

MICHIGAN STATE UNIVERSITY

Report of
THE UNIVERSITY COMMITTEE ON CURRICULUM
to the Faculty Senate
Actions by UCC
April 9, 2026

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

April 14, 2026

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.
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

April 14, 2026

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

ELI BROAD COLLEGE OF BUSINESS

1. Change the requirements of the **Master of Science** degree in **Business Data Science and Analytics** in the Eli Broad College of Business. The University Committee on Graduate Studies (UCGS) approved this request at its March 16, 2026 meeting.

- a. Under the heading **Requirements for the Master of Science Degree in Business Data Science and Analytics** replace the entire entry with the following:

The Master of Science degree in Business Data Science and Analytics is available only under Plan B (non-thesis). A total of 30 credits are required for the degree.

	CREDITS
1. Students must complete 21 credits from the following courses:	
CSE 801A Introduction to Big Data Analysis	3
ITM 818 Data Management and Visualization in Analytics	3
ITM 822 Information Systems Project Management	1
ITM 881 Network Analytics	2
ITM 883 Business Analytics Problem Solving	2
ITM 885 Machine Learning and Optimization in Analytics	2
ITM 886 Communication Strategies for Analytics	1
ITM 888 Capstone: Business Analytics	2
PIM 884 AI Governance	2
STT 805 Statistical Modeling for Business Analytics	3

2. One of the following graduate certificates (9 credits). The certificate will be noted on the students transcript.

Accounting Foundations
Business Essentials for Leaders
Digital Innovation in Global Business
Elements of Global Supply Chain Management
Healthcare Management

Other courses or certificates as may be used to fulfill this requirement with approval of the faculty director and/or program director. If other courses are used to satisfy this requirement, a certificate may not be listed on the student's transcript.

Effective Fall 2026.

COLLEGE OF COMMUNICATION ARTS AND SCIENCES

1. Change the requirements for the **Bachelor of Arts** degree in **Communication** in the Department of Communication.

a. Under the heading **Requirements for the Bachelor of Arts Degree in Communication** make the following changes:

(1) In item 3. a. (4) (b) under the **Intercultural Communication** concentration, in item 2. delete the following course:

MI	480	Information and Communication Technologies and Development	3
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(2) In item 3. a. (4) (b) under the **Interpersonal Communication** concentration, in item 2. add the following courses:

HDFS	212	Children, Youth and Family	3
LIN	225	Language and Gender	3
LIN	463	Introduction to Cognitive Science	3
PSY	238	Developmental Psychology: Lifespan	3
SOC	215	Race and Ethnicity	3
SOC	216	Sex, Gender, and Sexuality	3
SOC	315	Family and Society	3
SOC	351	Gendered Violence and Intersections of Power	3

(3) In item 3. a. (4) (b) under the **Social Influence** concentration, in item 2. delete the following course:

PHL	330	Formal Deductive Reasoning	4
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Add the following course:

PHL	330	Formal Deductive Reasoning	3
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Effective Fall 2026.

2. Establish a **Graduate Certificate in Digital Technology and Society** in the Department of Media and Information. The University Committee on Graduate Studies (UCGS) recommended approval of this request at its February 23, 2026 meeting.

a. **Background Information:**

The Master of Science in User Experience (UX) is an existing, fully online program in the Department of Media and Information. The UX committee intends to reach out to potential students who may not normally consider a full Masters experience. To that end, the committee explored competing external ideas, such as bootcamps, undergraduate and graduate programs, and certificates. Our self-study found that graduate certificates are an excellent way to introduce potential students to the fundamentals of UX design and research in a more digestible format. Certificate students may decide to apply to the entire master's program after experiencing the courses. The process to apply to the certificate is the same as applying to the master's, so the transition will be easier.

b. **Academic Programs Catalog Text:**

The Graduate Certificate in Digital Technology and Society is intended for students interested in learning the fundamentals of usability and socially minded design. This certificate program is appropriate for both those new to User Experience and professionals who have little to no user experience, quantitative, or usability background.

Admission

Applications for admission to the program are reviewed by faculty who look for indications of a high probability of success. Such indications include a high level of academic performance, experience with educational technology, and consistency of professional goals with the objectives of the program.

To be considered for admission to the program, an applicant must:

1. Have earned a bachelor's degree from a recognized, accredited educational institution.
2. Present evidence of competency in English, assessed with TOEFL, IELTS, or MELAB scores, if English is not the first language.
3. Submit three letters of recommendation.
4. Submit official transcripts.
5. Submit a resume/CV and portfolio (optional).
6. Submit a 1-2 page statement describing the applicant's background and interest in the program.
7. Submit both departmental and university application forms.

Requirements for the Graduate Certificate in Digital Technology and Society

Students must complete 9 credits from the following:

			CREDITS
UX	810	Social Science for Design	3
UX	835	Accessibility and Design	3
UX	840	UX and Society	3

Effective Fall 2026.

3. Establish a **Graduate Certificate in Human Computer Interaction and Design Research** in the Department of Media and Information. The University Committee on Graduate Studies (UCGS) recommended approval of this request at its February 23, 2026 meeting.

a. **Background Information:**

The master's department builds expertise in several areas. We are highly rated in human computer interaction and usability design as well as several other areas. The students that focus on human computer interaction research and design gain deep expertise and skills in this area. The certificate utilizes classes that are currently offered and will attract new students who want to focus on core human computer interaction and design research courses to finish the certificate. Additionally, since students who apply for the certificate are vetted by the master's committee, using the same standards used for the full master's program, they are eligible to take any of the courses from the full master's program. This will add great value to the full master's program as it recognizes specialized training. The certificate makes it possible to recognize the expertise offered in this area and recognize the work our faculty and students do in this domain.

b. **Academic Programs Catalog Text:**

The Graduate Certificate in Human-Computer Interaction and Design Research is intended for students in the Master of Arts Degree in Media and Information focusing on in-depth technical training in human computer interaction and design research in their training. The certificate provides acknowledgement of the skills and training students complete.

Admission

Application to the program requires inclusion of (1) a personal statement; (2) an academic statement; and (3) a CV or resume.

Students must also include one or more of the following: (1) a portfolio; (2) a research paper showing the students' work or scores on the Graduate Record Examination.

Students must have graduated from an undergraduate program from a recognized

institution. International students must pass the English language competency test.

Requirements for the Graduate Certificate in Human Computer Interaction and Design Research

			CREDITS
Students must complete 9 credits from the following courses:			
MI	839	Game and Project Design Studio I	3
MI	841	Advanced Methods of Understanding Users	3
MI	844	Interaction Design	3
MI	845	Interactive Usability and Accessibility: Design and Evaluation	3

Effective Fall 2026.

4. Establish a **Graduate Certificate in Research Methods for User Experience** in the Department of Media and Information. The University Committee on Graduate Studies (UCGS) recommended approval of this request at its February 23, 2026 meeting.

a. **Background Information:**

The Master of Science in User Experience (UX) is an existing, fully online program in the Department of Media and Information. The UX committee intends to reach out to potential students who may not normally consider a full Masters experience. To that end, the committee explored competing external ideas, such as bootcamps, undergraduate and graduate programs, and certificates. Our self-study found that graduate certificates are an excellent way to introduce potential students to the fundamentals of UX design and research in a more digestible format. Certificate students may decide to apply to the entire master’s program after experiencing the courses. The process to apply to the certificate is the same as applying to the master’s, so the transition will be easier.

b. **Academic Programs Catalog Text:**

The Graduate Certificate in Research Methods for User Experience is designed for students interested in researching and expanding upon their knowledge in the areas of user experience, quantitative methods, user experience/usability evaluation, and sub-genres within.

Admission

Applications for admission to the program are reviewed by faculty who look for indications of a high probability of success. Such indications include a high level of academic performance, experience with educational technology, and consistency of professional goals with the objectives of the program.

To be considered for admission to the program, an applicant must:

1. Have earned a bachelor’s degree from a recognized, accredited educational institution.
2. Present evidence of competency in English, assessed with TOEFL, IELTS, or MELAB scores, if English is not the first language.
3. Submit three letters of recommendation.
4. Submit official transcripts.
5. Submit a resume/CV and portfolio (optional).
6. Submit a 1-2 page statement describing the applicant’s background and interest in the program.
7. Submit both departmental and university application forms.

Requirements for the Graduate Certificate in Research Methods for User Experience

			CREDITS
Students must complete 9 credits from the following:			
UX	800	User Research and Design	3
UX	805	Quantitative Analysis and Insights for UX	3
UX	820	Usability Evaluation	3

Effective Fall 2026.

5. Establish a **Graduate Certificate in User Experience Design Fundamentals** in the Department of Media and Information. The University Committee on Graduate Studies (UCGS) recommended approval of this request at its February 23, 2026 meeting.

a. **Background Information:**

The Master of Science in User Experience (UX) is an existing, fully online program in the Department of Media and Information. The UX committee intends to reach out to potential students who may not normally consider a full Masters experience. To that end, the committee explored competing external ideas, such as bootcamps, undergraduate and graduate programs, and certificates. Our self-study found that graduate certificates are an excellent way to introduce potential students to the fundamentals of UX design and research in a more digestible format. Certificate students may decide to apply to the entire master's program after experiencing the courses. The process to apply to the certificate is the same as applying to the master's, so the transition will be easier.

b. **Academic Programs Catalog Text:**

The Graduate Certificate in User Experience Design Fundamentals is intended for those students interested in learning the fundamentals of visual design, programming, and interactivity with an application towards user experience.

Admission

Applications for admission to the program are reviewed by faculty who look for indications of a high probability of success. Such indications include a high level of academic performance, experience with educational technology, and consistency of professional goals with the objectives of the program.

To be considered for admission to the program, an applicant must:

1. Have earned a bachelor's degree from a recognized, accredited educational institution.
2. Present evidence of competency in English, assessed with TOEFL, IELTS, or MELAB scores, if English is not the first language.
3. Submit three letters of recommendation.
4. Submit official transcripts.
5. Submit a resume/CV and portfolio (optional).
6. Submit a 1-2 page statement describing the applicant's background and interest in the program.
7. Submit both departmental and university application forms.

Requirements for the Graduate Certificate in User Experience Design Fundamentals

			CREDITS
Students must complete 9 credits from the following:			
UX	815	Programming Fundamentals for UX	3
UX	825	Visual Design Fundamentals	3
UX	830	Design for Interactivity	3

Effective Fall 2026.

COLLEGE OF EDUCATION

1. Change the requirements for the **Teacher Certification Program** in the Department of Teacher Education. The Teacher Education Council (TEC) approved this request at its March 5, 2026 meeting.

- a. Under the heading **TEACHER CERTIFICATION** replace the section on **ADMISSION TO THE TEACHER CERTIFICATION PROGRAM** with the following:

ENTERING THE TEACHER CERTIFICATION PROGRAM

The Michigan State University Teacher Preparation Program has moved away from secondary admission and only requires prospective teacher candidates to declare their intent to pursue teacher certification. The declarations process is described here: <https://education.msu.edu/teacher-preparation/applying/applying-msu-students>.

MSU undergraduates generally declare during the first semester of the sophomore year, although they may do so later.

At the time of declaration, students must:

1. Be an active student at Michigan State University.
2. Have earned a minimum of 28 credits.
3. Have disclosed any prior convictions or civil infractions and provided required court documents as necessary.

- b. Under the heading **REQUIREMENTS FOR TEACHER CERTIFICATION** make the following changes:

- (1) Under the heading **Course Requirements for Birth to Kindergarten Certification** delete the following course:

TE	301A	Children's Literacy Development (W)	3
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Add the following course:

TE	301	Children's Literacy Development (W)	3
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- (2) Under the section **Course Requirements for Elementary Teacher Certification** make the following changes:

- (a) Replace item b. (2) with the following:

<i>Literacy</i>			
TE	301	Children's Literacy Development (W)	3

- (b) In item d. **English as a Second Language** make the following changes:

- (i) In item (1) add the following course:

TE	301	Children's Literacy Development (W)	3
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- (ii) In item (1) change the total credits from '16' to '19'.

