COLORADO MESA UNIVERSITY

Undergraduate Curriculum Committee
Meeting Minutes
October 25, 2018
UCC 222

Members Present: Lisa Driskell, Eric Elliott, Sean Flanigan, Keith Fritz, Ann Gillies, Lucy Graham, Geoffrey Gurka, Jennifer Hancock, Sarah Lanci, Denise McKenney, John Seebach, and Jill Van Brussel.

Members Absent: Sam Lohse and Joseph Quesenberry.

Ex-officio members present: Maggie Bodyfelt, Morgan Bridge, Janel Davis, Rose Petralia, Johanna Varner, and Hailey Wiedeman.

Guests: Clay King, Scott Kessler, and Rick Ott.

Recording Secretary: Emily Dodson

Chair Driskell called the meeting to order at 3:30.

I. Ex-Officio Reports

A. Assistant Vice President of Academic Affairs for Assessment and Accreditation
Bridge requested that any major curricular proposals be discussed with her prior to submission to the committee.

B. Registrar's Office
No updates.

C. Financial Aid
No updates.

D. Library
No updates.

E. Catalog Description Reviewer
No updates.

F. Essential Learning
No updates.

II. Curriculum Proposals

Summary of committee actions on curriculum proposals begins on page 3.
Further details of proposals begin on page 6.

III. Information Items

A. Review of Foundation Hours

The UCC Executive Committee review the description of foundation hours as described in the Curriculum Policies and Procedures Manual. Based on this conversation, it was determined that explicitly stating the maximum number of allowable foundation hours would help UCC better enforce this rule. Bridge presented this idea to department heads, and no conflicts were identified in clarifying the limits on foundation credits. UCC will return to this in later detail at a future meeting.

B. Notes on Completing Forms

It was requested that details about affected programs are more uniformly provided in course modifications. For the questions regarding whether the course is a requirement or listed choice for any programs and whether program sheets are affected, complete the program table if yes is answered to *either* of these questions.

For all proposal forms, it was requested that the course title be included when a course prefix and number is provided in the description or modification. The title, however, is not necessary in fields listing prerequisites and co-requisites.

C. Topics Courses

The Registrar's Office audited topics courses being offered this spring and found that some are being offer more than twice, , which is in violation of curriculum policy (page 18 of the Curriculum Policies and Procedures Manual). UCC will discuss methods for stricter enforcement of this rule will at a future meeting.

Adjournment:
With no objections from the committee, Chair Driskell adjourned the meeting at 4:10.

Respectfully submitted by Emily Dodson, October 26, 2018.

Summary of UCC Actions on Curriculum Proposals

10/25/2018

Proposal	Committee Action	Members (motion/second)	Effective Date
1 Program Modification: BS Accounting-General Accounting: 3104 No discussion.	Approved	Elliot, McKenney	Fall 2019
2 Program Modification: BS Accounting-Public Accounting: 3108 No discussion.	Approved	Elliot, McKenney	Fall 2019
3 Program Modification: Minor Accounting: M135 No discussion.	Approved	Elliot, McKenney	Fall 2019
16 Program Addition: BS Mathematics, Actuarial Science The department representatives noted that the outcome "Apply appropriate statistical procedures and justify chosen assumptions" should be added to the outcomes for STAT 301. In the final learning outcomes, finance was changed to insurance. Bridge noted that this program is still pending final approval on the student learning outcomes overall. It was noted that all instances of STAT 241 as a requirement should be changed to CISB 241 or STAT 241. Petralia noted that the library assessments are in progress but no additional expenses are anticipated. Completion of the library and student learning outcomes assessments are included in the corrections upon which approval is contingent.	Approved contingent upon corrections	Flanigan, Elliot	Fall 2019
4 Course Addition: STAT 301 Computational Statistics The committee requested that the department number the student learning outcomes. Petralia noted that the library assessments are in progress but no additional expenses are anticipated. Completion of the library assessment is included in the corrections upon which approval is contingent. It was noted that all instances of STAT 241 as a requirement should be changed to CISB 241 or STAT 241.	Approved contingent upon corrections	Flanigan, Gillies	Fall 2019
5 Course Addition: STAT 312 Correlation and Regression The committee requested that the department number the student learning outcomes. Petralia noted that the library assessments are in progress but no additional expenses are anticipated. Completion of the library assessment is included in the corrections upon which approval is contingent.	Approved contingent upon corrections	Flanigan, Gillies	Fall 2019
6 Course Addition: STAT 430 Categorical Data Analysis The committee requested that the department number the student learning outcomes. Petralia noted that the library assessments are in progress but no additional expenses are anticipated. Completion of the library assessment is included in the corrections upon which approval is contingent.	Approved contingent upon corrections	Flanigan, Gillies	Fall 2019

Proposal	Committee Action	Members (motion/second)	Effective Date
7 Course Addition: STAT 435 Introduction to Time Series	Approved contingent upon corrections	Flanigan, Gillies	Fall 2019
The committee requested that the department number the student learning outcomes. Petralia noted that the library assessments are in progress but no additional expenses are anticipated. Completion of the library assessment is included in the corrections upon which approval is contingent.			
8 Course Addition: STAT 460 Actuarial Exams Preparation	Approved contingent upon corrections	Flanigan, Gillies	Fall 2019
The committee requested that the department number the student learning outcomes. Petralia noted that the library assessments are in progress but no additional expenses are anticipated. Completion of the library assessment is included in the corrections upon which approval is contingent.			
9 Course Addition: STAT 492 Senior Capstone	Approved contingent upon corrections	Flanigan, Gillies	Fall 2019
The committee requested that the department number the student learning outcomes. Petralia noted that the library assessments are in progress but no additional expenses are anticipated. Completion of the library assessment is included in the corrections upon which approval is contingent. Typos were corrected in the justification (misspellings of mathematics and statistics and change comma to period at end of first sentence).			
11 Course Modification: CSCI 260 Introduction to Database	Approved	Elliot, Graham	Fall 2019
No discussion.			
12 Course Modification: MATH 369 Discrete Structures I	Approved	Elliot, Graham	Fall 2019
No discussion.			
13 Course Modification: STAT 313 Sampling Techniques	Approved	Elliot, Graham	Fall 2019
No discussion.			
14 Course Modification: STAT 350 Mathematical Statistics 1	Approved	Elliot, Graham	Fall 2019
No discussion.			
15 Course Modification: STAT 425 Design and Analysis of Experiments	Approved	Elliot, Graham	Fall 2019
No discussion.			
10 Course Deletion: STAT 412 Correlation and Regression	Approved	Van Brussel, Gurka	Fall 2019
No discussion.			
17 Program Modification: BA Liberal Arts-Elementary Education, Mathematics: 3491	Approved	Gillies, McKenney	Fall 2019
No discussion.			

Proposal	Committee Action	Members (motion/second)	Effective Date
19 Program Modification: BS Mathematics-Applied Mathematics: 3437	Approved	Gillies, McKenney	Fall 2019
No discussion.			
18 Program Modification: BS Mathematics-Mathematics: 3424	Approved	Gillies, McKenney	Fall 2019
No discussion.			
20 Program Modification: BS Mathematics-Secondary Education: 3430	Approved contingent upon corrections	Gillies, McKenney	Fall 2019
It was noted that both yes and no were selected in response to the question about whether these changes affect learning outcomes. The department representatives noted that only no should be selected.			
21 Program Modification: BS Mathematics-Statistics: 3434	Approved contingent upon corrections	Gillies, McKenney	Fall 2019
In the justification, it was noted that initialed, other, and mathematics were misspelled and need corrected.			
22 Program Modification: Minor Statistics: M465	Approved	Gillies, McKenney	Fall 2019
No discussion.			
23 Course Addition: EECE 225 Introduction to Circuits and Electronics	Approved	Flanigan, McKenney	Fall 2019
No discussion.			
24 Course Addition: EECE 226 Circuits as Systems	Approved contingent upon corrections	Flanigan, McKenney	Fall 2019
It was requested that the term "understand" that begins all learning outcomes be changed to "demonstrate understanding of."			
25 Course Addition: EECE 227 Electronics Design Laboratory	Approved	Flanigan, McKenney	Fall 2019
No discussion.			
26 Course Addition: EECE 235 Digital Logic	Approved	Flanigan, McKenney	Fall 2019
No discussion.			

Curriculum Committee Proposal Summary
10/25/2018

Department: Business

Program Modification

Accounting-General Accounting: 3104

Degree Type: BS

Revision to program sheet: Yes ☑ No ☐

Description of modification:

Addition of MANG 301 (Organizational Behavior (3)) to BS Accounting, General Accounting Requirements, Core, and reduction of General Electives to 4 semester hours. Concomitant change to Course Sequencing, Senior Year, Fall Semester.

Justification:

Graduates of the General Accounting program frequently work with, and take leadership roles in working with, external CPAs. Inclusion of MANG 301 will improve student preparation for their role in faciliatating interactions between their employing organization and CPAs.

Revision to SLOs: Yes ☐ No ☑

Other changes: Yes ☐ No ☑

Discussions with affected departments:

NA

Proposed by: Geoffrey Gurka

Director of Teacher Education Signature:

Expected Implementation: Fall 2019

2019-2020 PROGRAM REQUIREMENTS
Degree: Bachelor of Science
Major: Accounting
Concentration: General Accounting

About This Major . . .
Accounting is the one degree with 360 degrees of possibilities. Every business needs accounting expertise, whether it's a Wall Street law firm, a professional sports team, movie production company, or a rock band. With the proper accounting education, your employment options are endless. This program is designed for undergraduate students who do not wish to pursue CPA certification. The General Accounting concentration provides students with basic business skills as well as the accounting knowledge needed to work in an accounting department in private industry or government.

For more information on what you can do with this major, go to http://www.coloradomesa.edu/career/whatmajor.html

All CMU baccalaureate graduates are expected to demonstrate proficiency in critical thinking, communication fluency, quantitative fluency, and specialized knowledge/applied learning. In addition to these campus-wide student learning outcomes, graduates of this major will be able to:

1. Integrate knowledge from multiple functional areas of business to solve business problems and to develop sound business strategies. (Specialized Knowledge)
2. Apply business knowledge and skills in appropriate business contexts and transfer knowledge and skills to new business situations. (Critical Thinking)
3. Communicate clearly, appropriately, and persuasively to the business audience, both orally and in writing, including individual presentations. (Communication Fluency)
4. Analyze business data critically, reason logically, and apply quantitative analysis methods correctly to develop appropriate business conclusions. (Quantitative Fluency)
5. Effectively work as a team. (Applied Learning)
6. Strategically apply information across functional areas of business. (Applied Learning)
7. Produce professional business work products. (Applied Learning)
8. Practice principle-based ethics in decision making both personally and professionally. (Applied Learning)
9. Prepare and interpret financial information. (Specialized Knowledge)

Advising Process and DegreeWorks
This document is intended for informational purposes to help determine what courses and associated requirements are needed to earn a degree. The suggested course sequencing outlines how students could finish degree requirements. Some courses are critical to complete in specific semesters, while others may be moved around. Meeting with an academic advisor is essential in planning courses and altering the suggested course sequencing. It is ultimately the student's responsibility to understand and fulfill the requirements for her/his intended degree(s).

DegreeWorks is an online degree audit tool available in MAVzone. It is the official record used by the Registrar's Office to evaluate progress towards a degree and determine eligibility for graduation. Students are responsible for reviewing their DegreeWorks audit on a regular basis and should discuss questions or concerns with their advisor or academic department head. Discrepancies in requirements should be reported to the Registrar's Office.

Graduation Process
Students must complete the following in the first two months of the semester prior to completing their degree requirements:

- Review their DegreeWorks audit and create a plan that outlines how unmet requirements will be met in the final semester.
- Meet with their advisor and modify their plan as needed. The advisor must approve the final plan.
- Submit the "Intent to Graduate" form to the Registrar's Office to officially declare the intended graduation date and commencement ceremony plans.
- Register for all needed courses and complete all requirements for each degree sought.

Submission deadlines and commencement details can be found at http://www.coloradomesa.edu/registrar/graduation.html.
If a student's petition for graduation is denied, it will be her/his responsibility to consult the Registrar's Office regarding next steps.

INSTITUTIONAL DEGREE REQUIREMENTS

The following institutional degree requirements apply to all CMU baccalaureate degrees. Specific programs may have different requirements that must be met in addition to institutional requirements.

