Biology	5
b.	One of the following groups of courses (5 or 6 credits):			
(1)	CEM	141	General Chemistry	4
	CEM	161	Chemistry Laboratory I	1
(2)	CEM	151	General and Descriptive Chemistry	4
	CEM	161	Chemistry Laboratory	1
(3)	CEM	181H	Honors Chemistry I	4
	CEM	185H	Honors Chemistry Laboratory I	2
(4)	LB	171	Principles of Chemistry I	4
	LB	171L	Introductory Chemistry Laboratory I	1
c.	One course from each of the following groups of courses (8 credits):			
(1)	CEM	251	Organic Chemistry I	3
	CEM	351	Organic Chemistry I	3
(2)	CEM	252	Organic Chemistry II	3
	CEM	352	Organic Chemistry II	3
(3)	CEM	255	Organic Chemistry Laboratory	2
	CEM	355	Organic Laboratory I	2
d.	One of the following groups of courses (8 to 10 credits):			
(1)	PHY	231	Introductory Physics I	3
	PHY	232	Introductory Physics II	3
	PHY	251	Introductory Physics Laboratory I	1
	PHY	252	Introductory Physics Laboratory II	1
(2)	PHY	183	Physics for Scientists and Engineers I	4

		PHY	184	Physics for Scientists and Engineers II	4
(3)		LB	273	Physics I	4
		LB	274	Physics II	4
(4)		PHY	193H	Honors Physics I – Mechanics	4
		PHY	294H	Honors Physics II – Electromagnetism	4
e.	One of the following courses (3 or 4 credits):				
	MTH	124	Survey of Calculus I		3
	MTH	132	Calculus I		3
	MTH	152H	Honors Calculus I		3
	LB	118	Calculus I		4
f.	One of the following courses (3 or 4 credits):				
	LB	119	Calculus II		4
	MTH	126	Survey of Calculus II		3
	MTH	133	Calculus II		4
	MTH	153H	Honors Calculus II		3
	STT	201	Statistical Methods		4
	STT	224	Introduction to Probability and Statistics for Ecologists		3
	STT	231	Statistics for Scientists		3
	STT	421	Statistics I		3
g.	All of the following courses (14 credits):				
	IBIO	341	Fundamental Genetics		4
	IBIO	355	Ecology		3
	IBIO	355L	Ecology Laboratory (W)		1
	IBIO	445	Evolution (W)		3
	MMG	301	Introductory Microbiology		3
h.	One of the following courses (4 credits):				
	IBIO	306	Invertebrate Biology		4
	IBIO	320	Developmental Biology		4
	IBIO	328	Comparative Anatomy and Biology of Vertebrates (W)		4
i.	One of the following courses (3 or 4 credits):				
	IBIO	425	Cells and Development (W)		4
	MMG	409	Eukaryotic Cell Biology		3
j.	One of the following courses (3 or 4 credits):				
	IBIO	483	Environmental Physiology (W)		4
	PLB	301	Introductory Plant Physiology		3
	PLB	415	Plant Physiology		3
	PSL	310	Physiology for Pre-Health Professionals		4
	PSL	431	Human Physiology I		4
k.	One of the following options, either (1) or (2):				
	(1)	BMB	401	Comprehensive Biochemistry	4
	(2)	BMB	461	Advanced Biochemistry I	3
		BMB	462	Advanced Biochemistry II	3
l.	Experiential Requirement.				
	In addition to courses taken to meet requirements g. and h., one course at the 300-level or above in laboratory bench work or field experience. This course may be chosen from Integrative Biology 306, 320, 328, 355L, 360, 365, 384, 390, 408, 425, 490, 494, 496; Animal Science 313; Fisheries and Wildlife 471; or Microbiology and Molecular Genetics 302. Other experiential courses may be chosen through consultation with the student's academic adviser.				
m.	Additional credits in 300-400 level Integrative Biology courses as needed to meet the requirement of at least 33 credits. Students may complete more than one course, or pair of courses, from item 3. Additional courses completed from item 3. may be counted as Integrative Biology electives toward the 33 credits. Courses beyond those taken to satisfy item 3. may come from other departments with the approval of the student's academic advisor.				

PART II - NEW COURSES

COLLEGE OF ARTS AND LETTERS

- AL 110 Writing and Civic Life
Fall of every year. 4(4-0) P: (WRA 1004) or designated score on English Placement test R:
Approval of college.
Study and practice of invention, arrangement, revision, style, and delivery of writing,
reading, and researching in higher education. Rhetorical practices useful in democratic
deliberation about social, cultural, and political problems.
Effective Fall 2016
- AL 210 Democratic Discourse and Critique in the Arts and Humanities
Spring of every year. 4(4-0) P: AL 110 R: Approval of college.
Arts and humanities contributions to identifying and solving social, cultural, and political
problems. Various modes of participation and engagement by diverse groups in
democratic discourse broadly understood. Political debate, public discourse, critique,
protest, dissent, and artistic expression.
Effective Fall 2016

THE ELI BROAD COLLEGE OF BUSINESS

- MBA 846 Executive Lecture Series
Fall of every year. 1(1-0) R: Open to MBA students in the The Eli Broad College of Business and
open to undergraduate students in the Honors College.
CEO perspectives on interdisciplinary business topics. Real-world events and scenarios,
global business community, and innovative strategies to manage high-performance
organizations.
Effective Spring 2017

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

- ECE 449 Fundamentals of Acoustics
Fall of every year. 3(3-0) P: (MTH 235 and ECE 280) or ME 391 R: Open to juniors or seniors in
the College of Engineering.
Development of the fundamental theoretical concepts of acoustical systems, including
plane and spherical waves, radiation, diffraction, and absorption.
Effective Fall 2017
- ECE 456 Introduction to Communication and Network Security
Spring of every year. 3(3-0) P: ECE 280 or STT 351 R: Open to juniors or seniors in the College of
Engineering.
Security primitives, major network security protocols and applications, system security
practices, wireless security physical-layer built-in security, secure multiple-party
computing, privacy-preserving computation.
Effective Spring 2017

DEPARTMENT OF ENGLISH

- FLM 255 Stars and Directors
Fall of every year. 3(3-2) P: Completion of Tier I Writing Requirement
Survey of individual film directors and/or stars.
Effective Fall 2016

DEPARTMENT OF HISTORY

HST 456 Special Topics in the History of Sexuality
Spring of every year. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. R: Not open to freshmen.
Experimental courses and courses taught by visiting faculty.
Effective Spring 2017

DEPARTMENT OF HORTICULTURE

HRT 231 Clerkship in Grape Harvesting and Processing
Fall of even years. Northwestern Michigan College, Northwestern Michigan College, Northwestern Michigan College 1(0-2) R: Open to undergraduate students or agricultural technology students.
Hands-on skills in the management of grape harvest and processing; winery and cellar operations. Course meets on-farm. Field trips required.
Effective Fall 2016

HRT 233 Field Practices of Viticulture
Summer of even years. 3(2-2) P: HRT 232 R: Open to undergraduate students or agricultural technology students.
Cool climate grape production and vineyard management. Field trips required.
Effective Fall 2016

JAMES MADISON COLLEGE

MC 368 The Civil Rights Movement and its Legacies
Fall of even years. 4(3-0) P: Completion of Tier I Writing Requirement R: Open to students in the James Madison College.
History of the U.S. civil rights movement. Race, class and gender dimensions. National and local perspectives. Aims, strategies, and achievements. Relevance to contemporary social movements.
Effective Spring 2017