- (iii) Delete item (3) and renumber items (4) and (5) respectively.

- (3) Under the section **Course Requirements for PK-12 Teacher Certification** make the following changes:

- (a) Replace item b. (2) **Visual Arts** with the following:

Visual Arts (19 credits)			
STA	310	Clinical Experience in Visual Arts Education I	4

STA	410	Clinical Experience in Visual Arts Education II	3
STA	411	Seminar in Visual Arts Education I (W)	3
STA	412	Seminar in Visual Arts Education II (W)	3
STA	413	Student Teaching Internship in Visual Arts Education	6

Effective Fall 2026.

COLLEGE OF ENGINEERING

1. Change the requirements in the **Bachelor of Science** degree in **Chemical Engineering** in the Department of Chemical Engineering and Materials Science.

The concentrations in the Bachelor of Science degree in Chemical Engineering are 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 Chemical Engineering** make the following changes:

- (1) In item 3. a., change the total credits from '54' to '57' and delete the following courses:

CEM	152	Principles of Chemistry	3
CEM	351	Organic Chemistry I	3
CEM	352	Organic Chemistry II	3

Add the following courses:

CEM	152	Principles of Chemistry	4
CEM	351	Organic Chemistry I	4
CEM	352	Organic Chemistry II	4

- (2) Delete item 3. b. and reletter item 3. c., 3. d., and 3.e. respectively.

- b. Under the heading **Concentrations in Chemical Engineering** make the following changes:

- (1) Under the **Biochemical Engineering** concentration, replace the entire entry with the following:

To earn a Bachelor of Science degree in Chemical Engineering with a biochemical engineering concentration, students must complete requirements 1., 2., 3. a., and 3.c. above and the following:

Both of the following courses (6 credits):

CHE	481	Biochemical Engineering	3
MGI	301	Introductory Microbiology	3

One of the following tracks (8 to 10 credits):

Track 1 (9 or 10 credits):

The following course (4 credits):

BMB	401	Comprehensive Biochemistry	4
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Two of the following courses (5 or 6 credits):

BMB	805	Protein Structure, Design, and Mechanism	3
BMB	829	Special Problems in Macromolecular Analysis and Synthesis	2

CHE	882	Advanced Biochemical Engineering	3
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CHE	883	Multidisciplinary Bioprocessing Laboratory	3
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MGI	409	Eukaryotic Cell Biology	3
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MGI	421	Prokaryotic Cell Physiology	3
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MGI	431	Microbial Genetics	3
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Track 2 (8 or 9 credits):

Both of the following courses (6 credits):

BMB	461	Advanced Biochemistry I	3
BMB	462	Advanced Biochemistry II	3

One of the following courses (2 or 3 credits):

- | | | | | |
|--|-----|-----|---|---|
| | BMB | 805 | Protein Structure, Design, and Mechanism | 3 |
| | BMB | 829 | Special Problems in Macromolecular Analysis and Synthesis | 2 |
| | CHE | 882 | Advanced Biochemical Engineering | 3 |
| | CHE | 883 | Multidisciplinary Bioprocessing Laboratory | 3 |
| | MGI | 409 | Eukaryotic Cell Biology | 3 |
| | MGI | 421 | Prokaryotic Cell Physiology | 3 |
| | MGI | 431 | Microbial Genetics | 3 |
- (2) Under the **Bioenergy and Bioproducts** concentration make the following changes:
- (a) Delete the references to requirements 3.b. and 3.d. and replace with 3.c.
- (b) Delete the following course:
- | | | | | |
|--|-----|-----|--------------------------------|---|
| | CSS | 467 | Bioenergy Feedstock Production | 3 |
|--|-----|-----|--------------------------------|---|
- Add the following course:
- | | | | | |
|--|------|-----|--------------------------------|---|
| | CROP | 467 | Bioenergy Feedstock Production | 3 |
|--|------|-----|--------------------------------|---|
- (3) Under the **Biomedical Engineering** concentration replace the entire entry with the following:
- To earn a Bachelor of Science degree in Chemical Engineering with a biomedical engineering concentration, students must complete requirements 1., 2., 3.a., 3.c. above and the following:
- Both of the following courses (7 credits):
- | | | | |
|-----|-----|----------------------------|---|
| BMB | 401 | Comprehensive Biochemistry | 4 |
| CHE | 481 | Biochemical Engineering | 3 |
- One of the following courses (3 or 4 credits):
- | | | | |
|-----|-----|-------------------------|---|
| MGI | 409 | Eukaryotic Cell Biology | 3 |
| PSL | 431 | Human Physiology I | 4 |
- One of the following courses not taken above (3 credits):
- | | | | |
|-----|-----|--|---|
| BME | 860 | NanoEngineering in Biomedicine | 3 |
| CHE | 883 | Multidisciplinary Bioprocessing Laboratory | 3 |
| ME | 494 | Biofluid Mechanics and Heat Transfer | 3 |
| MSE | 425 | Biomaterials and Biocompatibility | 3 |
- One of the following courses not taken above (3 or 4 credits):
- | | | | |
|------|-----|--|---|
| ANTR | 350 | Human Gross Anatomy for Pre-Health Professionals | 4 |
| BME | 860 | NanoEngineering in Biomedicine | 3 |
| CHE | 883 | Multidisciplinary Bioprocessing Laboratory | 3 |
| IBIO | 341 | Fundamental Genetics | 4 |
| ME | 494 | Biofluid Mechanics and Heat Transfer | 3 |
| MGI | 409 | Eukaryotic Cell Biology | 3 |
| MSE | 425 | Biomaterials and Biocompatibility | 3 |
| PSL | 431 | Human Physiology I | 4 |
- (4) Under the **Environmental** concentration make the following changes:
- (a) Delete the references to requirements 3.b. and 3.d. and replace with 3.c.
- (b) Delete the following course:
- | | | | | |
|--|------|-----|--|---|
| | IBIO | 446 | Environmental Issues and Public Policy | 3 |
|--|------|-----|--|---|
- (5) Under the **Food Science** concentration make the following changes:
- (a) Delete the reference to requirements 3.d.
- (b) Delete the following course:
- | | | | | |
|--|-----|-----|---|---|
| | CEM | 482 | Science and Technology of Wine Production | 3 |
|--|-----|-----|---|---|
- Add the following course:

FSC 482 Science and Technology of Wine Production 3

- (6) Under the **Polymer Science and Engineering** concentration make the following changes:
- (a) Delete the references to requirements 3.b. and 3.d. and replace with 3.c.

Effective Fall 2026.

2. Change the requirements in the **Bachelor of Science** degree in **Materials Science and Engineering** in the Department of Chemical Engineering and Materials Science.

The concentrations in the Bachelor of Science degree in Materials Science and Engineering are 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 Materials Science and Engineering**, make the following change:

- (1) In item 3. a. make the following changes:

- (a) Delete the following courses:

CEM	152	Principles of Chemistry	3
ECE	345	Electronic Instrumentation and Systems	3

Add the following course:

CEM	152	Principles of Chemistry	4
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- (b) Change the total credits from '41' to '39'.

- (c) Delete the note.

- b. Under the heading **Concentrations in Materials Science and Engineering** make the following changes:

- (1) Under **Biomedical Materials Engineering** make the following changes:

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

ANTR	350	Human Gross Anatomy for Pre-Health Professionals	3
CEM	251	Organic Chemistry I	3
CEM	351	Organic Chemistry I	3

Add the following courses:

ANTR	350	Human Gross Anatomy for Pre-Health Professionals	4
CEM	251	Organic Chemistry I	4
or			
CEM	351	Organic Chemistry I	4

- (b) In item 1., change the total credits from '12' to '14'.

- (c) Change the total credits for the concentration from '25' to '27'.

- (2) Under **Polymeric Engineering** make the following changes:

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

CEM	251	Organic Chemistry I	3
CEM	252	Organic Chemistry II	3
CEM	351	Organic Chemistry I	3

CEM 352 Organic Chemistry II 3

Add the following courses:

CEM 251 Organic Chemistry I 4
or
CEM 351 Organic Chemistry I 4
CEM 252 Organic Chemistry II 4
or
CEM 352 Organic Chemistry II 4

- (b) In item 1., change the total credits from '19' to '21'.
- (c) Change the total credits for the concentration from '22' to '24'.

Effective Fall 2026.

- 3. Change the requirements for the **Bachelor of Science** degree in **Computational Data Science** in the Department of Computational Mathematics, Science, and Engineering.

The concentration in the Bachelor of Science degree in Computational Data Science 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 Computational Data Science** make the following changes:

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

MMG 141 Introductory Human Genetics 3
MMG 201 Fundamentals of Microbiology 3

Add the following courses:

MGI 141 Introductory Human Genetics 3
MGI 201 Fundamentals of Microbiology 3

- (2) In item 3. b., make the following changes:

- (a) Delete the following courses:

CSE 380 Information Management and the Cloud 3
CSE 480 Database Systems 3

Add the following course:

CSE 380 Data Management and the Cloud 4

- (b) Change the total credits from '47' to '45'.

- (3) Replace item 3.c. with the following:

Five courses selected from the following (15 to 17 credits):
CMSE 401 Methods for Parallel Computing 4
CMSE 402 Data Visualization Principles and Techniques 3
CSE 335 Software Engineering I 4
CSE 402 Biometrics and Pattern Recognition 3
CSE 415 Introduction to Parallel Computing 3
CSE 431 Algorithm Engineering 3
CSE 434 Autonomous Vehicles 3
CSE 440 Artificial Intelligence 3
CSE 446 AI Agents 3

CSE	471	Media Processing and Multimedia Computing	3
CSE	472	Computer Graphics	3
CSE	475	Computational Human-Computer Interaction	3
CSE	480	Database Systems	3
CSE	492	Selected Topics in Data Science	3
MTH	451	Numerical Analysis I	3
MTH	468	Predictive Analytics	3
STT	464	Statistics for Biologists	3
STT	465	Bayesian Statistical Methods	3

- (4) Delete item 3.d.
- (5) Add the following concentration:

Concentration in Software Engineering

The department offers the following concentration to students wanting an area of specialization in their degree. The concentration is available to, but not required of, any student enrolled in the Bachelor of Science degree program in Computational Data Science. NOTE: Completing the Bachelor of Science degree in Computational Data Science with a concentration may require more than 120 credits. Upon completion of the required courses for a concentration, certification will appear on the student’s official transcript.

Software Engineering

To complete a Bachelor of Science degree in Computational Data Science with a software engineering concentration, students must complete the requirements for the bachelor’s degree, including the following:

The following courses (8 credits):

CSE	335	Software Engineering I	4
CSE	336	Software Engineering II	4

Effective Fall 2026.

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

The concentrations in the Bachelor of Science degree in Computer Science are 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 Science** make the following changes:

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

CSE	320	Computer Organization and Architecture	3
CSE	380	Information Management and the Cloud	3

Add the following courses:

CSE	235	Tools, Teamwork, and Time	3
CSE	320	Computer Organization and Architecture	4
CSE	336	Software Engineering II	4
CSE	345	Fundamentals of Applied Intelligence	3
CSE	380	Data Management and the Cloud	4

- (2) In item 3. b. add the following courses to the note:

CSE 336, CSE 345

- (3) Change the total credits of item 3. b. from ‘32’ to ‘44’.

- (4) In item 3. d. add the following courses:
- | | | | |
|-----|-----|--|---|
| CSE | 416 | Software Performance Engineering | 3 |
| CSE | 446 | AI Agents | 3 |
| CSE | 475 | Computational Human-Computer Interaction | 3 |

- (5) Delete item 3. e. **Required Cognate**.

b. Under the heading **Concentrations in Computer Science** make the following changes:

- (1) Under **Artificial Intelligence** add the following course under the list of 'Three of the following courses not taken above (9 to 12 credits):

CSE	456	AI Agents	3
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- (2) Under **Computer Systems** add the following course:

CSE	416	Software Performance Engineering	3
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- (3) Under **Multimedia and Graphics** make the following changes:

- (a) Under the list of 'Three of the following courses not taken above (8 or 9 credits)', delete the following courses:

FLM	230	Introduction to Film	3
FLM	260	Introduction to Digital Film and Emergent Media	3

Add the following courses:

CSE	475	Computational Human-Computer Interaction	3
FLM	230	Introduction to Film	4
FLM	260	Introduction to Digital Film and Emergent Media	4

- (4) Delete the **Software Engineering** concentration.