- 120 semester hours minimum.
- Students must complete a minimum of 30 of the last 60 hours of credit at CMU, with at least 15 semester hours in major discipline courses numbered 300 or higher.
- 40 upper-division credits (an alternative credit limit applies to the Bachelor of Applied Science degree).
- 2.00 cumulative GPA or higher in all CMU coursework.
- A course may only be used to fulfill one requirement for each degree/certificate.
- No more than six semester hours of independent study courses can be used toward the degree.
- Non-traditional credit, such as advanced placement, credit by examination, credit for prior learning, cooperative education and internships, cannot exceed 30 semester credit hours for a baccalaureate degree; A maximum of 15 of the 30 credits may be for cooperative education, internships, and practica.
- Pre-collegiate courses (usually numbered below 100) cannot be used for graduation.
- Capstone exit assessment/projects (e.g., Major Field Achievement Test) requirements are identified under Program-Specific Degree Requirements.
- The Catalog Year determines which program sheet and degree requirements a student must fulfill in order to graduate. Visit with your advisor or academic department to determine which catalog year and program requirements you should follow.
- See “Requirements for Undergraduate Degrees and Certificates” in the catalog for a complete list of graduation requirements.

PROGRAM-SPECIFIC DEGREE REQUIREMENTS

- Must receive a grade of “C” or higher in all major requirements.

ESSENTIAL LEARNING REQUIREMENTS (31 semester hours)

See the current catalog for a list of courses that fulfill the requirements below. If a course is an Essential Learning option and a requirement for your major, you must use it to fulfill the major requirement and make a different selection for the Essential Learning requirement.

English (6 semester hours, must receive a grade of "C" or better and must be completed by the time the student has 60 semester hours.)

- ☐ ENGL 111 - English Composition (3)
- ☐ ENGL 112 - English Composition (3)

Mathematics (3 semester hours, must receive a grade of "C" or better, must be completed by the time the student has 60 semester hours.)

- ☐ MATH 113 - College Algebra (4)*

  *3 credits apply to the Essential Learning requirements and 1 credit applies to elective credit

Humanities (3 semester hours)

- ☐ Select one Humanities course (3)

Social and Behavioral Sciences (6 semester hours)

- ☐ Select one Social and Behavioral Sciences course (3)
- ☐ Select one Social and Behavioral Sciences course (3)

Natural Sciences (7 semester hours, one course must include a lab)

- ☐ Select one Natural Sciences course (3)
- ☐ Select one Natural Sciences course with a lab (4)

History (3 semester hours)

- ☐ Select one History course (3)

Fine Arts (3 semester hours)

- ☐ Select one Fine Arts course (3)

OTHER LOWER-DIVISION REQUIREMENTS

Wellness Requirement (2 semester hours)

- ☐ KINE 100 - Health and Wellness (1)
- ☐ Select one Activity course (1)

Essential Learning Capstone (4 semester hours)

Essential Learning Capstone must be taken after completion of the Essential Learning English and Mathematics requirements, and when a student has earned between 45 and 75 hours.

- ☐ ESSL 290 - Maverick Milestone (3)
- ☐ ESSL 200 - Essential Speech (1)

FOUNDATION COURSES (27 semester hours)

- ☐ ACCT 201 - Principles of Financial Accounting (3)
- ☐ ACCT 202 - Principles of Managerial Accounting (3)
- ☐ BUGB 211 - Business Communications (3)
- ☐ CISB 101 - Business Information Technology (3)
- ☐ CISB 210 - Fundamentals of Information Systems (3)
- ☐ ECON 201 - Principles of Macroeconomics (3)
- ☐ ECON 202 - Principles of Microeconomics (3)
- ☐ One of the following courses:

  CISB 241 - Introduction to Business Analysis (3)

  STAT 241 - Introduction to Business Analysis (3)
- ☐ MANG 201 - Principles of Management (3)

BS, ACCOUNTING, GENERAL ACCOUNTING REQUIREMENTS (~~56semester~~ 52 semester hours, must pass all courses with a grade of "C" or higher)

Core (~~28~~ 31 semester hours)

- ☐ ACCT 321 - Intermediate Accounting I (5)
- ☐ ACCT 322 - Intermediate Accounting II (4)
- ☐ ACCT 331 - Cost Accounting (3)
- ☐ ACCT 360 - Professional Preparation I (1)
- ☐ ACCT 392 - Accounting Info Systems (3)
- ☐ ACCT 401 - Governmental Accounting (3)
- ☐ One of the following courses:
  BUGB 349 - Legal Environment of Business (3)
  BUGB 351 - Business Law I (3)
- ☐ FINA 301 - Managerial Finance (3)
- ☐ MANG 301 – Organizational Behavior (3)
- ☐ MARK 231 - Principles of Marketing (3)

Concentration Courses (21 semester hours)
Accounting (9 semester hours)
Select 9 semester hours from the following courses:

ACCT 350 - Ethics for Accounting Professionals (3)
ACCT 393 - Cooperative Education (3)
ACCT 396 - Topics (no more than 3 semester hours)
ACCT 402 - Advanced Accounting (3)
ACCT 441 - Individual Income Tax (4)
ACCT 442 - Advanced Tax & Tax Research (5)
ACCT 470 - Fraud and Forensic Accounting (3)
ACCT 493 - Cooperative Education (3)

- ☐ _____
- ☐ _____
- ☐ _____

Business
(12 hours selected from upper division courses with the prefix of BUGB, CISB, ECON, ENTR, FINA, HMGT, HRMA, MANG, or MARK 3 credits must be for MANG 491).

- ☐ MANG 491 - Business Strategy (3)
- ☐ _____
- ☐ _____
- ☐ _____

GENERAL ELECTIVES (All college level courses appearing on your final transcript, not listed above that will bring your total semester hours to 120 hours. ~~7~~ 4 semester hours)

- ☐ MATH 113 - College Algebra (1)
- ☐ _____
- ☐ _____

SUGGESTED COURSE SEQUENCING

Freshman Year, Fall Semester: 16 credits

- ENGL 111 - English Composition (3)
- Essential Learning - Fine Arts (3)
- Essential Learning - Natural Science (3)
- Essential Learning - Social/Behavioral Science (3)
- MATH 113 - College Algebra (4)

Freshman Year, Spring Semester: 14 credits

- ENGL 112 - English Composition (3)
- Essential Learning - Humanities (3)
- Essential Learning - History (3)
- Essential Learning - Social/Behavioral Science (3)
- KINA Activity (1)
- KINE 100 - Health and Wellness (1)

Sophomore Year, Fall Semester: 15 credits

- ACCT 201 - Principles of Financial Accounting (3)
- CISB 101 - Business Information Technology (3)
- CISB 241 or STAT 241 - Introduction to Business Analysis (3)
- ECON 201 - Principles of Macroeconomics (3)
- MANG 201 - Principles of Management (3)

Sophomore Year, Spring Semester: 16 credits

- ACCT 202 - Principles of Managerial Accounting (3)
- BUGB 211 - Business Communications (3)
- CISB 210 - Fundamentals of Information Systems (3)
- ECON 202 - Principles of Microeconomics (3)
- ESSL 290 - Maverick Milestone (3)
- ESSL 200 - Essential Speech (1)

Junior Year, Fall Semester: 14 credits

- ACCT 321 - Intermediate Accounting I (5)
- ACCT 331 - Cost Accounting (3)
- BUGB 349 - Legal Environment of Business (3) or BUGB 351 - Business Law I (3)
- MARK 231 - Principles of Marketing (3)

Junior Year, Spring Semester: 15 credits

- ACCT 322 - Intermediate Accounting II (4)
- ACCT 360 - Professional Preparation I (1)
- ACCT 392 - Accounting Info Systems (3)
- Accounting Concentration Course (3)
- Essential Learning - Natural Science with Lab (4)

Senior Year, Fall Semester: 15 credits

- ACCT 401 - Governmental Accounting (3)
- Accounting Concentration Course (3)
- FINA 301 - Managerial Finance (3)
- MANG 301 – Organizational Behavior (3)
- General Elective(s) (~~6~~3)

Senior Year, Spring Semester: 15 credits

- Accounting Concentration Course (3)
- Business Electives (3 courses) (9)
- MANG 491 - Business Strategy (3)

Program Modification

Accounting-Public Accounting: 3108

Degree Type: BS

Revision to program sheet: Yes ☑ No ☐

Description of modification:

Addition of MANG 301 (Organizational Behavior (3)) to BS Accounting, Public Accounting Requirements, Core, and reduction of General Electives to 1 semester hour. Concomitant change to Course Sequencing, Senior Year, Fall Semester.

Justification:

To improve student preparation for the CPA exam and their career in Accounting.

Revision to SLOs: Yes ☐ No ☑

Other changes: Yes ☐ No ☑

Discussions with affected departments:

NA

Proposed by: Geoffrey Gurka

Director of Teacher Education Signature:

Expected Implementation: Fall 2019

2019-2020 PROGRAM REQUIREMENTS
Degree: Bachelor of Science
Major: Accounting
Concentration: Public Accounting

About This Major . . .
Accounting is the one degree with 360 degrees of possibilities. Every business needs accounting expertise, whether it's a Wall Street law firm, a professional sports team, movie production company, or a rock band. With the proper accounting education your employment options are endless. The Public Accounting concentration provides students with basic business skills as well as the accounting knowledge needed to pass the Certified Public Accounting CPA exam. Graduates of this program have a very high CPA exam pass rate and are heavily recruited by local and regional CPA firms. Most graduates will have job offers months before they graduate.

This program is designed to be the undergraduate component of the 3+2 accounting program which can earn the graduate a Bachelor of Science in Accounting and a Master of Business Administration (MBA) in five years. In order to meet Colorado CPA licensing requirements (150 hours), students will need to complete the 3+2 program. The Public Accounting concentration is the required pathway for the 3+2 program and, in conjunction with the 3+2 program, will provide the curriculum needed for CPA licensure.

For more information on what you can do with this major, go to http://www.coloradomesa.edu/career/whatmajor.html.

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1. Integrate knowledge from multiple functional areas of business to solve business problems and to develop sound business strategies. (Specialized Knowledge)
2. Apply business knowledge and skills in appropriate business contexts and transfer knowledge and skills to new business situations. (Critical Thinking)
3. Communicate clearly, appropriately, and persuasively to the business audience, both orally and in writing, including individual presentations. (Communication Fluency)
4. Analyze business data critically, reason logically, and apply quantitative analysis methods correctly to develop appropriate business conclusions. (Quantitative Fluency)
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- 2.00 cumulative GPA or higher in all CMU coursework.
- A course may only be used to fulfill one requirement for each degree/certificate.
- No more than six semester hours of independent study courses can be used toward the degree.
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- Pre-collegiate courses (usually numbered below 100) cannot be used for graduation.
- Capstone exit assessment/projects (e.g., Major Field Achievement Test) requirements are identified under Program-Specific Degree Requirements.
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PROGRAM-SPECIFIC DEGREE REQUIREMENTS

- Must receive a grade of "C" or higher in all major requirements

ESSENTIAL LEARNING REQUIREMENTS (31 semester hours)

See the current catalog for a list of courses that fulfill the requirements below. If a course is an Essential Learning option and a requirement for your major, you must use it to fulfill the major requirement and make a different selection for the Essential Learning requirement.

English (6 semester hours, must receive a grade of "C" or better and must be completed by the time the student has 60 semester hours.)

- ☐ ENGL 111 - English Composition (3)
- ☐ ENGL 112 - English Composition (3)

Mathematics (3 semester hours, must receive a grade of "C" or better, must be completed by the time the student has 60 semester hours.)

- ☐ MATH 113 - College Algebra (3)
  3 credits apply to the Essential Learning requirements and 1 credit applies to elective credit

Humanities (3 semester hours)

- ☐ Select one Humanities course (3)

Social and Behavioral Sciences (6 semester hours)

- ☐ Select one Social and Behavioral Sciences course (3)
- ☐ Select one Social and Behavioral Sciences course (3)

Natural Sciences (7 semester hours, one course must include a lab)

- ☐ Select one Natural Sciences course (3)
- ☐ Select one Natural Sciences course with a lab (4)

History (3 semester hours)

- ☐ Select one History course (3)

Fine Arts (3 semester hours)

- ☐ Select one Fine Arts course (3)

OTHER LOWER-DIVISION REQUIREMENTS

Wellness Requirement (2 semester hours)

- ☐ KINE 100 - Health and Wellness (1)
- ☐ Select one Activity course (1)

Essential Learning Capstone (4 semester hours)

Essential Learning Capstone must be taken after completion of the Essential Learning English and Mathematics requirements, and when a student has earned between 45 and 75 hours.