MSU COLLEGE OF LAW

LAW 508M Corporate Law Colloquium
On Demand. 0 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P: LAW 500M R: Open to Law students.
Student presentation of corporate law issues.
Effective Fall 2016

LAW 508N Corporate Law and Finance Seminar
On Demand. 0 to 6 credits. P: LAW 500M R: Open to Law students or master of laws students or law lifelong students or law non-degree students.
Exploration of complex issues in contemporary law with a focus on issues likely to arise in a sophisticated real-world corporate or transactional practice.
Effective Fall 2016

LAW 530T Advanced Civil Procedure
Fall of every year. 0 to 6 credits. P: LAW 530A R: Open to Law students or master of laws students or law lifelong students or law non-degree students.
Augment the fundamentals taught in Civil Procedure.
Effective Summer 2016

LAW 545N Jewish Law
On Demand. 0 to 6 credits. R: Open to Law students or master of laws students or law lifelong students or law non-degree students.
Comparative perspective of Jewish Law following introduction to sources and structure of areas found in both Jewish and American laws.
Effective Summer 2016

- LAW 545P International Taxation and Tax Treaties
On Demand. 0 to 6 credits. P: LAW 501K or LAW 501A or LAW 501B R: Open to Law students or master of laws students or law lifelong students or law non-degree students.
Surveys U.S. taxation of U.S. and foreign persons engaged in international activities.
Effective Fall 2016
- LAW 572G Nonprofit and Tax-Exempt Organizations
Spring of every year. 0 to 6 credits. R: Open to Law students or master of laws students or law lifelong students or law non-degree students.
Examination of the formation, governance, operation and the legal framework of non-profit, tax-exempt organizations.
Effective Fall 2016
- LAW 617D Evidence and the Expert Witness
Fall of every year. 0 to 6 credits. R: Open to law non-degree students.
Introduction of graduate students in scientific and technical disciplines to the process of serving as an expert in a judicial proceeding.
Effective Fall 2016
- LAW 631P Human Trafficking Civil Litigation Clinic I
Fall of every year. Spring of every year. 0 to 6 credits. P: (LAW 530D or LAW 530E or LAW 530N or LAW 530Q) and LAW 530J R: Open to Law students or master of laws students or law lifelong students or law non-degree students.
Clinic course on human trafficking litigation. Informal fact investigation, evidence gathering, conducting interviews, drafting memos on relevant legal issues and draft pleadings.
Effective Fall 2016
- LAW 631Q Human Trafficking Civil Litigation Clinic II
Fall of every year. Spring of every year. 0 to 6 credits. P: LAW 631P R: Open to Law students or master of laws students or law lifelong students or law non-degree students.
Continuation of hands-on experience preparing and bringing civil lawsuit on behalf of victims of human trafficking.
Effective Fall 2016
- LAW 810S Food Law Current Issues Seminar
On Demand. 0 to 6 credits. R: Open to master of laws students.
Analyze international, transnational, and national food law and policy. Emphasis on cutting-edge and controversial aspects of food law and policy.
Effective Summer 2016
- LAW 810T Advertising Law - Food Focus
Spring of every year. 0 to 6 credits. R: Open to master of laws students.
Provide broad introduction and practical detail, to a working understanding of the issues involved in the various laws, regulations and other principles applicable to the advertising of food in the U.S.
Effective Fall 2016

DEPARTMENT OF MANAGEMENT

- MGT 493B Sports Business: Fieldwork Seminar
Spring of every year. 3(3-0) P: MGT 479 R: Open to juniors or seniors in the Sports Business Management Minor or approval of department. Not open to students with credit in MGT 493A.
Leadership in day-to-day operations, decision making, strategic planning alongside industry leader in sports business. Hands-on projects in intercollegiate athletics, professional sports or applicable associations, firms or leagues. Rotational exposure to unit(s) and/or executive(s) within organization. Behind the scenes experience and knowledge of industry through real-time projects and solution-focused problem solving.
Effective Spring 2017

DEPARTMENT OF MATHEMATICS

- MTH 925 Random Variables and Stochastic Processes
Fall of every year. 3(3-0) R: Open to doctoral students in the College of Natural Science or approval of department.
Introduction to measure-theoretic probability theory. Topics include infinite product spaces, Kolomogorov extension theorem, Borel Cantelli Lemma, law of large numbers, central limit theorem, conditioning, filtrations, martingales, Markov chains, Wiener process.
Effective Fall 2016
- MTH 970 Dynamics I
Fall of every year. 3(3-0) P: (MTH 868 or concurrently) and MTH 869 or approval of department R: Open to doctoral students in the College of Natural Science or approval of department.
Flows and diffeomorphisms, examples, topological and smooth conjugacy, recurrence and limit sets, circle diffeomorphisms, symbolic spaces and expanding maps, structural stability of expanding maps, Perron-Frobenius theorem and discrete Markov processes, topological entropy and volume growth, zeta function, homological growth, linearization, bifurcation theory.
Effective Fall 2016
- MTH 971 Dynamics II
Spring of every year. 3(3-0) P: (MTH 868 or concurrently) and (MTH 869 or concurrently) R: Open to doctoral students in the College of Natural Science or approval of department.
Hyperbolic theory, Anosov systems, invariant manifold theory, geodesic flows on Riemannian manifolds, structural stability theorems, generic properties, horseshoe diffeomorphisms, basic theory of Hamiltonian systems on manifolds, variational principles, Lagrangian and Hamiltonian mechanics, Poisson brackets. Introduction to completely integrable systems.
Effective Spring 2017

COLLEGE OF MUSIC

- MUS 494 Musicians' Health and Wellness
Fall of even years. Spring of even years. 2(2-0) R: Open to undergraduate students in the College of Music and open to graduate students in the College of Music and not open to freshmen in the College of Music.
Healthy musical and lifestyle habits and choices.
Effective Spring 2017
- MUS 894 Seminar in Musicians' Health and Wellness
Fall of even years. Spring of even years. 1(1-0) R: Open to graduate students in the College of Music. C: MUS 494 concurrently.
Critical reading of research and scholarly resources in the area of performing arts.
Effective Spring 2017

DEPARTMENT OF PHYSIOLOGY

- PSL 539 Principles of Cell Biology and Pathophysiology
Fall of every year. 4(3-2) Interdepartmental with Human Anatomy and Biochemistry and Molecular Biology and Microbiology and Molecular Genetics. R: Open to graduate-professional students in the College of Osteopathic Medicine.
Modern concepts of human cell biology as a basis for understanding integration of structure (histology) and function (physiology) in health and disease (pathology).
Introduction to adaptive growth response, cell injury, inflammation, hemodynamic disorders, and tissue repair.
Request the use of the Pass-No Grade (P-N) system.
Effective Fall 2016