Effective Spring 2027.

5. Change the requirements in the **Minor in Computer Science** in the Department of Computer Science and Engineering.

a. Under the heading **Requirements for the Minor in Computer Science** make the following changes:

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

CSE	320	Computer Organization and Architecture	3
CSE	380	Information Management and the Cloud	3

Add the following courses:

CSE	320	Computer Organization and Architecture	4
CSE	336	Software Engineering II	4
CSE	345	Foundations of Artificial Intelligence	3
CSE	380	Data Management and the Cloud	4
CSE	475	Computational Human-Computer Interaction	3

Effective Spring 2027.

COLLEGE OF NATURAL SCIENCE

1. Establish a **Master of Science** degree in **Medical Neuroscience** in the College of Natural Science. The University Committee on Graduate Studies (UCGS) recommended approval of this request at its February 23, 2026 meeting.

- a. **Background Information:**

The development of the Master of Science degree in Medical Neuroscience responds to several key considerations and market needs. Many working professionals in healthcare, biomedical research, and related fields seek advanced credentials to enhance their career prospects. The program specifically supports individuals pursuing career advancement, academic enhancement, or preparation for further graduate and professional study. Pre-health students and those seeking admission to medical, dental, physician assistant, and other health professions programs require strong foundational knowledge in neuroscience. Similarly, students planning doctoral study in neuroscience, psychology, or related disciplines benefit from comprehensive graduate-level preparation. The fully online format addresses the needs of diverse learners, including working professionals, those with geographic constraints, and students requiring flexible scheduling options. This delivery method expands access to high-quality neuroscience education beyond traditional on-campus offerings and complements and extends existing neuroscience offerings at Michigan State University while serving a distinct student population. The program shares core courses with the Graduate Certificate in Medical Neuroscience, providing multiple pathways for students to pursue their academic and professional goals. The program's online delivery distinguishes it from existing in-person neuroscience courses, expanding access and serving students who cannot participate in traditional on-campus programs.

The Medical Neuroscience M.S. program positions MSU competitively within the national landscape of neuroscience graduate education. Many institutions offer either broad neuroscience programs or highly specialized clinical neuroscience tracks. This program fills a market gap by providing comprehensive medical neuroscience training that bridges basic science with clinical applications while remaining accessible to students with diverse academic backgrounds. While numerous institutions offer campus-based neuroscience master's programs, fewer provide high-quality online options. The fully online format positions MSU to serve a national student population seeking flexible, accessible graduate neuroscience education.

- b. **Academic Programs Catalog Text:**

The Master of Science degree in Medical Neuroscience is a fully online degree program that provides rigorous graduate-level training in human neuroscience, designed for individuals seeking career advancement, academic enhancement, or preparation for graduate and professional school. The program emphasizes both cellular/molecular and systems-level understanding of the nervous system in health and disease, and includes training in current topics in neuroscience research, neuroethics, and the social determinants of health.

This flexible program supports a wide range of learners—from those preparing for professional or doctoral programs to those transitioning into neuroscience-related careers or seeking advancement in biomedical or healthcare industries.

Admission

To be considered for admission to the Master of Science Degree in Medical Neuroscience, students must:

1. Have a bachelor's degree in a biological science background or in another area with equivalent work experience.
2. Have an undergraduate or graduate grade-point average or work experience that would indicate expected success in graduate school.
3. Write a reflective essay describing how the master's program will enhance their professional and personal development.
4. Provide three letters of recommendation.
5. Submit a CV or resume.

Requirements for the Master of Science Degree in Medical Neuroscience

CREDITS

A total of 30 credits are required for the degree under Plan B (non-thesis).
 The program is available only online.

1. Both of the following foundational courses (6 credits):

	NEU	848	Cellular and Molecular Medical Neuroscience	3
	NEU	849	Medical Neuroscience Systems and Anatomy	3
2. All of the following courses (14 credits):

	NEU	842	Neuroethics	3
	NEU	846	Neurobiology of Nervous System Disorders	3
	NEU	847	Development of the Nervous System	3
	NEU	850	Neuroscience Seminar Series	3
	NEU	891	Special Problems in Medical Neuroscience	2

NEU 850 is completed in three enrollments of 1 credit each.
3. One of the following options (3 or 4 credits):
 - a.

	NEU	845	Neuroscience of Drug Use and Human Disorders	3
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 - b.

	PHM	819	Principles of Drug-Tissue Interactions	2
	PHM	829	Neuropharmacology	2
 - c.

	PHM	431	Pharmacology of Drug Addition	3
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4. One of the following courses (3 credits):

	NUR	804	Statistics for the Healthcare Professional	3
	PH	802	Biostatistics for Public Health	3
	STT	421	Statistics I	3

Another statistics course may be used to fulfill this requirement with approval by the program director.
5. Complete 3 or 4 credits from the following:

	BLD	830	Concepts in Molecular Biology	2
	BMB	401	Comprehensive Biochemistry	4
	LIN	463	Introduction to Cognitive Science	3
	PH	803	Epidemiology and Public Health	3
	PH	806	Environmental Factors of Health	3
	PHM	817	Neurotoxicology	2
6. Successfully complete the Responsible and Ethical Conduct of Research (RECR) year 1 modules and 6 hours of discussion-based (RECR) education.
7. Pass a final oral examination or evaluation.

Effective Fall 2026.

2. Change the requirements for the **Graduate Certificate in Medical Neuroscience** in the Program in Neuroscience. The University Committee on Graduate Studies (UCGS) recommended approval of this request at its February 23, 2026 meeting.
 - a. Under the heading **Requirements for the Graduate Certificate in Medical Neuroscience** replace the entire entry with the following:

Students must complete a minimum of 12 credits from the following courses:

1. All of the following courses (9 credits):

	NEU	846	Neurobiology of Nervous System Disorders	3
	NEU	848	Cellular and Molecular Medical Neuroscience	3
	NEU	849	Medical Neuroscience Systems and Anatomy	3
2. At least 3 credits from the following courses:

	NEU	842	Neuroethics	3
	NEU	845	Neuroscience of Drug Use and Human Disorders	3
	NEU	847	Development of the Nervous System	3
	PHM	431	Pharmacology of Drug Addiction	3
	PHM	817	Neurotoxicology	2
	PHM	819	Principles of Drug-Tissue Interactions	2
	PHM	829	Neuropharmacology	2

Effective Fall 2026.

COLLEGE OF SOCIAL SCIENCE

1. Establish a **Graduate Certificate in Work and Organizational Psychology** in the Department of Psychology. The University Committee on Graduate Studies (UCGS) recommended approval of this request at its February 23, 2026 meeting.

- a. **Background Information:**

This proposal is to establish a completely online graduate certificate program in Work and Organizational Psychology in the Department of Psychology. This certificate program is an extension of our master's in science in Work and Organizational Psychology. The target audiences are students pursuing an advanced degree for whom a certificate would expand their skills and career options, but who are not interested in earning a master's degree. There are no similar online certificate programs with this focus at MSU. MSU is strongly positioned to offer an online certificate in Work and Organizational Psychology. MSU's reputation of providing high quality education will draw students to the program and strengthen demand for our graduates on the job market. Additionally, Organizational Psychology is an international discipline, thus MSU's reputation as a leader in international education will help extend the reach of this program to students from other countries. Also, due to MSU's land grant philosophy and long-standing commitment to outreach and engagement, it fits well with an applied program in Work and Organizational Psychology.

- b. **Academic Programs Catalog Text:**

The Graduate Certificate in Work and Organizational Psychology is designed for students to develop knowledge and skills in organizational theory, the development of best practices relevant to the role and responsibilities of positions in organization psychology that meet professional practice standards and act ethically in work relevant situations.

Graduates will be able to plan and design interventions to improve organizational effectiveness and enhance individual well-being, and develop business action plans and communicate plans and results effectively. The certificate is available only online.

Admission

To be considered for the Graduate Certificate in Work and Organizational Psychology, an applicant must:

1. have a bachelor's degree from a recognized educational institution;
2. have an academic record equivalent to at least a 3.00 in the last two years of undergraduate work;
3. possess attributes such as intellectual curiosity, analytical thinking, and perseverance to have a high degree of potential for completion of the program and advancement to the roles and duties of individuals in an Organizational Psychology position.
4. submit three letters of recommendation and a personal statement regarding their academic and professional goals and experience.
5. if an international student, submit TOEFL scores.

Requirements for the Graduate Certificate in Work and Organizational Psychology

CREDITS

Students must complete 12 credits from the following:

1. All of the following courses (6 credits):

PSY	806	Consulting Roles and Professional Development	2
PSY	816	Current Topics in Work and Organizational Psychology	2
PSY	856	Making the Business Case	2
2. Complete three additional elective courses from the following (6 credits):

PSY	807	Quantitative Analysis I	2
PSY	821	Staffing Organizations	2
PSY	822	Performance Management	2
PSY	823	Workplace Learning and Development	2
PSY	830	Special Topics	2
PSY	824	Employee Attitudes and Engagement	2

PART II - NEW COURSES

DEPARTMENT OF ANIMAL SCIENCE

ANS 426 Nutritional Immunology
Fall of every year. 3(3-0) P: ANS 313 R: Open to students in the Animal Science Major or in the Lyman Briggs Animal Science Coordinate Major. Not open to students with credit in ANS 826.
Intersection of nutrition and dietary components with immune function and overall animal health.
Effective Summer Semester 2026

ANS 826 Nutritional Immunology
Fall of every year. 3(3-0) RB: Previous coursework in nutrition and immunology R: Open to graduate students in the Department of Animal Science. Not open to students with credit in ANS 426.
Intersection of nutrition and dietary components with immune function and overall animal health.
Effective Summer Semester 2026

DEPARTMENT OF ART, ART HISTORY, AND DESIGN

STA 475 Photography Workshop
Spring of every year. 3(0-6) A student may earn a maximum of 18 credits in all enrollments for this course. P: STA 375 or STA 472 or STA 474

REINSTATEMENT Individualized study, resulting in a portfolio expressing a cohesive, creative vision suitable for exhibition and professional presentation. Projects may address contemporary photographic issues in any creative field or format, from digital through antique processes.
Effective Fall Semester 2026

STA 475S Senior Project in Photography
Spring of every year. 3(0-6) R: Open to seniors in the Bachelor of Fine Arts in Studio Art. Approval of department. ~~C: STA 475 concurrently~~ C: STA 475 concurrently

REINSTATEMENT Intensive studio work in photography.
Effective Fall Semester 2026

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CSE 235 Tools, Teamwork, and Time
Fall of every year. Spring of every year. 3(3-0) P: CSE 231
Tools utilized by computing professionals, effective teamwork, and time management
Effective Fall Semester 2026

CSE 336 Software Engineering II
Fall of every year. Spring of every year. 4(4-0) P: (CSE 335) and completion of Tier I writing requirement R: Open to students in the Computer Science Minor or in the Applied Engineering Sciences Major or in the Computational Data Science Major or in the Computer Engineering Major or in the Computer Science Major or in the Lyman Briggs Computer Science Coordinate Major.
Development of large software systems using modern software engineering methodologies.
Effective Fall Semester 2026

CSE 345 Foundations of Artificial Intelligence
Fall of every year. Spring of every year. 3(3-0) P: CSE 331 R: Open to students in the Applied Engineering Sciences Major or in the Computational Data Science Major or in the Computer Engineering Major or in the Computer Science Minor or in the Computer Science Major or in the Lyman Briggs Computer Science Coordinate Major or in the Data Science Major or in the Lyman Briggs Data Science Coordinate Major.
Understanding and applying the technologies that support modern artificial intelligence applications
Effective Fall Semester 2026