- ☐ ESSL 290 - Maverick Milestone (3)
- ☐ ESSL 200 - Essential Speech (1)

FOUNDATION COURSES (27 semester hours)

- ☐ ACCT 201 - Principles of Financial Accounting (3)
- ☐ ACCT 202 - Principles of Managerial Accounting (3)
- ☐ BUGB 211 - Business Communications (3)
- ☐ CISB 101 - Business Information Technology (3)
- ☐ CISB 210 - Fundamentals of Information Systems (3)
- ☐ One of the following courses:
  CISB 241 - Introduction to Business Analysis (3)
  STAT 241 - Introduction to Business Analysis (3)
- ☐ ECON 201 - Principles of Macroeconomics (3)
- ☐ ECON 202 - Principles of Microeconomics (3)
- ☐ MANG 201 - Principles of Management (3)

BS, ACCOUNTING, PUBLIC ACCOUNTING REQUIREMENTS (~~56~~ 55 semester hours, must pass all courses with a grade of "C" or higher)

Core (~~28~~ 31 semester hours)

- ☐ ACCT 321 - Intermediate Accounting I (5)
- ☐ ACCT 322 - Intermediate Accounting II (4)
- ☐ ACCT 331 - Cost Accounting (3)
- ☐ ACCT 360 - Professional Preparation I (1)
- ☐ ACCT 392 - Accounting Info Systems (3)
- ☐ ACCT 401 - Governmental Accounting (3)
- ☐ One of the following courses:
  BUGB 349 - Legal Environment of Business (3)
  BUGB 351 - Business Law I (3)
- ☐ FINA 301 - Managerial Finance (3)
- ☐ MANG 301 – Organizational Behavior (3)
- ☐ MARK 231 - Principles of Marketing (3)

Concentration Courses (24 semester hours)

- ☐ ACCT 350 - Ethics for Accounting Professionals (3)
- ☐ ACCT 402 - Advanced Accounting (3)
- ☐ ACCT 411 - Auditing I (3)
- ☐ ACCT 412 - Auditing II (3)
- ☐ ACCT 441 - Individual Income Tax (4)
- ☐ ACCT 442 - Advanced Tax and Tax Research (5)
- ☐ BUGB 352 - Business Law II (3)

GENERAL ELECTIVES (All college level courses appearing on your final transcript, not listed above that will bring your total semester hours to 120 hours. ~~4~~ 1 semester hours)

- ☐ MATH 113 - College Algebra (1)
- ☐ _____

SUGGESTED COURSE SEQUENCING

Freshman Year, Fall Semester: 16 credits

- ENGL 111 - English Composition (3)
- Essential Learning - Fine Arts (3)
- Essential Learning - Natural Science (3)
- Essential Learning - Social/Behavioral Science (3)
- MATH 113 - College Algebra (4)

Freshman Year, Spring Semester: 14 credits

- ENGL 112 - English Composition (3)
- Essential Learning - History (3)
- Essential Learning - Humanities (3)
- Essential Learning - Social/Behavioral Science (3)
- KINA Activity (1)
- KINE 100 - Health and Wellness (1)

Sophomore Year, Fall Semester: 15 credits

- ACCT 201 - Principles of Financial Accounting (3)
- CISB 101 - Business Information Technology (3)
- CISB 241 or STAT 241 - Introduction to Business Analysis (3)
- ECON 201 - Principles of Macroeconomics (3)
- MANG 201 - Principles of Management (3)

Sophomore Year, Spring Semester: 16 credits

- ACCT 202 - Principles of Managerial Accounting (3)
- BUGB 211 - Business Communications (3)
- CISB 210 - Fundamentals of Information Systems (3)
- ECON 202 - Principles of Microeconomics (3)
- ESSL 290 - Maverick Milestone (3)
- ESSL 200 - Essential Speech (1)

Junior Year, Fall Semester: 17 credits

- ACCT 321 - Intermediate Accounting I (5)
- ACCT 331 - Cost Accounting (3)
- BUGB 349 - Legal Environment of Business (3) or BUGB 351 - Business Law I (3)
- FINA 301 - Managerial Finance (3)
- MARK 231 - Principles of Marketing (3)

Junior Year, Spring Semester: 17 credits

- ACCT 322 - Intermediate Accounting II (4)
- ACCT 350 - Ethics for Accounting Professionals (3)
- ACCT 392 - Accounting Info Systems (3)
- BUGB 352 - Business law II (3)
- Essential Learning - Natural Science with Lab (4)

Senior Year, Fall Semester: 13 credits

- ACCT 401 - Governmental Accounting (3)
- ACCT 411 - Auditing I (3)
- ACCT 441 - Individual Income Tax (4)
- ~~General Elective~~MANG 301 – Organizational Behavior (3)

Senior Year, Spring Semester: 12 credits

- ACCT 360 - Professional Preparation I (1)
- ACCT 402 - Advanced Accounting (3)
- ACCT 412 - Auditing II (3)
- ACCT 442 - Advanced Tax and Tax Research (5)

Program Modification

Accounting: M135

Degree Type: Minor

Revision to program sheet: Yes ☑ No ☐

Description of modification:

Remove CISB 101 from required courses and increase "ACCT Elective at the 300 or 400 level" to 6 credits

Justification:

Improvements in secondary school preparation indicate CISB 101 is no longer necessary. Addition of another upper division elective allows students the opportunity to customize the minor to individual needs.

Revision to SLOs: Yes ☐ No ☑

Other changes: Yes ☐ No ☑

Discussions with affected departments:

N/A

Proposed by: Geoffrey Gurka

Director of Teacher Education Signature:

Expected Implementation: Fall 2019

2019-2020 PROGRAM REQUIREMENTS
Minor: Accounting

About This Minor. . .
Accounting is the one degree with 360 degrees of possibilities. Every business needs accounting help, whether it's a Wall Street law firm, a professional sports team, a movie production company, or a rock band. With the proper accounting education, your employment options are endless.

Accounting is the language of business and regardless of your major, the more accounting you have the better prepared you will be for a management position. This is a rigorous minor that will stand out on a résumé.

Advising Process and DegreeWorks
This document is intended for informational purposes to help determine what courses and associated requirements are needed to earn a minor. Meeting with an academic advisor is essential in planning courses and developing a suggested course sequencing. It is ultimately the student's responsibility to understand and fulfil the requirements for her/his intended minor.

DegreeWorks is an online degree audit tool available in MAVzone. It is the official record used by the Registrar's Office to evaluate progress towards a minor. Students are responsible for reviewing their DegreeWorks audit on a regular basis and should discuss questions or concerns with their advisor or academic department head for the minor. Discrepancies in requirements should be reported to the Registrar's Office.

Graduation Process
A minor cannot be awarded by itself. It must be combined with a baccalaureate degree outside the major field of study. Students should follow the graduation process outlined for the baccalaureate degree and list their majors and minors on the "Intent to Graduate" form.

If a student's petition for graduation is denied, it will be her/his responsibility to consult the Registrar's Office regarding next steps.

INSTITUTIONAL MINOR REQUIREMENTS

The following institutional requirements apply to all CMU minors. Specific programs may have different requirements that must be met in addition to institutional requirements.

- A minor consists of 15-24 semester hours. There may be prerequisites required for the minor which will increase the total number of credit hours for a student who has not already taken those prerequisites.
- Courses taken to satisfy Essential Learning, major requirements, or electives **can** be counted toward the minor if applicable.
- At least 33 percent of the credit hours required for the minor must be in courses numbered 300 or above.
- At least 25 percent of the classes must be taken at CMU.
- 2.00 cumulative GPA or higher for the courses used for the minor.
- A minor is not a degree by itself and must be earned at the same time as a baccalaureate degree.
- A minor must be outside the major field of study.
- A student may earn up to five minors with any baccalaureate degree at CMU.
- The Catalog Year determines which program sheet and degree requirements a student must fulfill in order to graduate. Visit with your advisor or academic department to determine which catalog year and program requirements sheet you should follow.
- See "Requirements for Undergraduate Degrees and Certificates" in the catalog for a complete list of graduation requirements.

PROGRAM-SPECIFIC MINOR REQUIREMENTS

- 24 semester hours for the Minor in Accounting.

REQUIRED COURSES FOR THE ACCOUNTING MINOR (24 semester hours)

- ☐ ACCT 201 - Principles of Financial Accounting (3)
- ☐ ACCT 202 - Principles of Managerial Accounting (3)
- ☐ ACCT 321 - Intermediate Accounting I (5)
- ☐ ACCT 322 - Intermediate Accounting II (4)
- ☐ ACCT 331 - Cost Accounting (3)
- ~~☐ CISB 101 - Business Information Technology (3)~~

ACCT Elective at the 300 or 400 level (~~3~~6):

- ☐ _____
- ☐ _____

Department: CSMS

Course Additions

STAT 301 Credit Hours 3

Course Title: Computational Statistics

Abbreviated Title: Computational Statistics

Contact hours per week: Lecture 3 Lab Field Studio Other

Type of Instructional Activity: Lecture

Academic engagement minutes: 2250 Student preparation minutes: 4500

Intended semesters for offering this course: Fall ☑ J-Term ☐ Spring ☑ Summer ☐

Intended semester to offer course 1st time: Fall 2019

Number of times course may be taken for credit: 1

Essential Learning Course: Yes ☐ No ☑

Prerequisites: Yes ☑ No ☐

STAT 200 or STAT 215 or STAT 241 or CISB 241

Prerequisite for other course(s): Yes ☑ No ☐

Co-requisites: Yes ☐ No ☑

Requirement or listed choice for any program of study: Yes ☑ No ☐

CSMS BS, Mathematics-Statistics: 3434
CSMS Minor, Statistics: M465
CSMS BS, Mathematics-Secondary Education: 3430
CSMS BA, Liberal Arts-Elementary Education, Mathematics: 3491
CSMS BS, Mathematics-Applied Mathematics: 3437
CSMS BS, Mathematics-Mathematics: 3424

Course is a requirement for a new program:

CSMS BS in Mathematics - Actuarial Science

Overlapping content with present courses offered on campus: Yes ☑ No ☐

There is some overlapping content with STAT 311 (as explained below).

Additional faculty FTE required: Yes ☐ No ☑

Additional equipment required: Yes ☐ No ☑

Additional lab facilities required: Yes ☐ No ☑

Course description for catalog:

Introduction to computational methods within statistical software, with a primary focus on R, SPSS, and Excel. Topics include inference on population means and variances, sampling from probability distributions, linear regression and correlation, analysis of variance, power of statistical tests, nonparametric methods, categorical data techniques, and graphics.

Justification:

This course is to enhance students' knowledge of statistical software and better prepare them for success in their upper level statistics courses. Concepts in this course overlap with concepts in STAT 311, but the computational aspect and use of statistical software makes the courses and students outcomes different. STAT 311 is not being deleted, but STAT 301 will replace STAT 311 on all program sheets.

Within the statistics community, there is a growing need for knowledge in R. Not only are we focusing more on the use of R in our own upper level courses, but many employed statisticians and computer

Course Additions

scientists have recently returned to graduate school to learn R, and many internships require a working knowledge of R. As for the other software included, anyone interested in a career in the business world should be well versed in the use of Excel for data analysis. With the addition of an actuarial science concentration, we feel that we need to offer a deeper level of instruction in this widespread software. Furthermore, SPSS is the tool of choice for data analysis within all of the social sciences, and this is a group of students who both need to have a good statistical foundation and often are interested in a minor in statistics.

Topical course outline:

Intro to R: syntax, data structures, functions
Intro to SPSS and Excel
Statistical graphics
Sampling from distributions
Confidence intervals and hypothesis tests
Linear regression
Analysis of variance
Nonparametric methods
Categorical data techniques

Student Learning Outcomes:

Import, describe, and analyze data comfortably using R, SPSS, and Excel
Run statistical tests and produce appropriate output using R, SPSS, and Excel

Discussions with affected departments:

Discussed in mathematics working group meetings in Fall 2018 and at CSMS department meeting in Sept 2018. Faculty are in favor of the course addition. Also discussed with and gained approval from education department to change the STAT 311 to STAT 301 in two programs (Mathematics: Secondary Education, and Liberal Arts: Elementary Education, Math) on 9/26/2018.