PART III – COURSE CHANGES

DEPARTMENT OF ACCOUNTING AND INFORMATION SYSTEMS

- ACC 230 Survey of Accounting Concepts
Fall of every year. Spring of every year. Summer of every year. 3(3-0) ~~R: Not open to undergraduate students in the Eli Broad College of Business and The Eli Broad Graduate School of Management.~~ R: Not open to students in the Accounting major or in the Business - Admitted major or in the Business-Preference major or in the Finance Major or in the Hospitality Business Major or in the Human Resource Management Major or in the Management Major or in the Marketing Major or in the Supply Chain Management Major. Not open to students with credit in ACC 202.
Basic concepts in financial and managerial accounting for non-business majors.
~~Effective Fall 2013~~ Effective Spring 2017
- ACC 300 Intermediate Financial Accounting I
Fall of every year. Spring of every year. Summer of every year. 3(3-0) ~~P: ACC 202~~ P: ACC 201 and ACC 202 R: Open to juniors or seniors in the Department of Accounting and Information Systems or in the Department of Finance or approval of department.
U.S. and international concepts and procedures for preparing financial statements.
Revenue recognition. Accounting for receivables, inventory, plant assets, intangibles and current liabilities. Applied research methods.
~~Effective Spring 2013~~ Effective Spring 2017
- ACC 305 Intermediate Accounting for Finance Majors
Fall of every year. Spring of every year. 3(3-0) ~~P: ACC 202~~ P: ACC 201 and ACC 202 ~~R: Open to juniors or seniors in the Finance Major or in the General Management Major or in the Human Resource Management Major or in the Marketing Major or in the Supply Chain Management Major.~~ R: Open to juniors or seniors in the Finance Major or in the Human Resource Management Major or in the Marketing Major or in the Supply Chain Management Major.
Major measurement, valuation, and reporting concepts and procedures underlying the assets, liabilities, owners' equity, revenues, and expenses contained in financial statements. Analysis, interpretation, and use of financial statements.
~~Effective Spring 2016~~ Effective Spring 2017
- ACC 321 Accounting Information Systems
Fall of every year. Spring of every year. Summer of every year. 3(3-0) ~~P: ACC 202~~ P: ACC 201 and ACC 202
Conceptual modeling and implementation of accounting transaction processing systems. Enterprise value chains, documentation of workflow processing and control requirements, and modeling of accounting interoperability requirements.
~~Effective Fall 2013~~ Effective Spring 2017
- ACC 333 Taxation and Accounting for the Entrepreneur
Fall of every year. 3(3-0) ~~P: ACC 202~~ P: ACC 201 and ACC 202 R: Open to undergraduate students in the Eli Broad College of Business and The Eli Broad Graduate School of Management and not open to students in the Department of Accounting and Information Systems. Not open to students with credit in ACC 331. C: MGT 352 concurrently or MKT 355 concurrently.
Basic concepts of income taxation and accounting applicable to business entrepreneurs and their business enterprises.
~~Effective Fall 2013~~ Effective Spring 2017
- ACC 493 Internship
Fall of every year. Spring of every year. Summer of every year. 1 credit. A student may earn a maximum of 2 credits in all enrollments for this course. ~~P: ACC 202~~ P: ACC 201 and ACC 202 R: Approval of department.
Professional internship in public, industrial, or governmental accounting under faculty supervision.
Request the use of the Pass-No Grade (P-N) system.
~~Effective Spring 2013~~ Effective Spring 2017

- ITM 311 Systems Analysis and Design
Fall of every year. Spring of every year. 3(3-0) ~~R: Open to juniors or seniors in the Eli Broad College of Business and The Eli Broad Graduate School of Management or in the Information Technology Minor and not open to students in the School of Hospitality Business.~~ R: Open to juniors or seniors in the Eli Broad College of Business and The Eli Broad Graduate School of Management or in the Information Technology Minor.
Structured analysis and design of information systems. Understanding of the system development process, and organizational issues associated with the design and implementation of information systems.
~~Effective Fall 2016~~ Effective Spring 2017
- ITM 490 Independent Study in Information Technology
Fall of every year. Spring of every year. Summer of every year. 1 to 4 credits. ~~P: ITM 309~~ P: ITM 209 R: Open to students in the Eli Broad College of Business and The Eli Broad Graduate School of Management.
Directed study in information technology under faculty supervision.
~~Effective Spring 2013~~ Effective Spring 2017
- ITM 491 Special Topics in Information Technology
Fall of every year. Spring of every year. 1 to 4 credits. ~~P: ITM 309~~ P: ITM 209 R: Open to students in the Eli Broad College of Business and The Eli Broad Graduate School of Management.
Current topics in information technology.
~~Effective Spring 2013~~ Effective Spring 2017

DEPARTMENT OF AGRICULTURAL, FOOD, AND RESOURCE ECONOMICS

- AFRE 861 Agriculture in Economic Development
Fall of every year. 3(3-0) RB: Intermediate microeconomics with calculus and introductory econometrics.
~~Role of agriculture in economic development of low and middle income countries. Theories of agricultural growth. Policy issues. Case studies. Theories and role of agriculture in economic development. Effects of policies, institutions, organizations, and technologies.~~
SA: AEC 861
~~Effective Summer 2015~~ Effective Fall 2017

DEPARTMENT OF ANIMAL SCIENCE

- ANS 300E Animal Welfare Judging
Fall of every year. 1(0-2) A student may earn a maximum of 6 credits in all enrollments for this course. P: ANS 200E ~~RB: ANS 110 and (ANS 305 or ZOL 313)~~ RB: (ANS 110) and (ANS 305 or IBIO 313) ~~R: Not open to freshmen.~~ R: Not open to freshmen. A student may earn a maximum of 8 credits from the following courses: ANS 200A, ANS 200C, ANS 200D, ANS 200E, ANS 200F, ANS 300A, ANS 300C, ANS 300D, ANS 300E, and ANS 300F.
Enhanced understanding of the physiological and behavioral indicators of animal welfare. Ethical values in the assessment of welfare status. Intercollegiate competition. Field trip required.
~~Effective Fall 2013~~ Effective Summer 2017

THE ELI BROAD COLLEGE OF BUSINESS

- MBA 843 Career Management
Fall of every year. 1 to 3 credits. R: Open to MBA students.
Understanding career development theory through experiential and skill-based learning. Active practice of career management, networking, negotiation, goal setting, and development planning skills.
~~Request the use of the Pass No Grade (P-N) system.~~
~~Effective Fall 2013~~ Effective Summer 2017

- MBA 845 Integrative Action Projects
Fall of every year. Spring of every year. 1 to 2 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open to MBA students.
Multi-day intensive action-based learning experience in which students apply business theories and concepts to real business issues.
~~Request the use of the Pass No Grade (P-N) system.~~
~~Effective Fall 2016~~ Effective Summer 2017

DEPARTMENT OF CHEMICAL ENGINEERING AND MATERIALS SCIENCE

- MSE 310 Phase Equilibria in Materials
Fall of every year. 3(3-0) ~~P: (MSE 250 or concurrently) and ((MTH 234 or concurrently) or (MTH 254H or concurrently) or (LB 220 or concurrently))~~ P: (MSE 250) and ((MTH 234 or concurrently) or (MTH 254H or concurrently) or (LB 220 or concurrently)) R: Open to juniors or seniors in the Materials Science and Engineering Major or in the Materials Science and Engineering Minor.
Enthalpy. Entropy. Free energy. Phase changes in metal, ceramic, and polymer materials systems. Application to alloying, phase diagram determination, and electrochemistry.
SA: MSE 351
~~Effective Fall 2016~~ Effective Fall 2017
- MSE 331 Materials Characterization Methods I
Fall of every year. 2(1-3) P: MSE 310 or concurrently R: Open to juniors or seniors in the Materials Science and Engineering Major.
~~Thermal analysis, microindentation techniques, quantitative optical microscopy, effects of alloying on creep deformation, slip systems in ionic crystals, environmental effects including galvanic corrosion, passivation.~~ Thermal analysis, microindentation techniques, quantitative optical microscopy, effects of alloying on creep deformation, slip systems in ionic crystals, viscoelastic of solids, and polymer rheology.
SA: MSE 375
~~Effective Fall 2016~~ Effective Fall 2017
- MSE 381 Materials Characterization Methods II
Spring of every year. 2(1-3) ~~P: MSE 331 and (MSE 260 or concurrently) and (MSE 360 or concurrently) and (MSE 370 or concurrently)~~ P: (MSE 260 or concurrently) and (MSE 360 or concurrently) and (MSE 370 or concurrently) R: Open to juniors or seniors in the Materials Science and Engineering Major.
Characterization of materials by electron microscopy, X-ray diffraction and fluorescence spectroscopy. Fractography, surface analysis, dynamic mechanical analysis, electrical and thermal property measurements.
~~Effective Fall 2016~~ Effective Fall 2017
- MSE 466 Design and Failure Analysis (W)
Spring of every year. 3(2-3) ~~P: (MSE 320 and MSE 381) and completion of Tier I writing requirement~~ P: (MSE 320 and MSE 331 and MSE 381) and completion of Tier I writing requirement R: Open to seniors in the Materials Science and Engineering Major.
Modes and causes of failure in mechanical components and role of design. Non-destructive evaluation. Legal and economic aspects of materials failure. Student projects.
SA: MSM 466
~~Effective Fall 2016~~ Effective Fall 2017