- CSE 416 Software Performance Engineering
Fall of every year. 3(3-0) P: (CSE 331) and (CSE 320 or ECE 331) R: Open to undergraduate students in the College of Engineering or in the Department of Computer Science and Engineering or in the Lyman Briggs Computer Science Coordinate Major.
Provides a hands-on, project-based introduction to building scalable and high-performance software systems.
Effective Fall Semester 2026
- CSE 446 AI Agents
Fall of every year. 3(3-0) P: CSE 335 or CSE 380 or CMSE 381 R: Open to undergraduate students in the College of Engineering or in the Department of Computer Science and Engineering or in the Lyman Briggs Computer Science Coordinate Major or in the Data Science Major or in the Lyman Briggs Data Science Coordinate Major. Not open to students with credit in CSE 846.
The design, implementation, and evaluation of large language model (LLM)-based agents.
Effective Fall Semester 2026
- CSE 475 Computational Human-Computer Interaction
Spring of every year. 3(3-0) P: CSE 335 or CSE 476 or CSE 477 R: Open to undergraduate students in the College of Engineering or in the Department of Computer Science and Engineering or in the Lyman Briggs Computer Science Coordinate Major or in the Data Science Major or in the Lyman Briggs Data Science Coordinate Major.
Principles of interaction between humans and interactive computing systems.
Effective Spring Semester 2027

DEPARTMENT OF ECONOMICS

- EC 495 Economics of Poverty and Income Distribution (W)
Fall of every year. 3(3-0) P: (EC 251H or EC 301) and Completion of Tier I Writing Requirement
REINSTATEMENT Theory of the distribution of income and wealth. Concepts and measurement of welfare.
Definitions of poverty. Effects of public and private programs on the poor.
Effective Spring Semester 2027

DEPARTMENT OF ENTOMOLOGY

- ENT 891 Special Topics in Entomology
Fall of every year. Spring of every year. Summer of every year. 1 to 4 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
Emerging or important topics in entomological science and pest management.
Effective Fall Semester 2026

DEPARTMENT OF FOOD SCIENCE AND HUMAN NUTRITION

- FSC 858 Food Microbiology Omics and Fermentations
Spring of even years. 3(3-0) RB: FSC 440 or MGI 431 or MGI 301 R: Open to graduate students.
Exploring microbial communities in food systems with emphasis on multi-omics approaches in microbial food safety, fermentations and human health.
Effective Spring Semester 2026

DEPARTMENT OF FORESTRY

- FOR 291 Careers in Forestry Seminar
Fall of every year. 1(1-0) R: Open to undergraduate students in the Forestry Major or in the Lyman Briggs Forestry Coordinate Major and open to undergraduate students in the Forestry Minor or approval of department.
Professional development, career preparation and exploration of career pathways in Forestry.
Request the use of the Pass-No Grade (P-N) system.
Effective Fall Semester 2026

DEPARTMENT OF HORTICULTURE

- HRT 475 International Studies in Horticulture
Spring of odd years. Summer of every year. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: HRT 203 and HRT 204 R: Approval of department; application required.
- REINSTATEMENT Study and travel experience emphasizing contemporary problems, issues, and trends in horticulture.
Effective Summer Semester 2026

DEPARTMENT OF LINGUISTICS, LANGUAGES AND CULTURES

- LIN 884 Foundations of Data Science in R
Fall of every year. 3(3-0) Not open to students with credit in LIN 484.
Introduction to data processing, data visualization, and statistical analysis in R. Course concepts and learning outcomes are general for any field, including linguistics.
Effective Fall Semester 2026
- LL 175 Facilitated Interdependent Language Learning (FILL) for Less Commonly Taught Languages
Fall of every year. Spring of every year. 1 to 3 credits. A student may earn a maximum of 12 credits in all enrollments for this course. RB: self-motivated students and prior language learning experience
Facilitated Interdependent Language Learning (FILL) for beginners. Allows students to study languages or levels not otherwise taught at MSU. Through interdependent study with other learners, students set personal goals in order to improve their language skills in all modes of communication as well as their cultural competency.
Effective Fall Semester 2026
- LL 475 Facilitated Interdependent Language Learning (FILL) for Less Commonly Taught Languages
Fall of every year. Spring of every year. 1 to 3 credits. A student may earn a maximum of 12 credits in all enrollments for this course. RB: self-motivated students and prior language learning experience
Facilitated Interdependent Language Learning (FILL) for advanced students. Allows students to study languages or levels not otherwise taught at MSU. Through interdependent study with other learners, students set personal goals in order to improve their language skills in all modes of communication as well as their cultural competency.
Effective Fall Semester 2026

PROGRAM IN NEUROSCIENCE

- NEU 848 Cellular and Molecular Medical Neuroscience
Fall of every year. 3(3-0) RB: Undergraduate degree in the biological sciences R: Not open to doctoral students in the Program in Neuroscience. Not open to students with credit in NEU 841.
Survey of the genetic, molecular, and cellular biology of the nervous system with an emphasis on medical applications.
Effective Fall Semester 2026
- NEU 849 Medical Neuroscience Systems and Anatomy
Spring of every year. 3(3-0) P: NEU 848 RB: Undergraduate degree in the biological sciences R: Not open to doctoral students in the Program in Neuroscience. Not open to students with credit in NEU 841.
Survey of the anatomy and physiology of neuronal mechanisms that regulate behavior, learning, and cognition with an emphasis on medical applications.
Effective Spring Semester 2027
- NEU 850 Neuroscience Seminar Series
Fall of every year. Spring of every year. 1(1-0) A student may earn a maximum of 3 credits in all enrollments for this course. R: Open to graduate students in the Program in Neuroscience.
Current research topics in neuroscience presented through weekly seminars featuring faculty, visiting scholars, and advanced graduate students.
Effective Fall Semester 2026

- NEU 891 Special Problems in Medical Neuroscience
Spring of every year. 2(2-0) P: NEU 842 and NEU 846 and NEU 847 and NEU 848 and NEU 849 and NEU 850 RB: Undergraduate degree in the biological sciences R: Open to master's students in the Program in Neuroscience.
Independent scholarly project for Plan B master's students integrating knowledge across medical neuroscience domains. Students will demonstrate mastery of program learning outcomes.
Effective Spring Semester 2027

SCHOOL OF PACKAGING

- PKG 811 Advanced CAD in Packaging
Fall of every year. Spring of every year. 3(2-2) R: Open to graduate students in the School of Packaging. Approval of department.
Development of consumer packaging utilizing current technology tools.
Effective Fall Semester 2026
- PKG 821 Computer Modeling and Simulation in Packaging
Fall of even years. 3(3-0) R: Open to graduate students in the School of Packaging. Approval of department.
3D modeling and analysis for packaging design.
Effective Fall Semester 2026

DEPARTMENT OF PHYSICS AND ASTRONOMY

- AST 150 Introduction to the Astrophysics Major
Fall of every year. 1(1-0)
Skills and professional development to prepare astrophysics students for success academically and in their future careers.
Effective Fall Semester 2026

DEPARTMENT OF SOCIOLOGY

- SOC 996 Pedagogical Training Seminar
On Demand. 1(1-0)
Development of knowledge and skills for teaching in sociology. Course design, teaching techniques, preparation of course syllabi, and teaching philosophy.
Effective Fall Semester 2026

PART III – COURSE CHANGES

DEPARTMENT OF ART, ART HISTORY, AND DESIGN

STA 201 Fundamentals of Comic Art and Graphic Novels
Fall of every year. Spring of every year. 3(0-6) ~~P: STA 110~~
Introduction to traditional and emerging visual narrative methods and comics production. Formal and conceptual strategies unique to the comics medium and critical consideration of artistic, instructional, and narrative capacities of comics. Character development, pen-and-ink, hand-illustration, and digital techniques for constructing storyboard layouts, graphic novels, and sequential art.
Effective Fall Semester 2026

DEPARTMENT OF CHEMICAL ENGINEERING AND MATERIALS SCIENCE

CHE 472 Polymeric Composite Materials Processing
Fall of every year. 3(2-3) Interdepartmental with Materials Science and Engineering ~~P: (CHE 311 or ME 332 or CE 321) or (MSE 360 and MSE 370)~~ P: (CHE 311 or CE 321) or (MSE 360 and MSE 370) or (ME 333 and ME 333L)
Manufacturing processes for thermoset and thermoplastic matrix composites. Mechanical and thermal evaluation of composites. Rheology and molding of fiber-filled materials.
Effective Fall Semester 2026

CHE 481 Biochemical Engineering
Fall of every year. 3(2-3) ~~P: (BMB 401 or (BMB 461 and BMB 462)) and CHE 431~~ P: BS 161 and CHE 431
Applications of microbiology and biochemistry to biochemical engineering. Kinetics and thermodynamics of biochemical reactors. Transport phenomena in biological systems. Bioreactor design and scale-up.
Effective Fall Semester 2026

DEPARTMENT OF CHEMISTRY

~~CJ 804~~
CEM 804 Crime Scene Investigation
~~Fall of odd years. Spring of odd years. 1(1-0) 1(0.5-0.5)~~ R: Open to graduate students in the Forensic Science Major.
Introduction to crime scene investigation. Documentation, evidence collection, presumptive chemical and biological tests, and collection and preservation of impression evidence.
SA: CJ 804
Effective Spring Semester 2027

~~CJ 805~~
CEM 805 Survey in Forensic Science
~~Fall of even years. 3(3-0) R: Open to students in the Forensic Science Major.~~ R: Open to graduate students in the Forensic Science Major.
Scientific analysis of physical evidence. Four major aspects of physical evidence using real criminal and civil cases: generation of physical evidence by criminal activity; collection and preservation of physical evidence; analysis of physical evidence by forensic science laboratory; presentation of scientific expert testimony in court.
SA: CJ 805
Effective Spring Semester 2027

~~CJ 819~~
CEM 819 ~~Forensic Analysis of Drugs and Alcohol~~ Analysis and Identification of Seized Drugs
Fall of odd years. 3(1-5) R: Open to graduate students in the Forensic Science Major.
Techniques and processes in analysis of physical evidence including spectroscopy, chromatography, and microscopy. Emphasis on controlled substances.
SA: CJ 819
Effective Spring Semester 2027

~~CJ 820~~
~~CEM 821~~

Forensic Chemistry and Microscopic Evidence
Spring of odd years. 3(1-5) ~~RB: CJ 819~~ R: Open to graduate students in the Forensic Science Major.
~~Continuation of CJ 819. Analysis of trace evidence including hairs and fibers, paints and coatings, explosives and fire residues, glass and soil. Analysis of trace evidence including hairs and fibers, paints and coatings, explosives and fire residues, glass and soil.~~
SA: CJ 820
Effective Spring Semester 2027

DEPARTMENT OF COMMUNICATION

COM 360 Advanced Sales Communication
Fall of every year. Spring of every year. 3(3-0) Interdepartmental with Advertising, Marketing ~~P: MKT 313 and (MKT 300 or MKT 327)~~ RB: COM 100 R: ~~Open to undergraduate students in the Sales Communication Specialization.~~ R: Open to undergraduate students in the Sales Leadership Minor.
Need-based selling and leadership role in meeting client needs. Advanced methods of questioning, customer need analysis, negotiation, effective presentations and interpersonal communication relationships with clients. Sales role-playing presentations, business and technical writing, portfolio presentations, and case studies.
Effective Fall Semester 2026

COM 483 Practicum in Sales Communication
Fall of every year. Spring of every year. 1(1-0) ~~P: (COM 225 and MKT 313 and COM 360) and (MKT 300 or MKT 327)~~ RB: COM 100 R: ~~Open to juniors or seniors in the Sales Communication Specialization.~~ R: Open to juniors or seniors in the Sales Leadership Minor.
Supervised practical experience in a professional sales environment
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 Semester 2026