Proposed by: Clay King Expected Implementation: Fall 2019

Course Additions

STAT 312 Credit Hours 3

Course Title: Correlation and Regression

Abbreviated Title: Correlation and Regression

Contact hours per week: Lecture 3 Lab Field Studio Other

Type of Instructional Activity: Lecture

Academic engagement minutes: 2250 Student preparation minutes: 4500

Intended semesters for offering this course: Fall ☐ J-Term ☐ Spring ☑ Summer ☐

Intended semester to offer course 1st time: Spring 2020

Number of times course may be taken for credit: 1

Essential Learning Course: Yes ☐ No ☑

Prerequisites: Yes ☑ No ☐

STAT 301

Prerequisite for other course(s): Yes ☑ No ☐

Co-requisites: Yes ☐ No ☑

Requirement or listed choice for any program of study: Yes ☑ No ☐

CSMS BS, Mathematics-Statistics: 3434
CSMS Minor, Statistics: M465
CSMS BS, Mathematics-Applied Mathematics: 3437

Course is a requirement for a new program:

CSMS BS in Mathematics - Actuarial Science

Overlapping content with present courses offered on campus: Yes ☑ No ☐

This is a duplication of STAT 412 which is being deleted at this time.

Additional faculty FTE required: Yes ☐ No ☑

Additional equipment required: Yes ☐ No ☑

Additional lab facilities required: Yes ☐ No ☑

Course description for catalog:

Graphical, numerical, and theoretical least-squares analysis for simple and multiple regression and correlation, including inference methods, diagnostics and remedial measures, simultaneous inference methods, the matrix approach to regression and correlation analysis, and stepwise regression procedures. Use of statistical software.

Justification:

This is a replacement of STAT 412, which is the exact same course but in the wrong location. As we are updating and improving the statistics concentration, we are adding two new 400-level statistics courses (time series and categorical data analysis) that both require the information in this course. As such, this course needs to be given earlier in students' academic careers, not only for their ability to succeed in future courses, but for there to simply be room in their schedules to graduate in 4 years. The content of this course is more appropriate at the 300-level as well, and this will allow a seamless transition to the new degree program.

Topical course outline:

Simple Linear Regression
Multiple Regression
Regression Diagnostics

Course Additions

Least Squares Regression Theory
Model Fitting Procedures
Regression using Matrices
Non-linear Regression Techniques

Student Learning Outcomes:

Perform a variety of regression techniques as appropriate for the given data
Verify model assumptions and present solutions to violations of those assumptions
Import, describe, and analyze data effectively using statistical software

Discussions with affected departments:

Discussed in mathematics working group meetings in Fall 2018 and at CSMS department meeting in Sept 2018. Faculty are in favor of the course addition.

Proposed by: Clay King Expected Implementation: Fall 2019

Course Additions

STAT 430 Credit Hours 3

Course Title: Categorical Data Analysis

Abbreviated Title: Categorical Data Analysis

Contact hours per week: Lecture 3 Lab Field Studio Other

Type of Instructional Activity: Lecture

Academic engagement minutes: 2250 Student preparation minutes: 4500

Intended semesters for offering this course: Fall ☑ J-Term ☐ Spring ☐ Summer ☐

Intended semester to offer course 1st time: Fall 2019

Number of times course may be taken for credit: 1

Essential Learning Course: Yes ☐ No ☑

Prerequisites: Yes ☑ No ☐

STAT 312

Prerequisite for other course(s): Yes ☐ No ☑

Co-requisites: Yes ☐ No ☑

Requirement or listed choice for any program of study: Yes ☑ No ☐

CSMS BS, Mathematics-Statistics: 3434

CSMS Minor, Statistics: M465

Course is a requirement for a new program:

CSMS BS in Mathematics - Actuarial Science

Overlapping content with present courses offered on campus: Yes ☐ No ☑

Additional faculty FTE required: Yes ☐ No ☑

Additional equipment required: Yes ☐ No ☑

Additional lab facilities required: Yes ☐ No ☑

Course description for catalog:

Study of appropriate methods for the collection and analysis of qualitative data. Topics include inference for contingency tables, chi-square and nonparametric tests, logistic regression, modelling for multinomial responses, and generalized linear models.

Justification:

Statistics is a growing field that is part of a variety of disciplines, and many of these disciplines interact extensively with qualitative data. Thus, a course that emphazies the appropriate treatment of such data is important. This course will be of particular importance to those in the new actuarial science concentration as well as anyone with an interest in applications or careers in the social sciences. Qualitative data is rarely covered in other classes but appears extensively in practice. Students will learn how to analyze this data in a way that is not covered in any other statistics course offered at CMU.

Topical course outline:

Gathering Categorical Data
Entering Categorical Data in R
Creating and Anaylzing Contingency Tables
Probability Theory and use with Categorical Data
Discrete Distributions
Inference for 2-way Contingency Tables
Modeling of Binary, Multinomial, and Ordinal Data

Course Additions

Generalized Linear Models

Student Learning Outcomes:

Use computer software to analyze discrete data, ordinal data and paired categorical data.
Select appropriate tests for any given data
Make accurate conclusions in analyzing categorical data

Discussions with affected departments:

Discussed in mathematics working group meetings in Fall 2018. Faculty are in favor of the course addition.

Proposed by: Clay King Expected Implementation: Fall 2019

Course Additions

STAT 435 Credit Hours 3

Course Title: Introduction to Time Series

Abbreviated Title: Introduction to Time Series

Contact hours per week: Lecture 3 Lab Field Studio Other

Type of Instructional Activity: Lecture

Academic engagement minutes: 2250 Student preparation minutes: 4500

Intended semesters for offering this course: Fall ☐ J-Term ☐ Spring ☑ Summer ☐

Intended semester to offer course 1st time: Spring 2020

Number of times course may be taken for credit: 1

Essential Learning Course: Yes ☐ No ☑

Prerequisites: Yes ☑ No ☐

STAT 312

Prerequisite for other course(s): Yes ☐ No ☑

Co-requisites: Yes ☐ No ☑

Requirement or listed choice for any program of study: Yes ☑ No ☐

CSMS BS, Mathematics-Statistics: 3434

CSMS Minor, Statistics: M465

Course is a requirement for a new program:

CSMS BS in Mathematics - Actuarial Science

Overlapping content with present courses offered on campus: Yes ☐ No ☑

Additional faculty FTE required: Yes ☐ No ☑

Additional equipment required: Yes ☐ No ☑

Additional lab facilities required: Yes ☐ No ☑

Course description for catalog:

Statistical methods for analyzing time series. Topics include stationarity, autocorrelation, ARIMA models, spectral analysis, filtering, forecasting, and GARCH models.

Justification:

In updating our statistics program to be more comprehensive and competitive for modern students, we researched both peer institutions and those nationally-recognized for their statistics degrees. The majority of these programs offer an undergraduate time series course either as a requirement or an upper-level elective. Furthermore, we are adding a concentration in actuarial science, and time series methods are both incredibly relevant to practicing actuaries and even more prevalent within actuarial programs than statistics programs.

Topical course outline:

Characteristics of time series
Stationarity
Measurement of correlation
Exploratory data analysis
Classical time series regression
Smoothing
Autoregressive integrated moving average (ARIMA) models
Estimation and forecasting

Course Additions

Spectral analysis and filtering
Generalized autoregressive conditionally heteroscedastic (GARCH) models
State space models
Models in the frequency domain

Student Learning Outcomes:

Recognize and perform descriptive analysis of time series data.
Fit multiple time series models, as appropriate for the data at hand.
Use models to smooth data, address trends, and predict future values.
Utilize statistical technology to accomplish all time series analysis.

Discussions with affected departments:

Discussed in mathematics working group meetings in Fall 2018. Faculty are in favor of the course addition.

Proposed by: Clay King Expected Implementation: Fall 2019

Course Additions

STAT 460 Credit Hours 3

Course Title: Actuarial Exams Preparation

Contact hours per week: Lecture 3 Lab Field Studio Other

Type of Instructional Activity: Lecture

Academic engagement minutes: 2250 Student preparation minutes: 4500

Intended semesters for offering this course: Fall ☐ J-Term ☐ Spring ☑ Summer ☐

Intended semester to offer course 1st time: Spring 2020

Number of times course may be taken for credit: 1

Essential Learning Course: Yes ☐ No ☑

Prerequisites: Yes ☑ No ☐

STAT 351

Prerequisite for other course(s): Yes ☐ No ☑

Co-requisites: Yes ☐ No ☑

Requirement or listed choice for any program of study: Yes ☑ No ☐

Course is a requirement for a new program:

BS, Mathematics - Actuarial Science

Overlapping content with present courses offered on campus: Yes ☑ No ☐

This course is a preparation course for the Society of Actuary P and FM exams. The content of the course is a summary of numerous statistics and business courses. Practice tests will be given to thoroughly prepare students to pass the exams.

Additional faculty FTE required: Yes ☐ No ☑

Additional equipment required: Yes ☐ No ☑

Additional lab facilities required: Yes ☐ No ☑

Course description for catalog:

Preparation for the Probability Exam (P Exam) as well as the Financial Mathematics Exam (FM Exam) from the Society of Actuaries.

Justification:

The P and FM actuary exams are quite difficult to pass. Passing them is the first step to becoming an Associate of the Society of Actuaries. Actuaries are well compensated and traditionally one of the most fulfilling careers. An exam preparation course is vital to help our students pass these two essential exams.

Topical course outline:

Probability Axioms
Mutually Exclusive & Independence
Combinatorics
Bayes' Rule
Law of Total probability
Discrete and Continuous Distributions
mgf's
joint distributions
transformations
correlation
time value of money

Course Additions

annuities
loans
bonds
portfolios
immunization
interest rate swaps
determinants of interest rates

Student Learning Outcomes:

Determine probabiites from general probability theory statements.
Utilize various distributions in order to predict specific outcomes.
Determine the time value of money in terms of loans, bonds, and annuities.

Discussions with affected departments:

Discussed in mathematics working group meetings in Fall 2018. Faculty are in favor of the course addition.
Discussions with Business faculty in Spring 2018 (at dept. meeting) and they have no issues with the new course.

Proposed by: Rick Ott Expected Implementation: Fall 2019

Course Additions

STAT 492 Credit Hours 1

Course Title: Senior Capstone

Abbreviated Title: Senior Capstone

Contact hours per week: Lecture 1 Lab Field Studio Other

Type of Instructional Activity: Independent Studies/Directed Readings/Directed Res

Academic engagement minutes: 750 Student preparation minutes: 1500

Intended semesters for offering this course: Fall ☐ J-Term ☐ Spring ☑ Summer ☐

Intended semester to offer course 1st time: Spring 2020

Number of times course may be taken for credit: 1

Essential Learning Course: Yes ☐ No ☑

Prerequisites: Yes ☑ No ☐

MATH 484

Prerequisite for other course(s): Yes ☐ No ☑

Co-requisites: Yes ☐ No ☑

Requirement or listed choice for any program of study: Yes ☑ No ☐

CSMS BS, Mathematics-Statistics: 3434

Overlapping content with present courses offered on campus: Yes ☐ No ☑

Additional faculty FTE required: Yes ☐ No ☑

Additional equipment required: Yes ☐ No ☑

Additional lab facilities required: Yes ☐ No ☑

Course description for catalog:

Independent capstone research project under the guidance of a faculty member.

Justification:

Replaces MATH 494 as the capstone research experience for majors in the statistics concentration. Students in MATH 494 prepare to take a fields test in mathematics which the new statistics concentrators will not be required to take.

Topical course outline:

Research Topic, Perform Appropriate Analysis, Write Article, Give Oral Presentation

Student Learning Outcomes:

Draw statistical conclusions and evaluate the validity of others' conclusions. (Critical Thinking) Communicate technical analysis to non-specialists. (Communication Fluency)Construct multi-step problem solving strategies, and communicate solutions effectively in written form. (Specialized Knowledge/Quantitative Fluency)

Discussions with affected departments:

Discussed in mathematics working group meetings in Fall 2018. Faculty are in favor of the course addition.