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

- CSE 843 Language and Interaction
Spring of even years. 3(3-0) ~~P: CSE 440 RB: Programming skills. Basic probability and statistical knowledge.~~ RB: Programming skills. Basic probability and statistical knowledge. Artificial intelligence.
Introduction to foundations and the state-of-the-art technology enabling natural language communication with artificial agents. Speech recognition, acoustic modeling and language modeling, dialogue and discourse modeling, psycholinguistic studies on situated human language processing, and their applications in situated human robot dialogue.
~~Effective Spring 2013~~ Effective Fall 2016

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

- ECE 331 Microprocessors and Digital Systems
Fall of every year. Spring of every year. 4(3-3) ~~P: ((ECE 102 and (CSE 251 or concurrently)) or (CSE 232 or CSE 220)) and ECE 230~~ P: (CSE 220 or CSE 232) and ECE 230 R: Open to students in the Department of Electrical and Computer Engineering and open to students in the Department of Computer Science and Engineering.
Microcomputers. Microprocessor architecture. Addressing modes. Assembly language programming. Parallel and serial input and output. Interfacing. Interrupts. Peripheral device controllers. Applications and design.
SA: EE 331
~~Effective Fall 2013~~ Effective Fall 2017
- ECE 448 Modeling and Analysis of Bioelectrical Systems
~~Spring of odd years. Spring of every year. 3(3-0) P: ECE 366 or ECE 313 P: PHY 184 R: Open to students in the College of Engineering. R: Open to juniors or seniors in the College of Engineering.~~
Basics of deterministic and stochastic linear systems, Principles of biophysics and electrophysiology, Theory and principles of system identification, methods to formulate dynamic mathematical and computer models of bioelectrical systems, Applications to neural systems and neuroprosthetics. Principles of biophysics and electrophysiology, ionic basis of neuronal excitability, introduction to computational models of signal generation and propagation in the nervous system, applications to neural systems and neuroprosthetics.
~~Effective Fall 2013~~ Effective Fall 2017

DEPARTMENT OF FINANCE

- FI 320 Introduction to Finance
Fall of every year. Spring of every year. 3(3-0) ~~R: Open to students in the James Madison College or in the Apparel and Textiles major or in the Applied Engineering Sciences major or in the Computer Science major or in the Construction Management major or in the Economics major or in the Food Industry Management major or in the Interdisciplinary Studies in Social Science major or in the Media and Information major or in the Media and Communication Technology major or in the Media Arts and Technology major or in the Natural Resource Recreation and Tourism major or in the Packaging major or in the Retailing major or in the Security Management Specialization or in the Apparel and Textile Design major. R: Not open to students in the Accounting major or in the Business - Admitted major or in the Business-Preference major or in the Finance Major or in the Hospitality Business Major or in the Human Resource Management Major or in the Management Major or in the Marketing Major or in the Supply Chain Management Major.~~ Not open to students with credit in FI 311.
Overview of finance for the non-business major. Stocks, bonds, mutual funds, financial statement analysis, capital budgeting, financial planning.
~~Effective Summer 2013~~ Effective Spring 2017
- FI 983 Financial Econometrics
Spring of every year. 3(3-0) P: EC 818 and (EC 821 or concurrently) and (EC 822 or concurrently)
R: Open only to doctoral students in the College of Business or Economics major.
Econometric techniques of relevance to problems in finance: asset pricing. Interpretation of the results and limitations of recent empirical finance research.
DELETE COURSE
Effective Summer 2016

GBL 323 Introduction to Business Law
Fall of every year. Spring of every year. 3(3-0) ~~R: Open to students in the James Madison College or in the Agribusiness Management major or in the Agribusiness Management Specialization or in the Apparel and Textile Design major or in the Apparel and Textiles major or in the Applied Engineering Sciences major or in the Communication major or in the Computer Science major or in the Construction Management major or in the Economics major or in the Food Industry Management Specialization or in the Food Industry Management major or in the Forestry major or in the Humanities Prolaw major or in the Interdisciplinary Studies in Social Science: Social Science Education major or in the Interdisciplinary Studies in Social Science major or in the Materials Science and Engineering major or in the Media and Information major or in the Media and Communication Technology major or in the Media Arts and Technology major or in the Natural Resource Recreation and Tourism major or in the Packaging major or in the Retailing major or in the Security Management Specialization.~~ R: Not open to students in the Accounting major or in the Business - Admitted major or in the Business-Preference major or in the Finance Major or in the Hospitality Business Major or in the Human Resource Management Major or in the Management Major or in the Marketing Major or in the Supply Chain Management Major.
Introduction to the legal system. Basic concepts of constitutional law, torts, contracts, and product liability. Administrative law and government regulations.
~~Effective Spring 2013~~ Effective Spring 2017

DEPARTMENT OF FISHERIES AND WILDLIFE

FW 463 Wildlife Disease Ecology
Spring of even years. 3(3-0) Interdepartmental with Large Animal Clinical Sciences. ~~P: ZOL 355 or approval of department P: IBIO 355 or approval of department RB: (FW 423) or additional course work in zoology, microbiology and environmental sciences.~~ RB: (FW 423) or additional course work in integrative biology, microbiology and environmental sciences. R: Open to juniors or seniors or approval of department. Not open to students with credit in FW 863.
Role of wildlife disease in ecological interactions. Factors underlying pathogen emergence. Disease modeling. Conservation medicine.
~~Effective Spring 2014~~ Effective Fall 2016

DEPARTMENT OF FOOD SCIENCE AND HUMAN NUTRITION

HNF 250 Contemporary Issues in Human Nutrition
Fall of every year. 2(1-2) P: (HNF 150) and completion of Tier I writing requirement ~~R: Open to students in the Nutritional Sciences Major.~~ R: Open to students in the Nutritional Sciences Major or in the Lyman Briggs Nutritional Sciences Coordinate Major.
Current topics and controversies in nutrition, health, and chronic disease. Concepts of health. Credible sources of nutrition information and research. Governing agencies and policy. Ethical issues related to nutrition.
~~Effective Summer 2016~~ Effective Fall 2016