COM 490 Independent Study
Fall of every year. Spring of every year. Summer of every year. ~~1 to 3 credits. 1 to 4 credits. A student may earn a maximum of 3 credits in all enrollments for this course. A student may earn a maximum of 4 credits in all enrollments for this course.~~ R: ~~Not open to freshmen or sophomores. Approval of department; application required.~~ R: Open to undergraduate students. Approval of department; application required.
Directed study under faculty supervision.
Effective Fall Semester 2026

COM 494 Practicum in Communication Research and Instruction
Fall of every year. Spring of every year. Summer of every year. 1 to 4 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: ~~Open to sophomores or juniors or seniors in the Department of Communication. Approval of department; application required.~~ R: Open to undergraduate students. Approval of department; application required.
Structured participation in departmental research teams and applied practice in the community.
Request the use of the Pass-No Grade (P-N) system.
Effective Fall Semester 2026

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CSE 300 Social, Ethical, and Professional Issues in Computing
Fall of every year. Spring of every year. 1(1-0) P: CSE 232 R: ~~Open to undergraduate students in the College of Engineering.~~ R: Open to students in the Computational Data Science Major or in the Computer Science Major or in the Computer Science Minor or in the Lyman Briggs Computer Science Coordinate Major.
Professional responsibilities and informed judgments in computing practice based on legal and ethical principles. Local and global impacts of computing solutions on individuals, organizations, and society.
Effective Fall Semester 2026

- CSE 320 Computer Organization and Architecture
Fall of every year. Spring of every year. Summer of every year. ~~3(3-0)~~ 4(4-0) P: CSE 232 and CSE 260 ~~R: Open to students in the Department of Computer Science and Engineering or in the Computer Engineering Major or in the Lyman Briggs Computer Science Coordinate Major or in the Lyman Briggs Computer Science Major or in the Computer Science Disciplinary Teaching Minor.~~ R: Open to students in the Applied Engineering Sciences Major or in the Computer Engineering Major or in the Computer Science Minor or in the Computer Science Major or in the Lyman Briggs Computer Science Coordinate Major. Not open to students with credit in ECE 331.
Boolean algebra and digital logic. Combinational and sequential circuits. Representations of data and instructions. Architecture and major components of computer systems. Assembly language programming and interfacing to high level languages. Assembler and linker processing.
SA: CPS 320
Effective Spring Semester 2027
- CSE 331 Algorithms and Data Structures
Fall of every year. Spring of every year. 3(3-0) P: (CSE 232) and (CSE 260 or CMSE 202) ~~R: Open to students in the Department of Computer Science and Engineering or in the Computer Engineering Major or in the Lyman Briggs Computer Science Coordinate Major or in the Lyman Briggs Computer Science Major or in the Data Science Major and open to juniors or seniors in the College of Engineering.~~ R: Open to students in the Department of Computer Science and Engineering or in the Computer Engineering Major or in the Lyman Briggs Computer Science Coordinate Major or in the Lyman Briggs Data Science Coordinate Major or in the Data Science Major and open to juniors or seniors in the College of Engineering.
Design, analysis, and application of fundamental algorithms and data structures in computer science.
Effective Fall Semester 2026
- CSE 335 ~~Object oriented Software Design~~ Software Engineering I
Fall of every year. Spring of every year. 4(4-0) ~~P: CSE 232 and CSE 260~~ P: (CSE 232) and (CSE 260 or CMSE 381) ~~R: Open to students in the Department of Computer Science and Engineering or in the Computer Engineering Major or in the Lyman Briggs Computer Science Coordinate Major or in the Lyman Briggs Computer Science Major or in the Computer Science Disciplinary Teaching Minor.~~ R: Open to students in the Applied Engineering Sciences Major or in the Computational Data Science Major or in the Computer Engineering Major or in the Computer Science Minor or in the Computer Science Major or in the Electrical Engineering Major or in the Lyman Briggs Computer Science Coordinate Major.
Development of large software products, libraries, and product families. Object-oriented programming using inheritance and polymorphism. Design methods. Specification and the use of contracts to design reliable software. Configuration management and life-cycle issues.
SA: CSE 370
Effective Fall Semester 2026
- CSE 380 ~~Information Management and the Cloud~~ Data Management and the Cloud
Fall of every year. Spring of every year. ~~3(3-0)~~ 4(4-0) P: CSE 232 ~~R: Open to students in the College of Engineering or in the Lyman Briggs Computer Science Coordinate Major or in the Lyman Briggs Data Science Coordinate Major or in the Data Science Major.~~ R: Open to students in the Applied Engineering Sciences Major or in the Computational Data Science Major or in the Computer Engineering Major or in the Computer Science Minor or in the Computer Science Major or in the Lyman Briggs Computer Science Coordinate Major or in the Data Science Major or in the Lyman Briggs Data Science Coordinate Major.
~~Introduction to information management and cloud computing~~ Introduction to data management and cloud computing
Effective Spring Semester 2027
- CSE 431 Algorithm Engineering
Fall of every year. Spring of every year. 3(3-0) P: CSE 331 ~~R: Open to juniors or seniors in the College of Engineering or in the Computer Science Minor or in the Lyman Briggs Computer Science Coordinate Major or in the Lyman Briggs Computer Science Major.~~ R: Open to juniors or seniors in the College of Engineering. Not open to students with credit in CSE 830.
Algorithm analysis, design, implementation, and optimization for a broad range of problem categories including techniques to recognize and cope with intractable problems.
Effective Fall Semester 2026

CSE 435 ~~Software Engineering Requirements Analysis and Software Engineering In Practice~~
Fall of every year. 3(3-0) ~~P: (CSE 331 and CSE 335) and completion of Tier I writing requirement P:~~
~~CSE 336 R: Open to juniors or seniors in the College of Engineering or in the Lyman Briggs Computer~~
~~Science Coordinate Major or in the Lyman Briggs Computer Science Major. R: Open to juniors or~~
~~seniors in the College of Engineering or in the Lyman Briggs Computer Science Coordinate Major.~~
Software engineering methods for reliable, reusable, and dependable software. Requirements
Analysis and Software Engineering methods for reliable, reusable, and dependable software.
Effective Fall Semester 2026

CSE 440 ~~Introduction to Artificial Intelligence Artificial Intelligence~~
Fall of every year. Spring of every year. 3(3-0) P: (CSE 331) and (MTH 314 or ECE 280 or MTH
317H) ~~R: Open to juniors or seniors in the College of Engineering or in the Lyman Briggs Computer~~
~~Science Coordinate Major or in the Lyman Briggs Computer Science Major or in the Computer~~
~~Science Minor or in the Data Science Major or in the Lyman Briggs Data Science Coordinate Major. R:~~
~~Open to juniors or seniors in the College of Engineering or in the Lyman Briggs Computer Science~~
~~Coordinate Major or in the Computer Science Minor or in the Lyman Briggs Data Science Coordinate~~
~~Major or in the Data Science Major.~~
Fundamental algorithms and methods in intelligent systems and artificial intelligence. Advanced
algorithms and methods in intelligent systems and artificial intelligence.
SA: CPS 440
Effective Fall Semester 2026

CSE 499 Undergraduate Research
Fall of every year. Spring of every year. Summer of every year. 1 to 3 credits. ~~A student may earn a~~
~~maximum of 3 credits in all enrollments for this course. A student may earn a maximum of 9 credits in~~
~~all enrollments for this course. R: Open to students in the Department of Computer Science and~~
~~Engineering or in the Computer Engineering Major or in the Lyman Briggs Computer Science~~
~~Coordinate Major or in the Lyman Briggs Computer Science Major. Approval of department. R: Open~~
~~to students in the Department of Computer Science and Engineering. Approval of department.~~
Independent undergraduate research in contemporary areas of computer science.
Request the use of the Pass-No Grade (P-N) system.
Effective Fall Semester 2026

DEPARTMENT OF FISHERIES AND WILDLIFE

FW 207 Great Lakes: Biology and Management
Spring of every year. 3(3-0) ~~Interdepartmental with Community Sustainability~~
Living aquatic resources of the Great Lakes, environmental history, and biological resources and
their management. Policy issues.
Effective Spring Semester 2027

FW 334 Human Dimensions of Fisheries and Wildlife Management
~~Fall of every year. Spring of every year. 3(2-2) P: (BS 162) and completion of Tier I writing~~
~~requirement P: (FW 101) and ((BS 162 or LB 144 or BS 182H) and completion of Tier I writing~~
~~requirement) RB: IBIO 355 R: Not open to freshmen or approval of department. R: Open to juniors or~~
~~seniors or approval of department.~~
Principles and application of social science in fisheries and wildlife conservation and
management.
SA: FW 434
Effective Spring Semester 2027

FW 353 Marine Biology
Fall of every year. 3(3-0) P: (BS 162 or LB 144 or BS 182H) and completion of Tier I writing
requirement R: Open to juniors or seniors or approval of department.
Integration of biology, chemistry, and physics on organisms and habitats in the ocean and
estuaries. Life history, functional adaptation, reproduction and physiology of marine organisms.
SA: IBIO 353, ZOL 353
Effective Fall Semester 2026

- FW 364 Ecological Problem Solving
Spring of every year. 3(2-2) P: ~~((MTH 124 or concurrently) or (MTH 132 or concurrently) or (LB 118 or concurrently)) and (STT 224 or STT 231 or STT 421) and (IBIO 355 or BE 230)~~ P: (MTH 124 or MTH 132 or LB 118) and (STT 201 or STT 224 or STT 231 or STT 421) and (IBIO 355 or concurrently) R: Open to juniors or seniors or approval of department.
Application of ecological concepts and models to problems in natural resource and ecosystem management.
Effective Fall Semester 2026
- FW 413 Wildlife Research and Management Techniques
Fall of every year. 3(2-3) P: (FW 101L) and completion of Tier I writing requirement R: Open to juniors or seniors or approval of department.
Field techniques used in collecting, analyzing, and communicating data on wild animal populations and their habitats. Field trips required.
Effective Fall Semester 2026
- FW 416 Marine Ecology and Management
Fall of every year. 3(3-0) P: (BS 162 or BS 182H or LB 144) and Completion of Tier I Writing Requirement ~~RB: (IBIO 355) and (FW 110 or GLG 303 or IBIO 353)~~ RB: (IBIO 355) and (FW 110 or FW 353 or GLG 303) R: Open to juniors or seniors or approval of department.
Management of marine ecosystems and populations for ecological and socio-economic objectives. Anthropogenic impacts, mitigation, and marine resource conservation strategies.
Field trips required.
Effective Fall Semester 2026
- FW 444 Conservation Biology
~~Spring of every year.~~ Fall of every year. 3(3-0) ~~Interdepartmental with Integrative Biology~~ P: (BS 162 or BS 182H or LB 144 or FOR 340) and completion of Tier I writing requirement RB: IBIO 355 or PLB 441 R: Open to juniors or seniors or approval of department.
Ecological theories and methodologies to manage species, communities and genetic diversity on a local and global scale.
Effective Fall Semester 2026
- FW 471 Ichthyology
~~Spring of every year.~~ 4(3-3) ~~Interdepartmental with Integrative Biology~~ P: (BS 162 or BS 182H or LB 144) and Completion of Tier I Writing Requirement R: Open to juniors or seniors or approval of department.
Fish morphology and physiology. Development, behavior, evolution, and ecology. World fishes with emphasis on freshwater fishes. Field trips required.
Effective Fall Semester 2026
- FW 474 Field and Laboratory Techniques for Aquatic Studies
Fall of every year. 3(2-3) ~~Interdepartmental with Integrative Biology~~ P: (FW 101L) and completion of Tier I writing requirement R: Open to juniors or seniors or approval of department.
Field and laboratory techniques for the investigation and analysis of lake and stream ecosystems and their biota. Field trips required.
SA: FW 470
Effective Fall Semester 2026
- FW 828 Molecular Ecology and Conservation Genetics
~~Fall of even years.~~ Fall of odd years. 3(2-2) ~~Interdepartmental with Integrative Biology, Plant Biology~~ RB: IBIO 341 or CSS 350 or ANS 314
Population and evolutionary genetic principles applied to ecology, conservation, and management of fish and wildlife at the individual, population, and species level.
Effective Fall Semester 2026
- FW 854 Uncertainty in Natural Resource Management
~~Spring of odd years.~~ Fall of even years. 3(2-2) RB: IBIO 355
Methods and challenges associated with accounting for uncertainty in natural resource decision making. Decision analysis, structured decision making, and adaptive management.
Effective Fall Semester 2026