Proposed by: Rick Ott Expected Implementation: Fall 2019

Course Deletions

STAT 412 Credit Hours 3

Course Title: Correlation and Regression

Essential Learning Course: Yes ☐ No ☑

Requirement or listed choice for any program of study: Yes ☑ No ☐

CSMS BS, Mathematics-Statistics: 3434

CSMS Minor, Statistics: M465

CSMS BS, Mathematics-Applied Mathematics: 3437

Prerequisite for other course(s): Yes ☐ No ☑

Co-requisite for other course(s): Yes ☐ No ☑

Justification:

This course will be reinstated as STAT 312 (Correlation and Regression). The content is more appropriate as a 300-level course, especially as we are adding two 400-level STAT courses that the new STAT 312 will be a prerequisite for.

Proposed by: Clay King Expected Implementation: Fall 2019

Course Modifications

CSCI 260

Intended semester to offer modified course for the 1st time: Fall 2019

	Current	Proposed
Course Prefix:	CSCI	
Course No.:	260	
Credit Hours:	3	
Course Title:	Introduction to Database	
Times for Credit:	1	1

Prerequisites:

Current: CSCI 110

Proposed: CSCI 110 or CSCI 111

Requirement or listed choice for any program of study:	Yes	☑	No	☐
Change affects program sheet or grad requirements:	Yes	☐	No	☑

Justification:

Students in the Actuarial Science program would benefit from taking CSCI 260 (Introduction to Database) however we would like those students to have the option of taking CSCI 110/110L (Beginning Programming) or CSCI 111 (CSI: Foundations of Computer Science) so we have added CSCI 111 as an alternative the the prerequisite of CSCI 110/110L. CSCI 111 will provide sufficient preparation for students entering CSCI 260.

Discussions with affected departments:

This change to prerequisites was ok'd by CSMS Department Head, Lori Payne. (Fall 2018)

Proposed by: Lisa Driskell Expected Implemention: Fall 2019

Course Modifications

MATH 369

Intended semester to offer modified course for the 1st time: Fall 2019

	Current	Proposed
Course Prefix:	MATH	
Course No.:	369	
Credit Hours:	3	
Course Title:	Discrete Structures I	
Times for Credit:	1	1

Prerequisites:

Current: MATH 152 or MATH 136; and CSCI 111

Proposed: MATH 152 or MATH 136; and CSCI 110/110L or CSCI 111 or CSCI 130

Requirement or listed choice for any program of study: Yes ☑ No ☐

Change affects program sheet or grad requirements: Yes ☐ No ☑

Justification:

We are including the option to take CSCI 110/110L (Beginning Programming) or CSCI 130 (Introduction to Engineering Computer Science) as an alternative to the CSCI 111 (Foundations of Computer Science) prerequisite. This is partially clean-up after program modifications/additions in mathematics in 2016. Mathematics: Secondary Education now allows the choice of CSCI 111 or CSCI 110/110L, but requires MATH 369. This modification will clean up the prerequisite issue for those students. The inclusion of CSCI 130 is to allow engineering students who are required to take CSCI 130 (and not CSCI 110 or CSCI 111) to enroll in the course.

Both CSCI 111 and CSCI 110 are computer science intro programming courses and CSCI also teaches programming fundamentals. Students who take CSCI 110/110L or CSCI 130 will be adequately prepared (computer science-wise) for this math course. CSCI 110 has become a popular alternative to CSCI 111 in some programs due to the different programming laguage used. Programs such as Mathematics: Secondary Education and Mathematics: Applied Math opted to allow CSCI 111 or CSCI 110/110L in the program.

Discussions with affected departments:

This was discussed with the Computer Science and mathematics faculty during the September Dept meeting in Fall 2018. Faculty voted for this modification.

Proposed by: Lisa Driskell Expected Implemention: Fall 2019

Course Modifications

STAT 313

Intended semester to offer modified course for the 1st time: Spring 2020

	Current	Proposed
Course Prefix:	STAT	
Course No.:	313	
Credit Hours:	3	
Course Title:	Sampling Techniques	
Times for Credit:	1	1

Prerequisites:

Current: STAT 200

Proposed: STAT 301

Requirement or listed choice for any program of study:	Yes	☑	No	☐
Change affects program sheet or grad requirements:	Yes	☐	No	☑

Justification:

We are adding a computational statistics course (STAT 301) that will be a prerequisite to most upper-level STAT courses. In STAT 301, students will learn how to use various statistical software, so that courses like this one (STAT 313) can focus on the course content and not on teaching students the software simultaneously. Since STAT 200 is a prerequisite for STAT 301, it does not need to be listed alongside STAT 301.

Discussions with affected departments:

Discussed in mathematics working group meetings in FAll 2018. Faculty are in favor of the prerequisite change.

Proposed by: Clay King Expected Implemention: Fall 2019

Course Modifications

STAT 350

Intended semester to offer modified course for the 1st time: Fall 2019

	Current	Proposed
Course Prefix:	STAT	
Course No.:	350	
Credit Hours:	3	
Course Title:	Mathematical Statistics 1	
Times for Credit:	1	1

Prerequisites:

Current: STAT 311 and MATH 253 (may be taken concurrently)

Proposed: STAT 200 and MATH 253 (may be taken concurrently)

Requirement or listed choice for any program of study: Yes ☑ No ☐

Change affects program sheet or grad requirements: Yes ☐ No ☑

Justification:

STAT 311 (Statistical Methods) will likely no longer be taught. The topics in that course will mostly appear in STAT 301 (Computational Statistics) along with a technological/software emphasis. However, the topics and the software taught in STAT 301 are not needed for STAT 350, as this is a proof-based course. STAT 311 only existed as a prerequisite previously to ensure that students were far enough along to be ready for STAT 350 however MATH 253 (Calculus III) is sufficient for that purpose and STAT 200 (Probability and Statistics) is a sufficient prerequisite for the statistics content.

Discussions with affected departments:

Discussed in mathematics working group meetings in Fall 2018. Faculty are in favor of the prerequisite change.

Proposed by: Clay King Expected Implemention: Fall 2019

Course Modifications

STAT 425

Intended semester to offer modified course for the 1st time: Fall 2019

	Current	Proposed
Course Prefix:	STAT	
Course No.:	425	
Credit Hours:	3	
Course Title:	Design and Analysis of Experiments	
Times for Credit:	1	1

Prerequisites:

Current: STAT 311, and MATH 121 or MATH 135 or MATH 146 or MATH 151

Proposed: STAT 301; and MATH 121 or MATH 135 or MATH 146 or MATH 151

Requirement or listed choice for any program of study: Yes ☑ No ☐

Change affects program sheet or grad requirements: Yes ☑ No ☐

CSMS BS, Mathematics-Statistics: 3434

Justification:

STAT 311 (Statistical Methods) is being replaced by STAT 301 (Computational Statistics), which covers much of the same content but with a greater emphasis on introducing and implementing statistical software. This software is used extensively in STAT 425.

Discussions with affected departments:

Discussed in mathematics working group meetings in Fall 2018. Faculty are in favor of the prerequisite change.

Proposed by: Clay King Expected Implemention: Fall 2019

Program Additions

Mathematics, Actuarial Science

Degree Type: BS

Abbreviated Name: Mathematics, Actuarial Science

Proposed by: Richard Ott

Director of Teacher Education Signature:

Expected Implementation: Fall 2019

Colorado Mesa University

New Programs: Projected Enrollment, Revenue and Expense Estimates

Undergraduate

Program Name: **Mathematics, Actuarial Science**

Step 1. Enrollment Assumptions

		Year 1	Year 2	Year 3	Year 4	Year 5
Fiscal /Academic Year		**2019-2020**	**2020-2021**	**2021-2022**	**2022-2023**	**2023-2024**
In-state Headcount	New	2	3	5	5	5
	Existing	3	5	6	10	13
Out-of-State Headcount	New	1	1	1	1	1
	Existing	0	1	2	3	3
Program Headcount		6	10	14	19	22
In-state FTE		5.17	8.00	11.00	15.00	18.00
Out-of-State FTE		1.03	2.00	3.00	4.00	4.00
Program FTE		6.20	10.00	14.00	19.00	22.00
Program Graduates		0	2	1	3	4

Step 1a. Anticipated Credit Hours taken based on recommended course sequencing:

Per Student	31	30	30	29	31
In-State Total	155	240	330	450	540
Out-of-State Total	31	60	90	120	120
Total	186	300	420	570	660

Revenue Rates - Per Credit Hour

Undergraduate Tuition					
In-State	$ 286.44	$ 295.04	$ 309.79	$ 325.28	$ 341.54
Out-of-State (average)	$ 476.45	$ 490.75	$ 520.19	$ 551.40	$ 584.49

Step 2. Program Revenue Projections

Tuition - New	$ 32,529	$ 41,276	$ 62,074	$ 65,334	$ 68,766
Tuition- -Existing	$ 26,639	$ 58,978	$ 86,973	$ 147,209	$ 185,805
Total Tuition	$ 59,169	$ 100,253	$ 149,047	$ 212,543	$ 254,571
Academic Fees - Existing	$ -	$ -	$ -	$ -	$ -
Academic Fees - New	$ -	$ -	$ -	$ -	$ -
State and Federal Grants - New	0	0	0	0	0
Donations - New	0	0	0	0	0
Other - New	0	0	0	0	0
TOTAL PROGRAM REVENUES	**$ 59,169**	**$ 100,253**	**$ 149,047**	**$ 212,543**	**$ 254,571**

Colorado Mesa University

New Programs: Projected Enrollment, Revenue and Expense Estimates

Undergraduate

Program Name: **Mathematics, Actuarial Science**

Step 3. Program Expenses

	Year 1	Year 2	Year 3	Year 4	Year 5
Operating Expenses:					
Faculty Full-time	$ -	$ -	$ -	$ -	$ -
FTE	-	-	-	-	-
Benefits	-	-	-	-	-
Faculty Part-time	-	-	-	-	-
FTE	-	-	-	-	-
Benefits	-	-	-	-	-
Administrative and/or Support Staff	-	-	-	-	-
FTE	-	-	-	-	-
Benefits	-	-	-	-	-
Financial Aid (program specific)	0	0	0	0	0
Supplies	-	-	-	-	-
Equipment	-	-	-	-	-
Travel	-	-	-	-	-
Telecommunications	-	-	-	-	-
Other (copier, postage)	-	-	-	-	-
Total Operating Expenses	$ -	$ -	$ -	$ -	$ -
Program Start-Up Expenses:					
Capital Construction	-	-	-	-	-
Equipment	-	-	-	-	-
Library Acquisitions	-	-	-	-	-
Other	-	-	-	-	-
Total Start-Up Expenses	-	0	0	0	0
TOTAL PROGRAM EXPENSES	$ -	$ -	$ -	$ -	$ -
Institutional Reallocation					
Existing Funds in Dept's Budget					
Net New Expense Increase	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Program Revenue and Expense Summary*	Year 1	Year 2	Year 3	Year 4	Year 5
Program Revenue and Expense					
Total Revenues	$ 59,169	$ 100,253	$ 149,047	$ 212,543	$ 254,571
Total Expenses	$ -	$ -	$ -	$ -	$ -
Revenue less Expenses	$ 59,169	$ 100,253	$ 149,047	$ 212,543	$ 254,571
New Revenue and Expense Impact					
Tuition	$ 32,529	$ 41,276	$ 62,074	$ 65,334	$ 68,766
State and Federal Grants	0	0	0	0	0
Donations	0	0	0	0	0
Other	0	0	0	0	0
Total Revenues	$ 32,529	$ 41,276	$ 62,074	$ 65,334	$ 68,766
New Expenses	$ -	$ -	$ -	$ -	$ -

*Excludes other indirect program support services costs.

2019-2020 PROGRAM REQUIREMENTS
Degree: Bachelor of Science
Major: Mathematics
Concentration: Actuarial Science

About This Major . . .
The actuarial science concentration in statistics prepares students for graduate work in actuarial science or to enter the job force. With some additional job-specific training, students entering the job market could function as actuaries in the insurance field or as applied statisticians working in areas such as risk management and marketing.

For more information on what you can do with this major, visit Career Services' *What to Do with a Major?* resource.