HNF 350 Advanced Human Nutrition and Metabolism
Spring of every year. 4(5-0) P: (HNF 250 or HNF 320) and (PSL 250 or PSL 310 or PSL 431) and (BMB 200 or BMB 401 or BMB 461) ~~R: Open to juniors or seniors in the Dietetics Major or in the Nutritional Sciences Major.~~ R: Open to juniors or seniors in the Dietetics Major or in the Nutritional Sciences Major or in the Lyman Briggs Nutritional Sciences Coordinate Major.
Nutrient function, metabolism, and interaction in humans at the molecular, cellular, tissue, organ and system level. Mechanistic relationships of nutritional status to health and disease.
SA: HNF 461, HNF 462
Effective Spring 2017

HNF 377 Applied Community Nutrition
Fall of every year. 4(3-2) P: HNF 250 or HNF 320 ~~R: Open to juniors or seniors in the Dietetics Major or in the Nutritional Sciences Major.~~ R: Open to juniors or seniors in the Dietetics Major or in the Nutritional Sciences Major or in the Lyman Briggs Nutritional Sciences Coordinate Major.
Skill development in nutritional assessment including dietary, anthropometric, clinical, biochemical and ecological assessment.
~~Effective Summer 2016~~ Effective Fall 2016

HNF 453 Nutrition and Human Development
Spring of every year. 3(3-0) ~~P: (HNF 375 or HNF 377) and ((PSL 250 or concurrently) or PSL 310 or PSL 431) P: (HNF 375 or HNF 377) and (PSL 250 or PSL 310 or PSL 431) R: Open to juniors or seniors in the Dietetics major or in the Nutritional Sciences major or in the Nutritional Sciences minor.~~ R: Open to juniors or seniors in the Dietetics Major or in the Nutritional Sciences Major or in the Lyman Briggs Nutritional Sciences Coordinate Major.
Role of nutrients in anatomical, physiological, and biochemical processes as related to human growth and development. Nutrition throughout the life cycle. Nutritional assessment integrating the nutrition care process and age specific programs.
SA: HNF 376
~~Effective Fall 2014~~ Effective Fall 2016

DEPARTMENT OF HORTICULTURE

HRT 232 ~~Principles and Practices of Grape Production~~
Principles of Viticulture
Spring of even years. 3(3-0) P: PLB 105 R: Open to undergraduate students or agricultural technology students.
~~Grapevine physiology, structure, and function. Techniques for vineyard establishment. Cultivar and rootstock selection, influence of environmental factors on vine growth, pre-plant site selection and preparation, training and trellising systems, cultural practices for canopy management, and methods of crop control. Grapevine physiology, grape production, cultural practices and vineyard management. Field trip required.~~
SA: HRT 432
~~Effective Fall 2014~~ Effective Summer 2017

DEPARTMENT OF HUMAN DEVELOPMENT AND FAMILY STUDIES

HDFS 880 ~~Research Methods in Family and Child Ecology~~
Research Design and Measurement
Fall of every year. 3(3-0)
~~Methods applied to problem definition, research design, and analysis. Methods applied to~~
problem definition, research design, and analysis in Human Development and Family Studies.
SA: FCE 880
~~Effective Fall 2014~~ Effective Summer 2017

DEPARTMENT OF KINESIOLOGY

KIN 445 ~~Sociocultural Analysis of Physical Activity (W)~~
Sport and Physical Activity in Society (W)
Fall of every year. Spring of every year. 3(3-0) P: (KIN 173) and completion of Tier I writing requirement R: Open to undergraduate students in the Athletic Training Major or in the Kinesiology major and open to graduate students in the Department of Kinesiology.
Sociocultural context of and social practices in sport and physical activity.
SA: PES 445
~~Effective Spring 2013~~ Effective Summer 2017

DEPARTMENT OF LINGUISTICS AND GERMANIC, SLAVIC, ASIAN AND AFRICAN LANGUAGES

CHS 350 Studies in the Chinese Language
Spring of every year. 3(3-0) ~~P: CHS 204~~ P: CHS 301 or concurrently
~~Grammatical structures of modern Chinese. Grammar review, sound system, word formation, sentence and discourse structures, historical evolution of the Chinese language, dialects, sociolinguistics. Grammatical structures of modern Chinese, grammar review, sound system, word formation, sentence and discourse structures, dialects and sociolinguistic variation, the history of writing system, pragmatics.~~
Grammatical structures of modern Chinese, grammar review, sound system, word formation, sentence and discourse structures, dialects and sociolinguistic variation, the history of writing system, pragmatics.
~~Effective Spring 2015~~ Effective Spring 2017

DEPARTMENT OF MANAGEMENT

- MGT 315 Managing Human Resources and Organizational Behavior
Fall of every year. Spring of every year. Summer of every year. 3(3-0) RB: Programs for which MGT 315 is a catalog-listed requirement. ~~R: Open to juniors or seniors in the Eli Broad College of Business and The Eli Broad Graduate School of Management and not open to students in the School of Hospitality Business.~~ R: Open to juniors or seniors in the Accounting major or in the Finance Major or in the Marketing Major or in the Supply Chain Management Major or in the Business - Admitted major or in the Human Resource Management Major or in the Management Major and not open to students in the School of Hospitality Business.
Formulation and administration of human resource policies in the business enterprise. Personnel planning, job analysis and evaluation, staffing. Compensation and labor relations. Employee safety. Training, development, and performance appraisal. Issues of diversity and ethics.
SA: MGT 310
~~Effective Spring 2013~~ Effective Spring 2017
- MGT 325 Management Skills and Processes
Fall of every year. Spring of every year. Summer of every year. 3(3-0) ~~R: Open to juniors or seniors in the James Madison College or in the Advertising Major or in the Agribusiness Management Undergraduate Specialization or in the Agribusiness Management Major or in the Apparel and Textile Design Major or in the Apparel and Textiles Major or in the Applied Engineering Sciences Major or in the Communication Major or in the Construction Management Major or in the Dietetics Major or in the Economics Major or in the Food Industry Management Specialization or in the Food Industry Management Major or in the Food Science Major or in the Interdisciplinary Studies in Social Science Major or in the Media and Information Major or in the Packaging Major or in the Security Management Specialization or in the Public Relations Specialization.~~ R: Open to juniors or seniors and not open to students in the Accounting major or in the Finance Major or in the Human Resource Management Major or in the Management Major or in the Marketing Major or in the Supply Chain Management Major or in the Business - Admitted major or in the Business-Preference major or in the Hospitality Business Major.
Managerial skills and processes in goal-directed institutions.
SA: MGT 302
~~Effective Fall 2015~~ Effective Spring 2017
- MGT 352 Entrepreneurship: New Venture Process
~~Fall of every year. Spring of every year. 3(3-0) P: ACC 202 R: Open to juniors or seniors in the Eli Broad College of Business and The Eli Broad Graduate School of Management and not open to students in the School of Hospitality Business.~~ R: Open to juniors or seniors in the Eli Broad College of Business and The Eli Broad Graduate School of Management or in the Retail Management Minor and not open to students in the School of Hospitality Business. ~~Not open to students with credit in MKT 355.~~
Becoming an entrepreneur. Developing successful business ideas. Moving from an idea to an entrepreneurial firm. Managing and growing an entrepreneurial firm.
~~Effective Spring 2013~~ Effective Spring 2017
- MGT 411 Organizational Staffing
Spring of every year. 3(3-0) ~~P: (MGT 315 or concurrently) R: Open to juniors or seniors in the Eli Broad College of Business and The Eli Broad Graduate School of Management and not open to students in the School of Hospitality Business.~~ P: (MGT 315 or concurrently) or (MGT 325 or concurrently) R: Open to juniors or seniors in the Eli Broad College of Business and The Eli Broad Graduate School of Management or in the Retail Management Minor or in the Sports Business Management Minor and not open to students in the School of Hospitality Business.
Job and organizational analysis. Personnel planning, recruitment, selection and placement. Employment interviewing and testing. Validation of selection procedures, equal opportunity employer (EEO) guidelines, and affirmative action. Issues and diversity of ethics.
~~Effective Spring 2016~~ Effective Spring 2017