CENTER FOR INTEGRATIVE STUDIES IN GENERAL SCIENCE

- ISB 200 History of Life
~~Fall of every year. Spring of every year. Summer of every year.~~ Fall of every year. Spring of every year. 3(3-0)-P: ~~((MTH 101 or concurrently) or (MTH 103 or concurrently) or (MTH 103B or concurrently) or (MTH 116 or concurrently) or (MTH 124 or concurrently) or (MTH 132 or concurrently) or (MTH 201 or concurrently) or (LB 118 or concurrently) or (STT 200 or concurrently) or (STT 201 or concurrently))~~ or designated score on Mathematics Placement test
Life from its origin to the dawn of human history. Living things as both the products of evolutionary processes and as a major force driving evolution and altering the environment of planet earth.
Effective Fall Semester 2026
- ISB 201 Insects, Globalization, and Sustainability
~~Fall of every year. Spring of every year. Summer of every year.~~ Fall of every year. Spring of every year. 3(3-0)-P: ~~((MTH 101 or concurrently) or (MTH 103 or concurrently) or (MTH 103B or concurrently) or (MTH 116 or concurrently) or (MTH 124 or concurrently) or (MTH 132 or concurrently) or (MTH 201 or concurrently) or (LB 118 or concurrently) or (STT 200 or concurrently) or (STT 201 or concurrently))~~ or designated score on Mathematics Placement test
The relationship between insects, human society, and the environment with an emphasis on ecological and evolutionary processes. Critical evaluation of current regional and global environmental problems and how they are effecting the development of a sustainable society.
Effective Fall Semester 2026
- ISB 201L Insects, Globalization, and Sustainability Laboratory
Fall of every year. Spring of every year. 2(1-2)-P: ~~ISB 201 or concurrently~~ P: ISB 201 or concurrently and ((MTH 101 or concurrently) or (MTH 103 or concurrently) or (MTH 103B or concurrently) or (MTH 116 or concurrently) or (MTH 124 or concurrently) or (MTH 132 or concurrently) or (MTH 201 or concurrently) or (LB 118 or concurrently) or (STT 200 or concurrently) or (STT 201 or concurrently)) or designated score on Mathematics Placement test)
Problem-based learning activities involved with observing, hypothesizing, experimenting, and analysis of data related to environmental science.
Effective Fall Semester 2026
- ISB 202 Applications of Environmental and Organismal Biology
Fall of every year. Spring of every year. Summer of every year. 3(3-0)-P: ~~((MTH 101 or concurrently) or (MTH 103 or concurrently) or (MTH 103B or concurrently) or (MTH 116 or concurrently) or (MTH 124 or concurrently) or (MTH 132 or concurrently) or (MTH 201 or concurrently) or (LB 118 or concurrently) or (STT 200 or concurrently) or (STT 201 or concurrently))~~ or designated score on Mathematics Placement test
Historical and recent development of ideas about behavior, ecological, and evolutionary processes. Critical evaluation of the use and misuse of human understanding of nature, emphasizing recent findings.
Effective Fall Semester 2026
- ISB 204 Applications of Biomedical Sciences
~~Fall of every year. Spring of every year. Summer of every year.~~ Fall of every year. Spring of every year. 3(3-0)-P: ~~((MTH 101 or concurrently) or (MTH 103 or concurrently) or (MTH 103B or concurrently) or (MTH 116 or concurrently) or (MTH 124 or concurrently) or (MTH 132 or concurrently) or (MTH 201 or concurrently) or (LB 118 or concurrently) or (STT 200 or concurrently) or (STT 201 or concurrently))~~ or designated score on Mathematics Placement test
Historical and recent development of knowledge about cellular developmental or genetic processes. Critical evaluation of the use and misuse of scientific discoveries in these areas.
Effective Fall Semester 2026

- ISB 208L Applications in Biological Science Laboratory
Fall of every year. Spring of every year. 2(1-2)-P: ~~(ISB 202 or concurrently) or (ISB 204 or concurrently)~~ P: ((ISB 202 or concurrently) or (ISB 204 or concurrently) or (ISB 206 or concurrently)) and (((MTH 101 or concurrently) or (MTH 103 or concurrently) or (MTH 103B or concurrently) or (MTH 116 or concurrently) or (MTH 124 or concurrently) or (MTH 132 or concurrently) or (MTH 201 or concurrently) or (LB 118 or concurrently) or (STT 200 or concurrently) or (STT 201 or concurrently)) or designated score on Mathematics Placement test)
Problem solving activities based on observation and interpretation of selected biological systems.
SA: ISB 202L, ISB 204L
Effective Fall Semester 2026
- ISB 210L Science and Society: Impacts of Daily Decisions Lab
~~Fall of every year. Spring of every year. Summer of every year.~~ Summer of every year. 2(1-2)-P: ~~MTH 101 or MTH 103 or MTH 103B~~ P: ((MTH 101 or concurrently) or (MTH 103 or concurrently) or (MTH 103B or concurrently) or (MTH 116 or concurrently) or (MTH 124 or concurrently) or (MTH 132 or concurrently) or (MTH 201 or concurrently) or (LB 118 or concurrently) or (STT 200 or concurrently) or (STT 201 or concurrently)) or designated score on Mathematics Placement test
Investigating and analyzing the environmental and personal impacts of daily decisions (fuels, energy, food, water, consumer goods).
Effective Fall Semester 2026
- ISE 322 Foundational Earth Systems for Secondary Science Education
Spring of every year. ~~4(3-1) 4(3-2)~~-R: ~~Open to undergraduate students in the Department of Teacher Education.~~ R: Open to undergraduate students.
Exploration of natural, physical, and chemical processes in the Universe, the planets and the Earth, while developing skills necessary to instruct others on these processes.
Effective Fall Semester 2026
- ISP 203A Understanding Earth: Global Change
Fall of every year. Spring of every year. Summer of every year. 3(3-0)-P: ~~(MTH 101 or MTH 103 or MTH 103B or (MTH 116 or concurrently) or (MTH 124 or concurrently) or (MTH 132 or concurrently) or (MTH 201 or concurrently) or (LB 118 or concurrently) or (STT 200 or concurrently) or (STT 201 or concurrently)) or designated score on Mathematics Placement test~~ P: ((MTH 101 or MTH 103 or MTH 103B or MTH 116 or MTH 124 or MTH 132 or MTH 201) or designated score on Mathematics Placement test) or (LB 117 or LB 118 or STT 200 or STT 201)
Science as a way of knowing about natural and anthropogenic global change. Implications for societies.
Effective Fall Semester 2026
- ISP 203B Understanding Earth: Natural Hazards and the Environment
~~Fall of every year. Spring of every year. Summer of every year.~~ Fall of every year. Spring of every year. 3(3-0)-P: ~~(MTH 101 or MTH 103 or MTH 103B or (MTH 116 or concurrently) or (MTH 124 or concurrently) or (MTH 132 or concurrently) or (MTH 201 or concurrently) or (LB 118 or concurrently) or (STT 200 or concurrently) or (STT 201 or concurrently)) or designated score on Mathematics Placement test~~ P: ((MTH 101 or MTH 103 or MTH 103B or MTH 116 or MTH 124 or MTH 132 or MTH 201) or designated score on Mathematics Placement test) or (LB 117 or LB 118 or STT 200 or STT 201)
Science as a way of knowing about natural hazards, as well as natural and anthropogenic environmental change. Implications for societies.
Effective Fall Semester 2026
- ISP 203L Geology of the Human Environment Laboratory
Fall of every year. Spring of every year. 2(1-2)-P: ~~(ISP 203A or concurrently) or (ISP 203B or concurrently)~~ P: ((ISP 203A or concurrently) or (ISP 203B or concurrently)) and ((MTH 101 or MTH 103 or MTH 103B or MTH 116 or MTH 124 or MTH 132 or MTH 201 or LB 118 or STT 200 or STT 201) or designated score on Mathematics Placement test)
Exercises in the scientific method applied to earth materials and their impact on society.
Effective Fall Semester 2026

- ISP 205 Visions of the Universe
Fall of every year. Spring of every year. Summer of every year. 3(3-0)-P: (MTH 101 or MTH 103 or MTH 103B or (MTH 116 or concurrently) or (MTH 124 or concurrently) or (MTH 132 or concurrently) or (MTH 201 or concurrently) or (LB 118 or concurrently) or (STT 200 or concurrently) or (STT 201 or concurrently)) or designated score on Mathematics Placement test P: ((MTH 101 or MTH 103 or MTH 103B or MTH 116 or MTH 124 or MTH 132 or MTH 201) or designated score on Mathematics Placement test) or (LB 117 or LB 118 or STT 200 or STT 201)
Role of observation, theory, philosophy, and technology in the development of the modern conception of the universe. The Copernican Revolution. Birth and death of stars. Spaceship Earth. Cosmology and time.
Effective Fall Semester 2026
- ISP 205L Visions of the Universe Laboratory
Fall of every year. Spring of every year. 2(1-2)-P: ~~ISP 205 or concurrently~~ P: {(ISP 205 or concurrently) and ((MTH 101 or MTH 103 or MTH 103B or MTH 116 or MTH 124 or MTH 132 or MTH 201) or designated score on Mathematics Placement test)} or (LB 117 or LB 118 or STT 200 or STT 201)
Observations of the sky, laboratory experiments, and computer simulations exploring the development of the modern conception of the universe.
Effective Fall Semester 2026
- ISP 209 The Mystery of the Physical World
Fall of every year. Spring of every year. 3(3-0)-P: (MTH 101 or MTH 103 or MTH 103B or (MTH 116 or concurrently) or (MTH 124 or concurrently) or (MTH 132 or concurrently) or (MTH 201 or concurrently) or (LB 118 or concurrently) or (STT 200 or concurrently) or (STT 201 or concurrently)) or designated score on Mathematics Placement test P: ((MTH 101 or MTH 103 or MTH 103B or MTH 116 or MTH 124 or MTH 132 or MTH 201) or designated score on Mathematics Placement test) or (LB 117 or LB 118 or STT 200 or STT 201)
Laws of physics through demonstrations and analyses of every day phenomena. Optics, mechanical systems and electromagnetic phenomena.
Effective Fall Semester 2026
- ISP 220 Quarks, Spacetime, and the Big Bang
Fall of every year. 3(3-0)-P: (MTH 101 or MTH 103 or MTH 103B or (MTH 116 or concurrently) or (MTH 124 or concurrently) or (MTH 132 or concurrently) or (MTH 201 or concurrently) or (LB 118 or concurrently) or (STT 200 or concurrently) or (STT 201 or concurrently)) or designated score on Mathematics Placement test P: ((MTH 101 or MTH 103 or MTH 103B or MTH 116 or MTH 124 or MTH 132 or MTH 201) or designated score on Mathematics Placement test) or (LB 117 or LB 118 or STT 200 or STT 201)
Elementary particle physics and the Big Bang for non-scientists. A survey of particles and forces in the early universe as it is recreated at high energy particle colliders in laboratories around the world.
Effective Fall Semester 2026

JAMES MADISON COLLEGE

- MC 100 ~~Freshmen Success Seminar~~ The First Year Experience
Fall of every year. 1(1-0) R: Open to freshmen in the James Madison College or in the James Madison-No Major.
Exploration of academic, social, personal and career decisions that students face in college, with a primary focus on the first year and the James Madison College experience.
Request the use of the Pass-No Grade (P-N) system.
Effective Fall Semester 2026