All CMU baccalaureate graduates are expected to demonstrate proficiency in critical thinking, communication fluency, quantitative fluency, personal and social responsibility, information literacy, and specialized knowledge/applied learning. In addition to these campus-wide student learning outcomes, graduates of this major will be able to:

1. Construct multi-step problem-solving strategies, and communicate solutions effectively in written form. (Specialized Knowledge, Quantitative Fluency)
2. Use statistical software (including calculators) to aid in problem-solving and investigation, and understand its limitations. (Applied Learning)
3. Apply appropriate statistical procedures and justify chosen assumptions. (Applied Learning, Personal and Social Responsibility)
4. Draw statistical conclusions and evaluate the validity of others' conclusions. (Critical Thinking, Information Literacy)
5. Communicate technical analyses to non-specialists. (Communication Fluency)

Advising Process and DegreeWorks
This document is intended for informational purposes to help determine what courses and associated requirements are needed to earn a degree. The suggested course sequencing outlines how students could finish degree requirements. Some courses are critical to complete in specific semesters, while others may be moved around. Meeting with an academic advisor is essential in planning courses and altering the suggested course sequencing. It is ultimately the student's responsibility to understand and fulfill the requirements for her/his intended degree(s).

DegreeWorks is an online degree audit tool available in MAVzone. It is the official record used by the Registrar's Office to evaluate progress towards a degree and determine eligibility for graduation. Students are responsible for reviewing their DegreeWorks audit on a regular basis and should discuss questions or concerns with their advisor or academic department head. Discrepancies in requirements should be reported to the Registrar's Office.

Graduation Process

Students must complete the following in the first two months of the semester prior to completing their degree requirements:

- Review their DegreeWorks audit and create a plan that outlines how unmet requirements will be met in the final semester.
- Meet with their advisor and modify their plan as needed. The advisor must approve the final plan.
- Submit the "Intent to Graduate" form to the Registrar's Office to officially declare the intended graduation date and commencement ceremony plans.
- Register for all needed courses and complete all requirements for each degree sought.

Submission deadlines and commencement details can be found at http://www.coloradomesa.edu/registrar/graduation.html.

If a student's petition for graduation is denied, it will be her/his responsibility to consult the Registrar's Office regarding next steps.

INSTITUTIONAL DEGREE REQUIREMENTS

The following institutional degree requirements apply to all CMU baccalaureate degrees. Specific programs may have different requirements that must be met in addition to institutional requirements.

- 120 semester hours minimum.
- Students must complete a minimum of 30 of the last 60 hours of credit at CMU, with at least 15 semester hours in major discipline courses numbered 300 or higher.
- 40 upper-division credits (an alternative credit limit applies to the Bachelor of Applied Science degree).
- 2.00 cumulative GPA or higher in all CMU coursework.
- A course may only be used to fulfill one requirement for each degree/certificate.
- No more than six semester hours of independent study courses can be used toward the degree.
- Non-traditional credit, such as advanced placement, credit by examination, credit for prior learning, cooperative education and internships, cannot exceed 30 semester credit hours for a baccalaureate degree; A maximum of 15 of the 30 credits may be for cooperative education, internships, and practica.
- Pre-collegiate courses (usually numbered below 100) cannot be used for graduation.
- Capstone exit assessment/projects (e.g., Major Field Achievement Test) requirements are identified under Program-Specific Degree Requirements.
- The Catalog Year determines which program sheet and degree requirements a student must fulfill in order to graduate. Visit with your advisor or academic department to determine which catalog year and program requirements you should follow.
- See “Requirements for Undergraduate Degrees and Certificates” in the catalog for a complete list of graduation requirements.

PROGRAM-SPECIFIC DEGREE REQUIREMENTS

- 2.50 cumulative GPA or higher in coursework toward the major content area
- At most one “D” may be used in completing major requirements.

ESSENTIAL LEARNING REQUIREMENTS (31 semester hours)
See the current catalog for a list of courses that fulfill the requirements below. If a course is an Essential Learning option and a requirement for your major, you must use it to fulfill the major requirement and make a different selection for the Essential Learning requirement.

English (6 semester hours, must receive a grade of "C" or better and must be completed by the time the student has 60 semester hours.)

- ☐ ENGL 111 - English Composition (3)
- ☐ ENGL 112 - English Composition (3)

Mathematics (3 semester hours, must receive a grade of "C" or better, must be completed by the time the student has 60 semester hours.)

- ☐ MATH 151 - Calculus I (5)*

  *3 credits apply to the Essential Learning requirements and 2 credits apply to general electives.

Humanities (3 semester hours)

- ☐ Select one Humanities course (3)

Social and Behavioral Sciences (6 semester hours)

- ☐ Select one Social and Behavioral Sciences course (3)
- ☐ Select one Social and Behavioral Sciences course (3)

Natural Sciences (7 semester hours, one course must include a lab)

- ☐ Select one Natural Sciences course (3)
- ☐ Select one Natural Sciences course with a lab (4)

History (3 semester hours)

- ☐ Select one History course (3)

Fine Arts (3 semester hours)

- ☐ Select one Fine Arts course (3)

OTHER LOWER-DIVISION REQUIREMENTS

Wellness Requirement (2 semester hours)

- ☐ KINE 100 - Health and Wellness (1)
- ☐ Select one Activity course (1)

Essential Learning Capstone (4 semester hours)
Essential Learning Capstone must be taken after completion of the Essential Learning English and Mathematics requirements and when a student has earned between 45 and 75 hours.

- ☐ ESSL 290 - Maverick Milestone (3)
- ☐ ESSL 200 - Essential Speech (1)

FOUNDATION COURSES (8 semester hours)

- ☐ MATH 152 - Calculus II (5)
- ☐ CISB 241 or STAT 241 – Introduction to Business Analysis (3)

BS, MATHEMATICS, ACTUARIAL SCIENCE REQUIREMENTS (53-54 semester hours)

Required Core Courses (11 semester hours)

- ☐ MATH 150 - Topics and Careers in Mathematics (1)
- ☐ MATH 225 - Computational Linear Algebra (2)
- ☐ MATH 253 - Calculus III (4)
- ☐ One of the following courses:
  CSCI 110 - Beginning Programming (3) with CSCI 110L - Beginning Programming Laboratory (1)
  CSCI 111 - CS1: Foundations of Computer Science (4)

Required Concentration Courses (33 semester hours)

- ☐ CSCI 260 – Introduction to Database (3)
- ☐ STAT 301 – Computational Statistics (3)
- ☐ STAT 312 - Correlation and Regression (3)
- ☐ STAT 350 - Mathematical Statistics I (3)
- ☐ STAT 351 - Mathematical Statistics II (3)
- ☐ CISB 341 – Quantitative Decision Making (3)
- ☐ ECON 201- Principles of Macroeconomics (3)
- ☐ ECON 415 - Econometrics (3)
- ☐ FINA 310 – Risk Management (3)
- ☐ FINA 412 - Life and Health Insurance Licensure and Financial Planning (3)
- ☐ STAT 460 – Actuarial Exams Preparation (3)

Concentration Electives (9-10 semester hours)
Choose three courses from the groups below. At least two courses must be from Group A and the third course may be from Group A or Group B.

Group A:

STAT 313 - Sampling Techniques (3)
STAT 425 – Design and Analysis of Experiments (3)
STAT 430 – Categorical Data Analysis (3)
STAT 435 – Introduction to Time Series (3)

Group B:

MATH 240 – Introduction to Advanced Mathematics (4)
MATH 361 - Numerical Analysis (4)
MATH 362 - Fourier Analysis (3)
MATH 365 – Mathematical Modeling (3)
MATH 369 – Discrete Structures I (3)

- ☐ _____
- ☐ _____
- ☐ _____

GENERAL ELECTIVES (All college level courses appearing on your final transcript, not listed above that will bring your total semester hours to 120 hours, including 40 upper-division credit hours. 21-22 semester hours, 3-7 hours may need to be upper division.)

- ☐ MATH 151 – Calculus I (2)
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

- ☐ _____
- ☐ _____
- ☐ _____

SUGGESTED COURSE SEQUENCING

Freshman Year, Fall Semester: 15 credits

- MATH 151 - Calculus I (5)
- CSCI 111- Computer Science 1: Foundations (4) or CSCI 110/CSCI 110L - Beginning Programming and Laboratory (4)
- ENGL 111 - English Composition (3)
- Essential Learning - Social and Behavioral Sciences (3)

Freshman Year, Spring Semester: 16 credits

- MATH 150 – Topics and Careers in Mathematics (1)
- MATH 152 - Calculus II (5)
- Essential Learning - History (3)
- ENGL 112 - English Composition (3)
- Essential Learning - Social and Behavioral Sciences (3)
- KINA Activity (1)

Sophomore Year, Fall Semester: 15 credits

- MATH 225 - Computational Linear Algebra (2)
- MATH 253 - Calculus III (4)
- Essential Learning - Fine Arts (3)
- Essential Learning - Humanities (3)
- CISB 241 or STAT 241 - Introduction to Business Analysis (3)

Sophomore Year, Spring Semester: 15 credits

- ECON 201 – Principles of Macroeconomics (3)
- CSCI 260 – Introduction to Database (3)
- ESSL 290 - Maverick Milestone (3)
- ESSL 200 - Essential Speech (1)
- KINE 100 - Health and Wellness (1)
- Essential Learning - Natural Science with Lab (4)

Junior Year, Fall Semester: 15 credits

- STAT 301 – Computational Statistics (3)
- FINA 310 – Risk Management (3)
- CISB 341 – Quantitative Decision Making (3)
- STAT 350 - Mathematical Statistics I (3)
- General Elective (3)

Junior Year, Spring Semester: 15 credits

- STAT 312 - Correlation and Regression (3)
- STAT 351 - Mathematical Statistics II (3)
- Concentration Elective from Group A or B (3)
- Essential Learning - Natural Science (3)
- General Electives (3)

Senior Year, Fall Semester: 15-16 credits

- FINA 412 – Life and Health Insurance Licensure and Financial Planning (3)
- Concentration Elective from Group A or B (3-4)
- General Electives (9)

Senior Year, Spring Semester: 13-14 credits

- ECON 415 Econometrics (3)
- STAT 460 – Actuarial Exams Preparation (3)
- Concentration Elective from Group A or B (3)
- General Electives (4-5)

Program Modification

Liberal Arts-Elementary Education, Mathematics: 3491

Degree Type: BA

Revision to program sheet: Yes ☑ No ☐

Description of modification:

1) Remove STAT 311: Statistical Methods from program electives list.
2) Add STAT 301: Computational Statistics to program electives list.

Justification:

Material from STAT 311 will be covered in STAT 301 with the addition of using computational software. The statistics faculty believe that STAT 301 is a more valuable course for students and so STAT 301 will replace STAT 311 in the program electives. Note STAT 311 was in a group of four courses from which students must choose one course.

Revision to SLOs: Yes ☐ No ☑

Other changes: Yes ☐ No ☑

NA

Discussions with affected departments:

Blake Bickham confirmed approval by the Department of Education on 9/26/2018.

Proposed by: Lisa Driskell

Director of Teacher Education Signature: Blake R. Bickham

Expected Implementation: Fall 2019

2019-2020 PROGRAM REQUIREMENTS
Degree: Bachelor of Arts
Major: Liberal Arts, Elementary Education
Concentration: Mathematics

About This Major . . .

The Center for Teacher Education offers a comprehensive program of study that leads to licensure in Colorado. Our professors are experienced, knowledgeable, accessible, and dedicated to the improvement of public education. At Colorado Mesa University, we pride ourselves on the personal touch. Faculty offer one-on-one guidance for course selection, field placements, student teaching, and employment. Our mission is to develop *Educators as Innovators;* we are always looking to improve the quality of learning in our programs and K-12 schools.

As a student, you will gradually accumulate over 200 hours of classroom experience before beginning student teaching. School districts throughout western Colorado provide opportunities to gain experience with children of all ages and backgrounds in a variety of school settings.

The elementary licensure program provides teacher education candidates with a broad content knowledge and prepares them as teachers for grades kindergarten through six. A minimum of 60 credit hours of Essential Learning and content area coursework must be completed with a minimum GPA of 2.80 before a candidate may apply for admission to the Center for Teacher Education elementary licensure program. Please see the Teacher Education Admission Packet for further information on admissions criteria. EDUC 115 and EDUC 215 must be taken before applying to the program.

For more information on what you can do with this major, go to http://www.coloradomesa.edu/career/whatmajor.html.