- MGT 412 Compensation and Reward Systems
Fall of every year. 3(3-0) ~~P: (MGT 315 or concurrently)~~ P: (MGT 315 or concurrently) or (MGT 325 or concurrently) ~~R: Open to juniors or seniors in the Eli Broad College of Business and The Eli Broad Graduate School of Management and not open to students in the School of Hospitality Business.~~ R: Open to juniors or seniors in the Eli Broad College of Business and The Eli Broad Graduate School of Management or in the Retail Management Minor or in the Sports Business Management Minor and not open to students in the School of Hospitality Business.
Designing compensation systems. Job evaluation, internal and external equity. Pay-for-performance plans and financial incentives. Wage and salary surveys. Benefits administration. Diversity and ethical considerations.
~~Effective Fall 2016~~ Effective Spring 2017
- MGT 413 Personnel Training and Development
Fall of every year. 3(3-0) ~~P: MGT 315 or concurrently~~ P: (MGT 315 or concurrently) or (MGT 325 or concurrently) ~~R: Open to juniors or seniors in the Eli Broad College of Business and The Eli Broad Graduate School of Management and not open to students in the School of Hospitality Business.~~ R: Open to juniors or seniors in the Eli Broad College of Business and The Eli Broad Graduate School of Management or in the Retail Management Minor and not open to students in the School of Hospitality Business.
Designing and implementing training and development programs. Career stages and career planning. Needs analysis. Experimental design and program evaluation. Learning theories. Issues and diversity of ethics.
~~Effective Fall 2016~~ Effective Spring 2017
- MGT 414 Diversity in the Workplace
Spring of every year. 3(3-0) ~~P: (MGT 315 or concurrently)~~ P: (MGT 315 or concurrently) or (MGT 325 or concurrently) ~~R: Open to juniors or seniors in the Eli Broad College of Business and The Eli Broad Graduate School of Management and not open to students.~~ R: Open to juniors or seniors in the Eli Broad College of Business and The Eli Broad Graduate School of Management or in the Retail Management Minor or in the Sports Business Management Minor and not open to students in the Hospitality Business Major.
Problems experienced by racial, ethnic, physically disabled, and other minorities in work organizations. Awareness training for managers. Ethical issues.
~~Effective Spring 2016~~ Effective Spring 2017
- MGT 418 Labor-Management Relations
Spring of every year. 3(3-0) ~~P: MGT 315 or concurrently~~ P: (MGT 315 or concurrently) or (MGT 325 or concurrently) ~~R: Open to seniors or juniors in the Eli Broad College of Business and The Eli Broad Graduate School of Management and not open to students in the School of Hospitality Business.~~ R: Open to juniors or seniors in the Accounting major or in the Finance Major or in the Marketing Major or in the Supply Chain Management Major or in the Business - Admitted major or in the Human Resource Management Major or in the Management Major or in the Retail Management Minor or in the Sports Business Management Minor and not open to students in the School of Hospitality Business.
Contextual framework of employment relations in union and non-union settings; history and labor law; environmental influences and employer and organized labor strategies; collective bargaining process including negotiations; grievance administration and arbitration; public sector employment relations.
~~Effective Spring 2013~~ Effective Spring 2017
- MGT 460 Capstone for Management Majors (W)
Fall of every year. Spring of every year. 3(2-2) ~~P: (MGT 315 or concurrently)~~ P: (MGT 315 or concurrently) or (MGT 325 or concurrently) ~~R: Open to seniors in the General Management major or in the Human Resource Management major.~~ R: Open to seniors in the Human Resource Management Major or in the Management Major or in the Retail Management Minor or in the Sports Business Management Minor.
Topics in management and organizational behavior.
~~Effective Spring 2013~~ Effective Spring 2017

- MGT 479 Sports Business Management
Fall of every year. ~~Spring of every year.~~ 3(3-0) ~~R: Open to juniors or seniors in the Marketing Major or in the General Management Major or in the Media and Information Major. R: Open to juniors or seniors in the Sports Business Management Minor or approval of department.~~
Introduction to current sports industry landscape and impact of business on decision-making in sports. Focus on trends in intercollegiate athletics and professional sports including careers, governance, organizational structure, revenue and sports entertainment.
~~Effective Fall 2015~~ Effective Spring 2017
- MGT 491 Special Topics in Management
Spring of even years. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course. ~~P: MGT 315 or concurrently P: (MGT 315 or concurrently) or (MGT 325 or concurrently) R: Open to juniors or seniors in the Eli Broad College of Business and The Eli Broad Graduate School of Management and not open to students in the School of Hospitality Business. R: Open to juniors or seniors in the Eli Broad College of Business and The Eli Broad Graduate School of Management or in the Retail Management Minor or in the Sports Business Management Minor and not open to students in the School of Hospitality Business.~~
Topics in management such as advanced organizational behavior, managing labor relations, organizational development, organizational theory and design, strategic leadership and decision making.
~~Effective Spring 2013~~ Effective Spring 2017
- ~~MGT 403~~
MGT 493A ~~Fieldwork in Sports Business~~
Sports Business: Internship
Spring of every year. Summer of every year. 3(3-0) P: MGT 479 ~~R: Open to juniors or seniors in the Marketing Major or in the General Management Major. R: Open to juniors or seniors in the Sports Business Management Minor or approval of department. Not open to students with credit in MGT 493B.~~
Supervised, professional work or internship experience in the field of sports business with intercollegiate athletics or professional sports associations, firms, leagues, organizations, teams or sports business and entertainment companies.
SA: MGT 493
~~Effective Fall 2015~~ Effective Spring 2017
- MGT 879 Strategic Management Consulting Projects
Spring of every year. 3(2-2) ~~P: MBA 850 and MGT 877~~ P: MBA 850 R: Open to MBA students.
Team-based, project-oriented course in which students work with a company to analyze a strategic issue facing the company. Development of a consulting engagement from project definition through a final report and recommendations.
Request the use of ET-Extension to postpone grading.
The work for the course must be completed and the final grade reported within 1 semester after the end of the semester of enrollment.
~~Effective Fall 2013~~ Effective Spring 2017

DEPARTMENT OF MARKETING

- MKT 327 Introduction to Marketing
Fall of every year. Spring of every year. Summer of every year. 3(3-0) ~~R: Open to juniors or seniors in the College of Agriculture and Natural Resources or in the College of Communication Arts and Sciences or in the College of Engineering or in the James Madison College or in the College of Social Science or in the College of Arts and Letters. R: Open to juniors or seniors and not open to students in the Accounting major or in the Business - Admitted major or in the Business-Preference major or in the Finance Major or in the Hospitality Business Major or in the Human Resource Management Major or in the Management Major or in the Marketing Major or in the Supply Chain Management Major. Not open to students with credit in MKT 300.~~
Buyer behavior, segmentation, positioning, demand analysis, information, pricing, promotion, channels, product policies, and ethics in consumer, reseller, industrial, and service markets.
SA: MSC 327
~~Effective Spring 2013~~ Effective Spring 2017