DEPARTMENT OF LINGUISTICS, LANGUAGES AND CULTURES

- LIN 484 Data Analysis for Linguists Foundations of Data Science in R
Fall of every year. 3(3-0)-P: ~~LIN 200 or LIN 404~~ RB: Open to any interested undergraduates. Students in Linguistics, Languages and Cultures, Romance and Classical Studies, CommArts, College of Ed would especially benefit. Not open to students with credit in LIN 884.
~~Develop proficiency in statistical techniques, data munging/cleaning and data management.~~ Introduction to data processing, data visualization, and statistical analysis in R. Course concepts and learning outcomes are general for any field, including linguistics.
Effective Fall Semester 2026

DEPARTMENT OF MICROBIOLOGY, GENETICS, AND IMMUNOLOGY

- MGI 404 Human Genetics
Fall of every year. 3(3-0)-P: ~~IBIO 344~~ P: BS 161 or LB 145 or BS 181H R: Open to juniors or seniors.
Inheritance of human traits. Medical, molecular, physiological and forensic applications.
Biochemical, clinical, and molecular genetics of human disease. Prenatal, pre-symptomatic, and clinical diagnosis. Ethical, legal and social considerations.
SA: MMG 404, ZOL 344, ZOL 404
Effective Fall Semester 2026

DEPARTMENT OF PHYSICS AND ASTRONOMY

- AST 207 The Science of Astronomy
Fall of every year. 3(3-0)-P: ~~((PHY 231 or concurrently) or (PHY 183 or concurrently) or (PHY 193H or concurrently) or (LB 273 or concurrently)) and ((MTH 114 or concurrently) or (MTH 116 or concurrently) or (MTH 132 or concurrently) or (MTH 152H or concurrently) or (LB 117 or concurrently) or (LB 118 or concurrently))~~ P: ((PHY 183 or concurrently) or (PHY 193H or concurrently) or (PHY 233 or concurrently) or (LB 273 or concurrently)) and ((MTH 132 or concurrently) or (MTH 152H or concurrently) or (LB 118 or concurrently)) and (CMSE 201 or concurrently)
In-depth study of one topic in astronomy with emphasis on key discoveries. Topics may be cosmology, the solar system, and the life of stars.
Effective Fall Semester 2026
- AST 208 Planets and Telescopes
Spring of every year. 3(2-2)-P: ~~(PHY 183 or PHY 193H or LB 273) and ((MTH 103 or concurrently) or (MTH 114 or concurrently) or (MTH 116 or concurrently) or (MTH 132 or concurrently) or (MTH 152H or concurrently) or (LB 117 or concurrently) or (LB 118 or concurrently))~~ P: ((PHY 184 or concurrently) or (PHY 294H or concurrently) or (LB 274 or concurrently) or (PHY 234 or concurrently)) and (MTH 132 or MTH 152H or LB 118) and (AST 207 and CMSE 201) RB: ~~AST 207~~ R: Open to undergraduate students in the Astrophysics Major or in the LB-Astrophysics Coordinate Major.
Origin and nature of the solar system. Planets of the solar system and other star systems.
Determination of time and celestial coordinates. Astronomical instruments and observational methods.
SA: AST 303, AST 312
Effective Fall Semester 2026
- AST 304 Stars
Fall of every year. 3(3-0)-P: ~~(AST 208) and PHY 215 and (PHY 321 or concurrently)~~ P: (AST 208 and (PHY 215 or concurrently) and (PHY 321 or concurrently)) and ((MTH 235 or concurrently) or (MTH 340 or concurrently) or (MTH 347H or concurrently)) R: Open to undergraduate students in the Astrophysics Major or in the LB-Astrophysics Coordinate Major.
Physical processes that determine the structure and evolution of stars. Observations of stars and star clusters. Spectra of stars.
Effective Fall Semester 2026

- AST 308 Galaxies and Cosmology
Spring of every year. 3(3-0) ~~P: (AST 208) and (PHY 215 or concurrently) and (PHY 321 or concurrently)~~ P: (AST 208 and (PHY 215 or concurrently) and (PHY 321 or concurrently)) and ((MTH 235 or concurrently) or (MTH 340 or concurrently) or (MTH 347H or concurrently)) R: Open to undergraduate students in the Astrophysics Major or in the LB-Astrophysics Coordinate Major.
The Milky Way. Structure and content of galaxies. Active galaxies and quasars. The expanding universe. Modern cosmological models.
SA: AST 402
Effective Fall Semester 2026
- AST 310 Directed Studies
Fall of every year. Spring of every year. Summer of every year. 1 to 3 credits. ~~A student may earn a maximum of 4 credits in all enrollments for this course.~~ A student may earn a maximum of 12 credits in all enrollments for this course. R: Approval of department.
Individual study or project in astronomy or astrophysics under the direction of a faculty member.
Effective Fall Semester 2026
- PHY 205 Directed Studies
Fall of every year. Spring of every year. Summer of every year. 1 to 3 credits. ~~A student may earn a maximum of 3 credits in all enrollments for this course.~~ A student may earn a maximum of 6 credits in all enrollments for this course. P: (PHY 183 or concurrently) or (PHY 193H or concurrently) or (PHY 231 or concurrently) or (LB 273 or concurrently) R: Approval of department.
Guided individualized study in an area of physics.
Effective Fall Semester 2026
- PHY 231 Introductory Physics I
Fall of every year. Spring of every year. Summer of every year. 3(3-0) ~~P: MTH 114 or MTH 116 or MTH 124 or (MTH 132 or concurrently) or (MTH 152H or concurrently) or LB 117 or (LB 118 or concurrently)~~ P: MTH 114 or MTH 116 or (MTH 124 or concurrently) or (MTH 132 or concurrently) or (MTH 152H or concurrently) or LB 117 or (LB 118 or concurrently)
Mechanics, Newton's Laws, momentum, energy, conservation laws, thermodynamics, waves, sound.
SA: PHY 231C
Effective Fall Semester 2026
- PHY 232 Introductory Physics II
Fall of every year. Spring of every year. Summer of every year. 3(3-0) ~~P: PHY 231 or PHY 183 or PHY 193H or PHY 221 or LB 273~~ P: (PHY 231 or PHY 183 or PHY 193H or PHY 221 or LB 273) and (MTH 114 or MTH 116 or MTH 124 or (MTH 132 or concurrently) or (MTH 152H or concurrently) or LB 117 or (LB 118 or concurrently))
Electricity and magnetism; optics; atomic, nuclear, and subnuclear physics.
SA: PHY 232C
Effective Fall Semester 2026
- PHY 294H Honors Physics II-Electromagnetism
Spring of every year. 4(4-0) ~~P: (PHY 193H or PHY 183) and ((MTH 133 or concurrently) or (MTH 153H or concurrently) or (LB 119 or concurrently))~~ P: (PHY 193H or PHY 183 or LB 273) and ((MTH 133 or concurrently) or (MTH 153H or concurrently) or (LB 119 or concurrently)) Not open to students with credit in PHY 184.
Electricity and magnetism, circuits, electromagnetic waves and optics.
Effective Fall Semester 2026
- PHY 305 Directed Studies
Fall of every year. Spring of every year. Summer of every year. 1 to 3 credits. ~~A student may earn a maximum of 3 credits in all enrollments for this course.~~ A student may earn a maximum of 6 credits in all enrollments for this course. ~~P: (PHY 184 or concurrently) or (PHY 184B or concurrently) or (PHY 294H or concurrently)~~ P: (PHY 184 or concurrently) or (PHY 294H or concurrently) or (PHY 232 or concurrently) or (LB 274 or concurrently) R: Open to undergraduate students. Approval of department.
Guided individualized study in an area of physics.
Effective Fall Semester 2026

- PHY 321 Classical Mechanics I
Fall of every year. Spring of every year. 3(3-0)-P: ~~((MTH 235 or concurrently) or (MTH 340 or concurrently) or (MTH 347H or concurrently)) and CMSE 201 and ((PHY 215 or concurrently) or (PHY 215B or concurrently))~~ P: ((MTH 235 or concurrently) or (MTH 340 or concurrently) or (MTH 347H or concurrently)) and ((PHY 215 or concurrently) and CMSE 201)
Newtonian point particles. Oscillations. One-particle chaos. Central-force motion. Systems of particles.
Effective Fall Semester 2026
- PHY 405 Directed Studies
Fall of every year. Spring of every year. Summer of every year. 1 to 3 credits. ~~A student may earn a maximum of 5 credits in all enrollments for this course. A student may earn a maximum of 6 credits in all enrollments for this course.~~ P: PHY 184 or PHY 184B or PHY 232 or PHY 232C or PHY 294H or LB 274 P: PHY 184 or PHY 294H or PHY 232 or LB 274 R: Approval of department.
Guided independent study of special topics.
Effective Fall Semester 2026
- PHY 440 Electronics
Fall of every year. 4(3-3)-P: ~~(((PHY 184 or PHY 294H) or (PHY 232 and PHY 234B)) and PHY 192) or LB 274) and (((MTH 235 or concurrently) or (MTH 340 or concurrently) or (MTH 347H or concurrently)) and completion of Tier I writing requirement)~~ P: (((PHY 184 or PHY 294H) or (PHY 232 and PHY 234)) and PHY 192) or LB 274) and (((MTH 235 or concurrently) or (MTH 340 or concurrently) or (MTH 347H or concurrently)) and completion of Tier I writing requirement)
Concepts of electronics used in investigating physical phenomena. Circuits, amplifiers, diodes, LEDs, transistors.
Effective Fall Semester 2026
- PHY 471 Quantum Physics I
Fall of every year. 3(3-0)-P: (PHY 215 or PHY 215B) and (PHY 321 or concurrently) and (MTH 235 or MTH 340 or MTH 347H) P: (PHY 215) and (PHY 321 or concurrently) and (MTH 235 or MTH 340 or MTH 347H)
Schroedinger equation, hydrogen atom, harmonic oscillator, and other one-dimensional systems.
Effective Fall Semester 2026
- PHY 493 Introduction to Elementary Particle Physics
Spring of every year. 3(3-0) P: (PHY 471) and completion of Tier I writing requirement RB: PHY 472 ~~R: Open to undergraduate students in the Department of Physics and Astronomy or approval of department.~~ R: Open to undergraduate students in the Department of Physics and Astronomy or in the Lyman Briggs Physics Coordinate Major or approval of department. Not open to students with credit in PHY 803.
Introduction to concepts and theory for elementary particle physics.
Effective Fall Semester 2026
- PHY 801 ~~Survey of Atomic and Condensed Matter Physics~~ Survey of Atomic and Cond. Mat. Physics
Spring of every year. 3(3-0) R: Open to graduate students in the Department of Physics and Astronomy or approval of department. ~~Not open to students with credit in PHY 491.~~
Survey of physics phenomena related to atomic, liquid and solid systems. Describe underlying microscopic principles responsible for properties of matter.
Effective Fall Semester 2026
- PHY 802 Survey of Nuclear Physics
Spring of every year. 3(3-0) R: Open to graduate students in the Department of Physics and Astronomy or approval of department. ~~Not open to students with credit in PHY 492.~~
Survey of phenomena and conceptual foundations of nuclear physics.
Effective Fall Semester 2026