All CMU baccalaureate graduates are expected to demonstrate proficiency in critical thinking, communication fluency, quantitative fluency, and specialized knowledge/applied learning. In addition to these campus-wide student learning outcomes, graduates of this major will be able to:

1. Demonstrate familiarity with the logical and historical development of mathematics and the implications of this development. (Specialized Knowledge)
2. Demonstrate a deep and coherent proficiency in the mathematics underlying elementary curricula. (Quantitative Fluency)
3. Effectively communicate mathematics using oral and written exposition appropriate for teachers of mathematics. (Communication Fluency)
4. Reason mathematically and communicate precisely using clear definitions, appropriate symbols, correct units of measure with an appropriate degree of precision, proper labels, and coherent chains of logic. (Applied Learning)
5. Instruct K-12 students based on self-written learning plans to address individual learning and developmental patterns. (Specialized Knowledge)
6. Design a safe and supportive learning environment for elementary and secondary education students. (Applied Learning)
7. Apply content knowledge while working with learners to access information in real world settings assuring learner mastery of the content. (Specialized Knowledge)
8. Integrate assessment, planning, and instructional strategies in coordinated and engaging ways through multiple means of communication. (Critical Thinking/ Communication Fluency)
9. Engage in meaningful and intensive professional learning and self-renewal by regularly examining practice through ongoing study, self-reflection, and collaboration. (Applied Learning)

Advising Process and DegreeWorks

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on a regular basis and should discuss questions or concerns with their advisor or academic department head. Discrepancies in requirements should be reported to the Registrar's Office.

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INSTITUTIONAL DEGREE REQUIREMENTS

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- 120 semester hours minimum.
- Students must complete a minimum of 30 of the last 60 hours of credit at CMU, with at least 15 semester hours in major discipline courses numbered 300 or higher.
- 40 upper-division credits (an alternative credit limit applies to the Bachelor of Applied Science degree).
- 2.00 cumulative GPA or higher in all CMU coursework.
- A course may only be used to fulfill one requirement for each degree/certificate.
- No more than six semester hours of independent study courses can be used toward the degree.
- Non-traditional credit, such as advanced placement, credit by examination, credit for prior learning, cooperative education and internships, cannot exceed 30 semester credit hours for a baccalaureate degree; A maximum of 15 of the 30 credits may be for cooperative education, internships, and practica.
- Pre-collegiate courses (usually numbered below 100) cannot be used for graduation.
- Capstone exit assessment/projects (e.g., Major Field Achievement Test) requirements are identified under Program-Specific Degree Requirements.
- The Catalog Year determines which program sheet and degree requirements a student must fulfill in order to graduate. Visit with your advisor or academic department to determine which catalog year and program requirements you should follow.
- See "Requirements for Undergraduate Degrees and Certificates" in the catalog for a complete list of graduation requirements.

PROGRAM-SPECIFIC DEGREE REQUIREMENTS

- 126 semester hours for the BA in Liberal Arts, Elementary Education, Mathematics
- 2.80 cumulative GPA or higher in all CMU coursework
- A cumulative grade point average of 2.8 or higher must be maintained for content courses-and overall GPA. A grade of B or better is required for all EDUC courses.
- Foreign language proficiency must be demonstrated by high school course work (2 years), college coursework (2 semesters), or competency testing.
- Students take the PRAXIS II exam in the content area prior to beginning the internship. Also, ALL other coursework toward the degree must be successfully completed prior to the internship.
- A grade of C or better must be earned in all required courses, unless otherwise stated.
- ENGL 111, ENGL 112, PSYC 233, EDUC 115 and 215, and MATH 105 (all with a grade of "B" or better) and formal acceptance to the Teacher Education Program.

ESSENTIAL LEARNING REQUIREMENTS (31 semester hours)

See the current catalog for a list of courses that fulfill the requirements below. If a course is an Essential Learning option and a requirement for your major, you must use it to fulfill the major requirement and make a different selection for the Essential Learning requirement.

English (6 semester hours, must receive a grade of "B" or better and must be completed by the time the student has 60 semester hours.)

- ☐ ENGL 111 - English Composition (3)
- ☐ ENGL 112 - English Composition (3)

Mathematics (3 semester hours, must be taken after MATH 105. Must receive a grade of "B" or better, must be completed by the time the student has 60 semester hours.)

- ☐ MATH 205 - Elements of Mathematics II

Humanities (3 semester hours)

- ☐ Select one Humanities course (3) (Essential Learning eligible ENGL or HIST course recommended)

Social and Behavioral Sciences (6 semester hours)

- ☐ PSYC 233 - Human Growth and Development (3) (Must earn a grade of "B" or higher)
- ☐ Select one Social and Behavioral Sciences course (3)

Natural Sciences (7 semester hours, one course must include a lab)

- ☐ Select one BIOL course (3)
- ☐ Select the corresponding BIOL lab (1)
- ☐ Select one GEOL course (3)

History (3 semester hours)

- ☐ Select one History course (3) (HIST 131 or HIST 132 recommended)

Fine Arts (3 semester hours)

- ☐ Select one Fine Arts course (3)

OTHER LOWER-DIVISION REQUIREMENTS

Wellness Requirement (2 semester hours)

- ☐ KINE 100 - Health and Wellness (1)
- ☐ Select one Activity course (1)

Essential Learning Capstone (4 semester hours)

Essential Learning Capstone must be taken after completion of the Essential Learning English and Mathematics requirements, and when a student has earned between 45 and 75 hours.

- ☐ ESSL 290 - Maverick Milestone (3)
- ☐ ESSL 200 - Essential Speech (1)

BA, LIBERAL ARTS ELEMENTARY EDUCATION, MATHEMATICS REQUIREMENTS (89 Semester Hours)

Elementary Education Core (36 semester hours)**:**

Literacy and Mathematics (15 semester hours)

- ☐ ENGL 240 - Children's Literature (3)
- ☐ ENGL 343 - Language systems and Linguistic Diversity (3)
- ☐ ENGL 451 - Understanding and Using English Grammar
- ☐ MATH 105 - Elements of Mathematics I (3) (Must earn a grade of "B" or higher.)
- ☐ MATH 301 - Mathematics for Elementary Teachers (3)

Kinesiology (3 semester hours)

- ☐ KINE 321 - Physical Activity and Health in the Classroom (3)

Social Sciences (9 semester hours)

- ☐ POLS 101 - American Government (3)
- ☐ Select two of the following courses:
  ANTH 202 - Introduction to Anthropology (3)
  ARKE 205 - Principles of Archaeology (3) or ARKE 225 - Introduction to North American Archaeology (3)
  ECON 201 - Principles of Macroeconomics (3)
  GEOG 102 - Human Geography (3) or GEOG 103 - World Regional Geography (3)
  HIST 101 - Western Civilizations (3)
  HIST 102 - Western Civilizations (3)
  HIST 131 - United States History (3)
  HIST 132 - United States History (3)
  HIST 225 - History of Colorado (3)
  HIST 315 - American Indian History (3)
  HIST 316 - American Slavery (3)
  HIST 320 - The American West (3)
  HIST 331 - The 20th Century (3)
  HIST 344- The Age of Industry in America (3)
  HIST 345 - History of Immigration, Race, and Ethnicity in America (3)
- ☐ _____
- ☐ _____

Science (6 semester hours)

Select Natural Sciences courses from approved Essential Learning list or BIOL 209 or BIOL 210

- ☐ _____
- ☐ _____

Art (3 semester hours)

- ☐ ARTD 410 - Elementary Art Education Methods (3)

Elementary Education Concentration: Math (15 semester hours):

Math Content Area Required Courses (12 semester hours)

- ☐ One of the following courses:
  CSCI 305 - Technology for Mathematics Educators (3)
  CSCI 110 - Beginning Programming (3)
- ☐ One of the following courses:
  MATH 151 - Calculus I (5)
  MATH 146 - Calculus for Biological Sciences (5)
- ☐ MATH 389 - Explorations in Mathematics for Elementary Educators (1)
- ☐ STAT 200 - Probability and Statistics (3)

Concentration Elective (3 semester hours)

- ☐ One of the following courses:
  MATH 305 - Euclidian Geometry (3)

MATH 369 - Discrete Structures (3)
~~STAT 311 - Statistical Methods (3)~~
STAT 301 – Computational Statistics (3)
MATH 340 - Ethnomathematics (3)

Elementary Education Requirements (38 semester hours) (880 field experience hours)
Program Requirements: ENGL 111, ENGL 112, PSYC 233, EDUC 115 and 215, and MATH 105 and formal acceptance to the Teacher Education Program

- ☐ EDUC 115 - What It Means to be an Educator (1) (8 field experience hours)
- ☐ EDUC 215 - Teaching as a Profession (1) (12 field experience hours)
- ☐ EDUC 341 - Pedagogy and Assessment: K-6/Elementary (3) (20 field experience hours)
- ☐ EDUC 343 - Teaching to Diversity (3) (20 field experience hours)
- ☐ EDUC 374 - Exceptional and English Language Learners in the Inclusive Classroom (3)
- ☐ EDUC 378 - Technology for K-12 Educators (1)
- ☐ EDUC 440 - Methods of Teaching Language and Literacy: Early Childhood (3) (40 field experience hours)
- ☐ EDUC 441 - Methods of Teaching Language and Literacy: Elementary (3) (80 field experience hours)
- ☐ EDUC 451 - Methods of Teaching Mathematics: Early Childhood/Elementary (3) (60 field experience hours)
- ☐ EDUC 461 - Methods of Teaching Science and Social Science: Early Childhood/Elementary (3)
- ☐ EDUC 471 - Educational Assessment (1)
- ☐ EDUC 475 - Classroom Management (1)
- ☐ EDUC 499C - Teaching Internship and Colloquia: Elementary (12) (600 field experience hours)

All EDUC prefix courses listed above must be completed with a grade of B or better to progress through the program sequence.

SUGGESTED COURSE SEQUENCING

Freshman Year, Fall Semester: 16 credits

- ENGL 111 - English Composition (3)
- Essential Learning - Fine Arts (3)
- Essential Learning - Geology (3)
- Essential Learning - History (3)
- KINA Activity (1)
- POLS 101 - American Government (3)

Freshman Year, Spring Semester: 16 credits

- EDUC 115 - What It Means to be an Educator (1)
- Elementary Core - Natural Sciences (3)
- ENGL 112 - English Composition (3)
- Essential Learning - Social and Behavioral Sciences (3)
- Essential Learning - Humanities (3)
- MATH 105 - Elements of Mathematics I (3)

Sophomore Year, Fall Semester: 17credits

- EDUC 215 - Teaching as a Profession (1)
- Elementary Core - Social Science (3)
- Essential Learning - Biology (3) and Biology Lab (1)
- MATH 205 - Elements of Mathematics II (3)
- PSYC 233 - Human Growth and Development (3)
- STAT 200 - Probability and Statistics (3)

Sophomore Year, Spring Semester: 18 credits

- Elementary Core - Natural Science (3)
- Elementary Core - Social Science (3)
- ENGL 240 - Children's Literature (3)
- ESSL 200 - Essential Speech (1)
- ESSL 290 - Maverick Milestone (3)
- MATH 151 - Calculus (5) or MATH 146 - Calculus for Biological Sciences (5)

Junior Year, Fall Semester: 16 credits

- EDUC 341 - Pedagogy and Assessment: K-6/Elementary (3)
- EDUC 343 - Teaching to Diversity (3)
- ENGL 343 - Language Systems and Linguistic Diversity (3)
- KINE 100 - Health and Wellness (1)
- MATH 301 - Mathematics for Elementary Teachers (3)
- MATH - Concentration Course (3)

Junior Year, Spring Semester: 17 credits

- CSCI 305 - Technology for Mathematics Educators (3) or CSCI 110 - Beginning Programming (3)
- EDUC 374 - Exceptional and English Language Learners in the Inclusive Classroom (3)
- EDUC 378 - Technology for K-12 Educators (1)
- EDUC 440 - Methods of Teaching Language and Literacy: Early Childhood (3)
- ENGL 451 - Understanding and Using English Grammar (3)
- KINE 321 - Physical Activity and Health in the Classroom (3)
- MATH 389 - Explorations in Mathematics (1)

Senior Year, Fall Semester: 13 credits

- ARTD 410 – Elementary Art Methods (3)
- EDUC 441 - Methods of Teaching Language and Literacy: Elementary (3)
- EDUC 451 - Methods of Teaching Mathematics: Early Childhood/Elementary (3)
- EDUC 471 - Educational Assessment (1)
- ENGL 461 - Methods of Teaching Science and Social Science: Early Childhood/Elementary (3)

Senior Year, Spring Semester: 13 credits

- EDUC 475 - Classroom Management (1)
- EDUC 499C - Teaching Internship and Colloquia: Elementary (12)

Program Modification

Mathematics-Mathematics: 3424

Degree Type: BS

Revision to program sheet: Yes ☑ No ☐

Description of modification:

Summary: Adjusting the core by rearranging courses (but not changing overall program requirements) and replacing STAT 311 with STAT 301 in the electives list.