MKT 412 Marketing Technology and Analytics
Spring of every year. 3(3-0) Interdepartmental with Information Technology Management. ~~P: (MKT 300 or MKT 327) and MKT 317 and ITM 300~~ P: (MKT 300 or MKT 327) and MKT 317 and ITM 209
R: Open to juniors or seniors in the Eli Broad College of Business and The Eli Broad Graduate School of Management and open to master's students in the Marketing Research major.
Collection and analysis of information from the web, including web-based surveys, web analytics, online communities, blog scraping, and web spiders.
SA: MSC 412
~~Effective Fall 2015~~ Effective Spring 2017

DEPARTMENT OF MATHEMATICS

MTH 235 Differential Equations
Fall of every year. Spring of every year. Summer of every year. 3(4-0) P: MTH 234 or MTH 254H or LB 220 ~~R: Not open to students in the Department of Mathematics or in the Lyman Briggs Computational Mathematics Coordinate Major or in the Lyman Briggs Mathematics Coordinate Major.~~ R: Not open to students in the Bachelor of Science in Mathematics or in the Bachelor of Arts in Mathematics or in the Lyman Briggs Mathematics Coordinate Major. ~~Not open to students with credit in MTH 255H or MTH 340 or MTH 347H.~~ Not open to students with credit in MTH 347H or MTH 340.
Separable and exact equations. Linear equations and variation of parameters. Higher order linear equations. Laplace transforms. Systems of first-order linear equations. Introduction to partial differential equations and Fourier series.
~~Effective Summer 2015~~ Effective Summer 2017

COLLEGE OF MUSIC

MUS 480 Counterpoint
~~Fall of every year.~~ Spring of every year. 2(2-0) P: MUS 381 R: Open to students in the College of Music.
Creative and analytical work with two-and three-part counterpoint in the style of J.S. Bach.
~~Effective Fall 2015~~ Effective Spring 2017

MUS 870 Advanced Modal Counterpoint
Fall of every year. 3(3-0) ~~P: MUS 480 or approval of college~~ P: MUS 869 or approval of college R: Open to graduate students in the College of Music.
Techniques of voice-leading through imitative counterpoint. Compositional exercises modeled after sacred vocal polyphony of the sixteenth century, principally Palestrina and Victoria.
~~Effective Summer 2014~~ Effective Spring 2017

MUS 871 Advanced Tonal Counterpoint
Spring of every year. 3(3-0) ~~P: MUS 480 or approval of college~~ P: MUS 869 or approval of college R: Open to graduate students in the College of Music.
Compositional exercises modeled after instrumental polyphony of the eighteenth century, principally J.S. Bach. Influence of fugal technique in the nineteenth and twentieth centuries.
~~Effective Spring 2014~~ Effective Spring 2017

MUS 872 Tonal Forms
Fall of every year. Spring of every year. 2(2-0) R: Open to graduate students in the College of Music.
Music from the period of common practice and its relationship to music composition. Interplay of melody, harmony, rhythm, and timbre in various structural units.
~~Effective Fall 2007~~ Effective Spring 2017

MUS 873 Early 20th Century Techniques
Spring of every year. 2(2-0) R: Open to graduate students in the College of Music.
Melodic, harmonic, rhythmic, and textural devices employed in early twentieth century music.
~~Effective Fall 2007~~ Effective Spring 2017

- MUS 874 Schenkerian Analysis
Fall of every year. 2(2-0) P: MUS 869 R: Open to graduate students in the College of Music.
Thought, works, and influences of Heinrich Schenker. Techniques of linear analysis emphasizing the role of long-range voice-leading musical structure.
~~Effective Fall 2007~~ Effective Spring 2017
- MUS 971 Pedagogy of Theory II
~~Spring of every year.~~ Spring of odd years. 3(3-0) P: MUS 970 R: Open to graduate students in the College of Music.
Organization, goals, and procedures for teaching second-year and advanced music theory. Includes form, technology, and counterpoint.
~~Effective Fall 2014~~ Effective Spring 2017
- MUS 973 Readings in Music Theory
On Demand. ~~3(3-0) 2(2-0)~~ A student may earn a maximum of 12 credits in all enrollments for this course. A student may earn a maximum of 8 credits in all enrollments for this course. P: MUS 872 or MUS 873 or MUS 869 or MUS 875 or MUS 879 or approval of college R: Open to graduate students in the College of Music.
Exploration of current research trends in music theory. Critical readings of published articles and books. Formulation of independent research projects culminating in a term paper similar in scope to a conference presentation or article.
~~Effective Fall 2016~~ Effective Summer 2017
- MUS 976 Performance and Analysis
~~Spring of every year.~~ Spring of even years. 3(3-0) P: ~~(MUS 872) or (MUS 875) or (MUS 879)~~ P: (MUS 872) or MUS 875 or MUS 879 RB: Familiarity with the content of graduate level basic tonal theory and form courses. R: Open to graduate students in the College of Music.
Representative pieces are studied and prepared for performance in class sessions. Exploration of how analysis can inform a performer's interpretative decisions and expressive choices.
~~Effective Spring 2008~~ Effective Spring 2017
- MUS 977 Schenkerian Analysis II
~~Spring of every year.~~ Spring of odd years. 3(3-0) P: MUS 874 RB: Strong familiarity with advanced tonal theory, form, and Schenkerian analysis. R: Open to graduate students in the College of Music.
Continuation of MUS 874. Analysis of complete compositions or movements from multi-movement works. Compositions to be studied will include ternary and sonata-form pieces. Repertoire of styles will range from Baroque to Romantic. Making voice-leading graphs to become more familiar with Schenker's writings and the secondary literature.
~~Effective Spring 2009~~ Effective Spring 2017
- MUS 978 Seminar in 20th- and 21st-Century Music Theory and Analysis
~~Spring of every year.~~ Spring of even years. 3(3-0) P: MUS 873 R: Open to graduate students in the College of Music.
Study of theories and analytical techniques for post-1900 music.
~~Effective Spring 2008~~ Effective Spring 2017

PROGRAM IN NEUROSCIENCE

- NEU 416 Development of the Nervous System Through the Lifespan
Fall of every year. 3(3-0) ~~interdepartmental with Zoology.~~ Interdepartmental with Integrative Biology
P: NEU 302 or ZOL 402 or PSY 209 RB: ZOL 341 R: Open to undergraduate students in the Program in Neuroscience or in the Department of Integrative Biology or in the Department of Psychology or in the Lyman Briggs Neuroscience Major or in the Lyman Briggs Zoology Coordinate Major.
Development of neurons and their connections, roles of both genetics and behavioral experience in shaping the mammalian nervous system.
~~Effective Fall 2015~~ Effective Fall 2016

NEU 804 Molecular and Developmental Neurobiology
Fall of every year. 3(3-0) ~~Interdepartmental with Pathobiology and Diagnostic Investigation and Pharmacology and Toxicology and Psychology and Zoology. Interdepartmental with Integrative Biology and Pathobiology and Diagnostic Investigation and Pharmacology and Toxicology and Psychology~~ RB: Bachelor's degree in a Biological Science or Psychology. R: Open to graduate students in Neuroscience major.
Nervous system specific gene transcription and translation. Maturation, degeneration, plasticity, and repair in the nervous system.
~~Effective Fall 2006~~ Effective Fall 2016

COLLEGE OF NURSING

NUR 300 Pathophysiology
Fall of every year. Spring of every year. Summer of every year. 4(4-0) ~~P: ANTR 350 and (PSL 310 or PSL 250) P: (ANTR 350) and (PSL 310 or PSL 250)~~ RB: Preprofessional students entering patient care disciplines. Not open to students with credit in NUR 301.
How disrupting normal structures and functions of the human body leads to disease processes from the cellular to the multi-system level. Critical examination of the mechanisms underlying signs and symptoms.
SA: NUR 341
~~Effective Summer 2016~~ Effective Summer 2017