DEPARTMENT OF SOCIOLOGY

- SOC 100 Introduction to Sociology
Fall of every year. Spring of every year. Summer of every year. 4(4-0)
~~Nature of sociological inquiry. Concepts and principles of sociology. Institutional features of modern society. Structure and dynamics of social organizations.~~ Sociological inquiry. Concepts and principles of sociology. Institutional features of modern society. Structure and dynamics of social organizations. Theoretical perspectives on key topics in society. Discussion of social inequities around core social identities (e.g., race, ethnicity, sex, gender, class, nationality, age, disability, sexuality).
Effective Fall Semester 2026
- SOC 252 Introduction to Environmental Sociology
Fall of every year. Spring of every year. 3(3-0)
~~Key concepts, theories, methods, and findings in environmental sociology.~~ Relationship between unprecedented inequality and climate breakdown. How we improve quality of life for the masses while addressing environmental crises. Root causes and solutions of growing inequality and environmental crises. Theories and research findings in the field of environmental sociology.
Effective Fall Semester 2026
- SOC 281 Social Research Methods
Fall of every year. 4(3-2)
~~Design and execution of social research. Ethics in research. Conceptualization, measurement, sampling, data collection, validity and reliability. Descriptive analysis. Presentation of conclusions.~~ Design and execution of social research. Ethics in research. Conceptualization, measurement, sampling, data collection, validity and reliability. Descriptive analysis. Presentation of conclusions. Consideration of sociodemographic characteristics (e.g., race, ethnicity, sex, gender, class, nationality, age, disability, weight/size, sexuality) in the research process.
Effective Fall Semester 2026
- SOC 282 Quantitative Analysis for Social Research
Spring of every year. 4(3-2) P: SOC 281
~~Experiments. Selected quantitative techniques of data analysis including regression and analysis of variance.~~ Advanced design and execution of social research. Quantitative analysis conceptualization, measurement, sampling, data collection, validity and reliability. Bivariate analysis. Presentation of conclusions. Consideration of sociodemographic characteristics in the research process.
Effective Fall Semester 2026
- SOC 315 Family and Society
Fall of every year. Spring of every year. Summer of every year. 3(3-0)
~~Family development. Diversity of family form and organization in relation to personality, class, race, and gender.~~ Family development. Variation in family forms across class, race, ethnicity, and sex, gender, nationality, age, and sexuality.
Effective Fall Semester 2026
- SOC 316 Youth and Society
Fall of every year. Spring of every year. Summer of every year. 3(3-0)
~~Behavioral analysis of youth. Youth subcultures. Youth at risk. Social change and youth behavior.~~ Behavioral analysis of youth. Youth subcultures. Youth at risk. Social change and youth behavior. Issues shaped by social conditions that are facing young adults today, including: education, housing, family relationships, dependence and independence, forming relationships, considering parenting, mental health, identity, the nature of work in an information economy, prejudice, discrimination, and sexuality.
Effective Fall Semester 2026

- SOC 350 Society and Mental Health
Fall of every year. Spring of every year. 3(3-0) P: Completion of Tier I Writing Requirement
~~Social determinants of mental health and mental illness. International and cross-cultural comparison of mental health and mental illness. Social determinants of mental health and illness. Disparities in mental health and illness. International and cross-cultural comparison of mental health and illness.~~
Social determinants of mental health and mental illness. International and cross-cultural comparison of mental health and illness. Disparities in mental health and illness. International and cross-cultural comparison of mental health and illness.
Effective Fall Semester 2026
- SOC 451 Dynamics of Population
~~Fall of every year. Fall of every year. Spring of every year. 3(3-0) R: Not open to freshmen.~~
~~Size, distribution, and composition of population by age and sex. Theories of the effect of fertility, mortality, and migration on population structures. Successful and unsuccessful population policies. Size, distribution, and composition of population by demographic characteristics such as age and sex. Theories of the effect of fertility, mortality, and migration on population structures. Population policies. International comparisons.~~
Size, distribution, and composition of population by age and sex. Theories of the effect of fertility, mortality, and migration on population structures. Population policies. International comparisons.
Effective Fall Semester 2026
- SOC 475 Health and Society
Fall of every year. Spring of every year. 3(3-0) R: Not open to freshmen or sophomores.
~~Social causes of Health and disease. Health disparities related to race-ethnicity, socioeconomic status, gender and family. Organizations, professions and institutions of health care. Medical standards and evidence. Global public health. Social causes of health and illness. Health disparities related to sociodemographic characteristics (e.g., race, ethnicity, sex, gender, class, nationality, age, disability, weight/size, sexuality). Organizations, professions, and institutions of health care. Medical standards and evidence. Global public health.~~
Social causes of health and illness. Health disparities related to sociodemographic characteristics (e.g., race, ethnicity, sex, gender, class, nationality, age, disability, weight/size, sexuality). Organizations, professions, and institutions of health care. Medical standards and evidence. Global public health.
Effective Fall Semester 2026
- SOC 480 Advanced Research Methods in Sociology
Fall of every year. Spring of every year. 3(3-0) P: (SOC 100 or SOC 161 or SOC 214 or SOC 215 or SOC 216 or SOC 241 or SOC 252 or SOC 260 or SOC 281 or SOC 282) or (SOC 310 or SOC 315 or SOC 316 or SOC 331 or SOC 350 or SOC 360 or SOC 361 or SOC 362 or SOC 368 or SOC 375) or (SOC 451 or SOC 452 or SOC 460 or SOC 475 or SOC 478 or SOC 481 or SOC 488 or SOC 490 or SOC 499) R: Not open to freshmen.
~~Advanced training and hands-on practice in methodologies commonly used in specific sub-fields of sociology. Advanced training and hands-on practice in methodologies commonly used in specific subfields of sociology to address social inequities related to core sociodemographic categories (e.g., race, ethnicity, sex, gender, class, nationality, age, size/weight, disability, sexuality).~~
Advanced training and hands-on practice in methodologies commonly used in specific subfields of sociology to address social inequities related to core sociodemographic categories (e.g., race, ethnicity, sex, gender, class, nationality, age, size/weight, disability, sexuality).
Effective Fall Semester 2026
- SOC 481 Social Movements and Collective Identities
Fall of every year. 3(3-0) R: Not open to freshmen.
~~How social movements emerge, change, and are challenged by others. Identity issues within social movements. How social movements emerge, change, and are challenged by others. Identity issues within social movements with consideration of sociodemographic characteristics such as race, ethnicity, sex, gender, class, nationality, age, disability, weight/size, sexuality. Effective strategies for social change.~~
How social movements emerge, change, and are challenged by others. Identity issues within social movements with consideration of sociodemographic characteristics such as race, ethnicity, sex, gender, class, nationality, age, disability, weight/size, sexuality. Effective strategies for social change.
Effective Fall Semester 2026
- SOC 490 Special Topics in Sociology
On Demand. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course. P: (SOC 100 or SOC 161 or SOC 214 or SOC 215 or SOC 216 or SOC 241 or SOC 252 or SOC 260 or SOC 281 or SOC 282) or (SOC 310 or SOC 315 or SOC 316 or SOC 331 or SOC 350 or SOC 360 or SOC 361 or SOC 362 or SOC 368 or SOC 375) or (SOC 451 or SOC 452 or SOC 460 or SOC 475 or SOC 478 or SOC 480 or SOC 481 or SOC 488 or SOC 499) R: Not open to freshmen.
~~Experimental courses and courses taught by visiting scholars. Experimental and cutting-edge sociological topics.~~
Experimental and cutting-edge sociological topics.
Effective Fall Semester 2026

- SOC 499 Social Issues and Change in Contemporary Society (W)
Fall of every year. Spring of every year. 3(3-0) P: Completion of Tier I Writing Requirement R: Not open to freshmen.
~~Selected major social problems in contemporary societies. Sources and consequences of social change. Application of sociological theory to selected cases.~~ Selected major social problems in contemporary societies. Sources and consequences of social change. Application of sociological theory to selected cases for the purpose of exploring effective social change strategies. Professional opportunities in sociology and engagement in professional development activities, including exploring opportunities for graduate education, learning job search skills, and resume/CV, personal statement, and cover letter development.
Effective Fall Semester 2026
- SOC 815 Classical Sociological Theory
Fall of every year. 3(3-0)
~~Nineteenth and early twentieth century sociological theory from Marx to Pareto in socio-historical context. Development of contemporary sociology theory and research from the classics.~~ Nineteenth- and early twentieth-century sociological theory (e.g., Durkheim, Martineau, Weber, Marx, Wells, DuBois, Mead, Cooley, Pareto) in sociohistorical context. Development of contemporary sociology theory and research from the classics.
Effective Fall Semester 2026
- SOC 816 Contemporary Sociological Theory
Spring of every year. 3(3-0) RB: SOC 815
~~Theories and conceptual schemes of contemporary social theorists. Relevance for sociological research.~~ Theories and conceptual frameworks of contemporary social theorists (e.g., Foucault, Giddens, Goffman, Smith, Connell, Bourdieu, West, Zimmerman). Relevance for sociological research and application to social change efforts.
Effective Fall Semester 2026
- SOC 820 Contemporary Sociological Research in the Family
~~Fall of odd years.~~ Fall of odd years. 3(3-0)
~~Family structure. Family and marital attitudes. Family and social policy.~~ Family structure. Family and marital attitudes. Family and social policy. Discussion of how sociodemographic categories (e.g., race, ethnicity, sex, gender, class, nationality, age, disability, sexuality) impact diverse families and family structures.
Effective Fall Semester 2026
- SOC 873 Social Organization of Health and Medicine
~~Spring of every year.~~ Spring of every year. 3(3-0)
~~Organization, delivery, and financing of health care. Public health systems, professional training and associations, and technology. International comparisons.~~ Organization and delivery of health care. Health systems, professional training and associations, and technology. Social determinants of health and health disparities. International comparisons. Health inequities around sociodemographic characteristics (e.g., race, ethnicity, sex, gender, class, nationality, age, size/weight, disability, sexuality).
Effective Fall Semester 2026
- SOC 881 Analysis of Social Data I
Fall of every year. 3(2-2) RB: One course in statistics. R: Open to graduate students in the Department of Sociology.
~~Applications of statistical techniques to social science data. Multiple regression. SPSS. Interpretation, strengths, and weaknesses of various statistical practices.~~ Applications of statistical techniques to social science data, including consideration of sociodemographic characteristics (e.g., race, ethnicity, sex, gender, class, nationality, age, weight/size, disability, sexuality).
Effective Fall Semester 2026

- SOC 882 Analysis of Social Data II
Spring of every year. 3(2-2) RB: SOC 881 R: Open to graduate students in the Department of Sociology.
~~Applications of multiple regression, path analysis, and factor analysis to social science data. Interpretation, strengths, and weaknesses of commonly used statistical practices.~~ Applications of multiple regression, path analysis, and factor analysis to social science data. Interpretation, strengths, and weaknesses of commonly used statistical practices. Consideration of sociodemographic characteristics (e.g., race, ethnicity, sex, gender, class, nationality, age, weight/size, disability, sexuality) in the analysis of social science data.
Effective Fall Semester 2026
- SOC 931 Topics in Structural Inequality
~~Fall of even years.~~ Fall of even years. 3(3-0) A student may earn a maximum of 12 credits in all enrollments for this course.
~~Current research on socioeconomic class, gender inequality, racial and ethnic inequality, power structures, social conflict, urban dynamics, or social change.~~ Current research on socioeconomic class, gender inequality, racial and ethnic inequality, power structures, social conflict, urban dynamics, or social change. Sociological theories of structural inequality, with an emphasis on critical and comparative analysis, as well as application.
Effective Fall Semester 2026
- SOC 970 Topics in Wellbeing and Health
~~Spring of even years.~~ Spring of even years. 3(3-0) A student may earn a maximum of 12 credits in all enrollments for this course.
~~Topics such as family work and stress, risk and uncertainty, social epidemiology, and life course.~~ Topics such as family and social relationships, aging and life course, health disparities, and stress process. Consideration of how sociodemographic characteristics (e.g., race, ethnicity, sex, gender, class, nationality, age, weight/size, disability, sexuality) impact wellbeing and health.
Effective Fall Semester 2026
- SOC 985 Qualitative Field Research
~~Fall of every year.~~ Fall of every year. 3(3-0) R: Open only to graduate students in Sociology.
~~Qualitative research methods. Participant observation, interview, and field documents. Design, data gathering, and analysis.~~ Qualitative research methods. Participant observation, interview, and field documents. Design, data gathering, and analysis. Consideration of sociodemographic characteristics (e.g., race, ethnicity, sex, gender, class, nationality, age, weight/size, disability, sexuality) in qualitative design and analytic processes.
Effective Fall Semester 2026
- SOC 986 Survey Research Principles
Spring of every year. 3(3-0) RB: SOC 881
~~Design, analysis, sampling, questionnaire construction, interviewing, and data processing.~~ Design, analysis, sampling, questionnaire construction, interviewing, and data processing. Consideration of sociodemographic characteristics (e.g., race, ethnicity, sex, gender, class, nationality, age, weight/size, disability, sexuality) in survey design and analytic processes.
Effective Fall Semester 2026