NUR 301 Clinical Pathophysiology
Fall of every year. Spring of every year. Summer of every year. 3(3-0) P: {(PSL 250 or PSL 310) or (PSL 431 and PSL 432)} and ANTR 350 R: Open to students in the College of Nursing. Not open to students with credit in NUR 300.
How disrupting normal structures and functions of the human body leads to disease processes from the cellular to the multisystem level. Critical examination of the mechanisms underlying signs and symptoms of diseases.
~~Effective Fall 2016~~ Effective Summer 2017

DEPARTMENT OF PATHOBIOLOGY AND DIAGNOSTIC INVESTIGATION

PDI 854 Advanced Clinical Pathology
Fall of odd years. ~~2(2-0)~~ 3(2-2) RB: Doctor of Veterinary Medicine degree. R: Approval of department.
~~Hematology, including anemias, leukocyte responses and hemostasis. Evaluation of clinical chemistry, urinalysis, and endocrinology. Interpretation and pathogenesis of veterinary clinical pathology laboratory abnormalities.~~
SA: PTH 854
~~Effective Fall 2009~~ Effective Fall 2017

PDI 855L Advanced Clinical Pathology Laboratory
Fall of odd years. 1(0-2) RB: Doctor of Veterinary Medicine degree. R: Approval of department.
Clinical pathology laboratory techniques including sample preparation and examination of blood smears and cytologic preparations.
DELETE COURSE
Effective Fall 2017

DEPARTMENT OF PHYSIOLOGY

PSL 537 Basic Principles of Pathology
Fall of every year. 1(1-0) R: Open to graduate-professional students in the College of Osteopathic Medicine.
Basic principles of general pathology, with emphasis on principles of cellular adaptations, cell injury, inflammation, tissue repair, hemodynamic disorders, and neoplasia.
Request the use of the Pass-No Grade (P-N) system.
DELETE COURSE
Effective Fall 2016

SCHOOL OF PLANNING, DESIGN AND CONSTRUCTION

- IDES 454 ~~Building Information Modeling and Green Design~~
~~Revit for Designers~~
Fall of every year. ~~3(2-2)~~ 3(3-0) P: ~~IDES 240 and IDES 250~~ R: Open to juniors or seniors.
~~Concepts and application of building information modeling and green design. Concepts~~
~~and application of building information modeling for interior design applications using~~
~~Revit.~~
~~Effective Fall 2014~~ Effective Summer 2017

DEPARTMENT OF ROMANCE AND CLASSICAL STUDIES

- ROM 355 ~~French, Italian and Spanish Cinema since 1930~~
~~French, Italian, Portuguese or Spanish Cinema~~
Spring of even years. 4(2-4) P: ~~Completion of Tier I Writing Requirement~~ R: Not open to freshmen.
~~Major French, Italian, and Spanish films, film movements, and thematic trends. Major~~
~~French, Italian, Portuguese, or Spanish films, film movements, and thematic trends.~~
~~Effective Spring 2014~~ Effective Summer 2017

DEPARTMENT OF STATISTICS AND PROBABILITY

- STT 422 Statistics II
Fall of every year. Spring of every year. Summer of every year. 3(3-0) P: ~~STT 421~~ P: STT 421 or
STT 441 Not open to students with credit in STT 464.
Goodness of fit and other non-parametric methods. Linear models including multiple
regression and ANOVA for simple experimental designs.
~~Effective Fall 2014~~ Effective Fall 2017
- STT 441 Probability and Statistics I: Probability
Fall of every year. Spring of every year. Summer of every year. 3(3-0) P: MTH 234 or MTH 254H or
LB 220 or approval of college
~~Probability models and basic statistics at an intermediate mathematical level. Discrete,~~
~~continuous, univariate, and multivariate distributions. Random variables. Normal~~
~~approximation. Sampling distributions, parameter estimation, and elementary tests of~~
~~hypotheses. Probability, conditional probability and independence. Random variables.~~
~~Discrete, continuous, univariate, and multivariate distributions. Expectation and its~~
~~properties, moment generating functions. Law of large numbers, central limit theorem.~~
~~Effective Fall 2013~~ Effective Fall 2017
- STT 442 Probability and Statistics II: Statistics
Fall of every year. Spring of every year. 3(3-0) P: STT 441 and (MTH 309 or MTH 314 or MTH
317H or MTH 415)
~~Estimation, testing hypotheses and simple and multiple regression analysis. Time series:~~
~~ARMA (Auto Regressive Moving Average) and ARIMA (Auto Regressive Integrated~~
~~Moving Average) models, data analysis and forecasting. Parameter estimation, sampling~~
~~distributions, confidence intervals, hypothesis testing, simple and multiple regression,~~
~~analysis of variance. Time series models, data analysis and forecasting~~
~~Effective Fall 2014~~ Effective Fall 2017
- STT 464 Statistics for Biologists
Fall of every year. 3(3-0) Interdepartmental with Animal Science and Crop and Soil Sciences. P:
~~MTH 103 or MTH 110 or MTH 116~~ P: MTH 103 or MTH 110 or MTH 116 or MTH 132 RB: STT 421
Biological random variables. Estimation of population parameters. Testing hypotheses.
Linear correlation and regression. Analyses of counted data and measured data to compare
several biological groups including contingency tables and analysis of variance.
~~Effective Fall 2014~~ Effective Fall 2016

DEPARTMENT OF SUPPLY CHAIN MANAGEMENT

- SCM 304 Survey of Supply Chain Management
Fall of every year. Spring of every year. Summer of every year. 3(3-0) ~~R: Not open to students in the Eli Broad College of Business and The Eli Broad Graduate School of Management.~~ R: Not open to students in the Business - Admitted major or in the Accounting major or in the Business-Preference major or in the Finance Major or in the Hospitality Business Major or in the Human Resource Management Major or in the Management Major or in the Marketing Major or in the Supply Chain Management Major. Not open to students with credit in SCM 303.
Objectives, processes, and functions of supply chain management activities including procurement, manufacturing, and logistics. The role of supply chain processes in creating competitive advantage with respect to quality, flexibility, lead-time, and cost.
~~Effective Fall 2016~~ Effective Summer 2017

DEPARTMENT OF TEACHER EDUCATION

- TE 407 Teaching Subject Matter to Diverse Learners – Secondary (W)
Fall of every year. 5(3-8) ~~P: (TE 301 or TE 302) or completion of Tier I writing requirement~~ P: (TE 301 or TE 302) and Completion of Tier I Writing Requirement R: Not open to freshmen or sophomores and open to students in the Secondary Teacher Certification Program (Admitted)..
Examining teaching as enabling diverse learners to inquire into and construct subject-specific meanings at the secondary level (7-12). Adapting subject matter to learner diversity. Exploring multiple ways diverse learners make sense of the curriculum.
~~Effective Fall 2014~~ Effective Spring 2017

COLLEGE OF VETERINARY MEDICINE

- VM 558 Digestive Diseases of Domestic Animals
Fall of every year. ~~3(3-0)~~ 3 credits. RB: Completion of Year 2 of the graduate professional program in the College of Veterinary Medicine R: Open to graduate-professional students in the College of Veterinary Medicine.
Digestive diseases of domestic animals. Diagnosis, therapy, prophylaxis, and management.
~~Effective Fall 2009~~ Effective Fall 2016