1) Add the option of CSCI 110/110L to the CSCI 111 requirement.
2) Move "CSCI 110/100L or CSCI 111" to the core requirements
3) Move the following courses out of the Core Requirements and into the Concentration Requirements
   a) MATH 240 - Introduction to Advanced Mathematics (4)
   b) MATH 325 - Linear Algebra (3)
   c) MATH 484 - Senior Seminar I (2)
   d) MATH 494 - Senior Seminar II (2)
4) Remove STAT 311: Statistical Methods from program electives list.
5) Add STAT 301: Computational Statistics to program electives list.
6) Correct the course title of CSCI 111 and MATH 150 to match the catalog.

Justification:

(1) All other concentrations of Mathematics allow the option of CSCI 110/110L (Beginning Programming) or CSCI 111 (CS1: Foundations of Computer Science). By adding the option, all concentrations will be consistent in the computer science requirement. Mathematics faculty agree that CSCI 110/110L would be a beneficial course for the majors since the programming language Python is taught in CSCI 110/110L and this language is often used by mathematicians.

(2)-(3) With the addition of the Actuarial Science concentration and the modification of the Statistics concentration, the Core Requirements had to be adjusted so that the core (+ foundation) would be consistent among all concentrations of Mathematics. The courses required for this concentration remain unchanged (except for swapping of STAT mentioned in (4)-(5)).

(4)-(5) Replacing STAT 311 with STAT 301 on the program sheet: Material from STAT 311 will be covered in STAT 301 with the addition of using computational software. The statistics faculty believe that STAT 301 is a more valuable course for students. Note STAT 311 in an elective group of many courses.

(6) Clean up for accuracy.

Revision to SLOs: Yes ☐ No ☑

Other changes: Yes ☐ No ☑

Discussions with affected departments:

The mathematics and statistics faculty voted to accept these program modifications on 9/26/2018.

Proposed by: Lisa Driskell

Director of Teacher Education Signature:

Expected Implementation: Fall 2019

2019-2020 PROGRAM REQUIREMENTS
Degree: Bachelor of Science
Major: Mathematics

About This Major . . .
Mathematics majors get jobs in a wide variety of areas. Our graduates have worked for local businesses, have run their own businesses and have worked for scientific companies. Other graduates have continued their educations by attending graduate school (in mathematics, computer science and engineering), law school, medical school and veterinary school.

For more information on what you can do with this major, go to http://www.coloradomesa.edu/career/whatmajor.html and/or http://www.coloradomesa.edu/mathstat/links.html .

All CMU baccalaureate graduates are expected to demonstrate proficiency in critical thinking, communication fluency, quantitative fluency, and specialized knowledge/applied learning. In addition to these campus-wide student learning outcomes, graduates of this major will:

1. Construct multi-step problem-solving strategies, and communicate solutions effectively in written form. (Specialized Knowledge/Quantitative Fluency)
2. Use mathematical software (including calculators) to aid in problem-solving and investigation, and understand its limitations. (Applied Learning)
3. Prove propositions deductively from definitions and theorems, using clear and precise prose. (Critical Thinking)
4. Learn an area of mathematics deeply and deliver substantial written and oral presentations of this area. (Specialized Knowledge/Communication Fluency)

Advising Process and DegreeWorks
This document is intended for informational purposes to help determine what courses and associated requirements are needed to earn a degree. The suggested course sequencing outlines how students could finish degree requirements. Some courses are critical to complete in specific semesters, while others may be moved around. Meeting with an academic advisor is essential in planning courses and altering the suggested course sequencing. It is ultimately the student's responsibility to understand and fulfill the requirements for her/his intended degree(s).

DegreeWorks is an online degree audit tool available in MAVzone. It is the official record used by the Registrar's Office to evaluate progress towards a degree and determine eligibility for graduation. Students are responsible for reviewing their DegreeWorks audit on a regular basis and should discuss questions or concerns with their advisor or academic department head. Discrepancies in requirements should be reported to the Registrar's Office.

Graduation Process
Students must complete the following in the first two months of the semester prior to completing their degree requirements:

- Review their DegreeWorks audit and create a plan that outlines how unmet requirements will be met in the final semester.
- Meet with their advisor and modify their plan as needed. The advisor must approve the final plan.
- Submit the "Intent to Graduate" form to the Registrar's Office to officially declare the intended graduation date and commencement ceremony plans.
- Register for all needed courses and complete all requirements for each degree sought.

Submission deadlines and commencement details can be found at http://www.coloradomesa.edu/registrar/graduation.html.

If a student's petition for graduation is denied, it will be her/his responsibility to consult the Registrar's Office regarding next steps.

INSTITUTIONAL DEGREE REQUIREMENTS

The following institutional degree requirements apply to all CMU baccalaureate degrees. Specific programs may have different requirements that must be met in addition to institutional requirements.

- 120 semester hours minimum.
- Students must complete a minimum of 30 of the last 60 hours of credit at CMU, with at least 15 semester hours in major discipline courses numbered 300 or higher.
- 40 upper-division credits (an alternative credit limit applies to the Bachelor of Applied Science degree).
- 2.00 cumulative GPA or higher in all CMU coursework.
- A course may only be used to fulfill one requirement for each degree/certificate.
- No more than six semester hours of independent study courses can be used toward the degree.
- Non-traditional credit, such as advanced placement, credit by examination, credit for prior learning, cooperative education and internships, cannot exceed 30 semester credit hours for a baccalaureate degree; A maximum of 15 of the 30 credits may be for cooperative education, internships, and practica.
- Pre-collegiate courses (usually numbered below 100) cannot be used for graduation.
- Capstone exit assessment/projects (e.g., Major Field Achievement Test) requirements are identified under Program-Specific Degree Requirements.
- The Catalog Year determines which program sheet and degree requirements a student must fulfill in order to graduate. Visit with your advisor or academic department to determine which catalog year and program requirements you should follow.
- See “Requirements for Undergraduate Degrees and Certificates” in the catalog for a complete list of graduation requirements.

PROGRAM-SPECIFIC DEGREE REQUIREMENTS

- 2.50 cumulative GPA or higher in coursework toward the major content area.
- At most one “D” may be used in completing major requirements.

ESSENTIAL LEARNING REQUIREMENTS (31 semester hours)
See the current catalog for a list of courses that fulfill the requirements below. If a course is an Essential Learning option and a requirement for your major, you must use it to fulfill the major requirement and make a different selection for the Essential Learning requirement.

English (6 semester hours, must receive a grade of "C" or better and must be completed by the time the student has 60 semester hours.)
- ☐ ENGL 111 - English Composition (3)
- ☐ ENGL 112 - English Composition (3)

Mathematics (3 semester hours, must receive a grade of "C" or better, must be completed by the time the student has 60 semester hours.)
- ☐ MATH 151 - Calculus I (5)*

  *3 credits apply to the Essential Learning requirements and 2 credits apply to electives.

Humanities (3 semester hours)
- ☐ Select one Humanities course (3)

Social and Behavioral Sciences (6 semester hours)
- ☐ Select one Social and Behavioral Sciences course (3)
- ☐ Select one Social and Behavioral Sciences course (3)

Natural Sciences (7 semester hours, one course must include a lab)
- ☐ Select one Natural Sciences course (3)
- ☐ Select one Natural Sciences course with a lab (4)

History (3 semester hours)
- ☐ Select one History course (3)

Fine Arts (3 semester hours)
- ☐ Select one Fine Arts course (3)

OTHER LOWER-DIVISION REQUIREMENTS

Wellness Requirement (2 semester hours)
- ☐ KINE 100 - Health and Wellness (1)
- ☐ Select one Activity course (1)

Essential Learning Capstone (4 semester hours)
Essential Learning Capstone must be taken after completion of the Essential Learning English and Mathematics requirements, and when a student has earned between 45 and 75 hours.
- ☐ ESSL 290 - Maverick Milestone (3)
- ☐ ESSL 200 - Essential Speech (1)

FOUNDATION COURSES (8 semester hours)
- ☐ MATH 152 - Calculus II (5)
- ☐ STAT 200 - Probability and Statistics (3)

BS, MATHEMATICS REQUIREMENTS (43-46 semester hours. A 2.5 GPA is required in the major courses. At most one "D" may be used in completing major requirements.)

Required Core Courses (~~18~~ 11 semester hours)

- ☐ MATH 150 - Topics and Careers in Mathematics (1)
- ☐ MATH 225 - Computational Linear Algebra (2)
- ☐ ~~MATH 240 - Intro to Advanced Mathematics (4)~~
- ☐ MATH 253 - Calculus III (4)
- ☐ One of the following courses:
  - CSCI 110 - Beginning Programming (3) with CSCI 110L - Beginning Programming Laboratory (1)
  - ☐ CSCI 111 - ~~Computer Science~~ CS1: Foundations of Computer Science (4)
- ☐ ~~MATH 325 - Linear Algebra (3)~~
- ☐ ~~MATH 484 - Senior Seminar I (2)~~
- ☐ ~~MATH 494 - Senior Seminar II (2)~~

Required Concentration Courses (~~13~~ 20 semester hours)

- ☐ ~~CSCI 111 - Computer Science 1: Foundations (4)~~
- ☐ MATH 240 - Introduction to Advanced Mathematics (4)
- ☐ MATH 325 - Linear Algebra (3)
- ☐ MATH 452 - Introduction to Real Analysis I (3)
- ☐ MATH 490 - Abstract Algebra I (3)
- ☐ One of the following courses:
  - MATH 453 - Introduction to Real Analysis II (3)
  - MATH 491 - Abstract Algebra II (3)
- ☐ MATH 484 - Senior Seminar I (2)
- ☐ MATH 494 - Senior Seminar II (2)

Restricted Electives (12-15 semester hours)

Select four courses from the following list. At most one topics course, which must be 3 semester hours, can be used as one of these four courses.

MATH 260 - Differential Equations (3) **or** MATH 236 - Differential Equations & Linear Algebra (4)
MATH 310 - Number Theory (3)
MATH 360 - Methods of Applied Mathematics (3)
MATH 361 - Numerical Analysis (4)
MATH 362 - Fourier Analysis (3)
MATH 365 - Mathematical Modeling (3)
MATH 366 - Methods of Applied Mathematics II (3)
MATH 369 - Discrete Structures I (3)
MATH 370 - Discrete Structures II (3)
MATH 386 - Geometries (4)
MATH 420 - Introduction to Topology (3)
MATH 430 - Mathematical Logic (3)
MATH 450 - Complex Variables (3)
MATH 460 - Advanced Linear Algebra (3)
MATH 453 - Introduction to Real Analysis II (3) **or** MATH 491 - Abstract Algebra II (3)
MATH 466 - Methods of Applied Mathematics III (3)
MATH 396 - Topics (1-3) **or** MATH 496 - Topics (1-3)
~~STAT 311 - Statistical Methods (3)~~
STAT 301 – Computational Statistics (3) ~~al Methods~~

- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

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2019-20 BS, Mathematics (3424). Posted:

GENERAL ELECTIVES (All college level courses appearing on your final transcript, not listed above that will bring your total semester hours to 120 hours. 29-32 semester hours; 10-15 hours of upper division may be needed.)

- ☐ MATH 151 - Calculus I (2)
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

SUGGESTED COURSE SEQUENCING

Freshman Year, Fall Semester: 16 credits

- MATH 151 - Calculus I (5)
- ENGL 111 - English Composition (3)
- KINA Activity (1)
- KINE 100 - Health and Wellness (1)
- Essential Learning - Natural Science (3)
- Essential Learning - Social and Behavioral Sciences (3)

Freshman Year, Spring Semester: 16 credits

- MATH 152 - Calculus II (5)
- MATH 150 - Topics and Careers in Mathematics (1)
- ENGL 112 - English Composition (3)
- CSCI 111- Computer Science 1: Foundations (4)
- Essential Learning - Social and Behavioral Sciences (3)

Sophomore Year, Fall Semester: 16 credits

- MATH 225 - Computational Linear Algebra (2)
- MATH 240 - Intro to Advanced Mathematics (4)
- MATH 253 - Calculus III (4)
- Essential Learning - Fine Arts (3)
- Essential Learning - History (3)

Sophomore Year, Spring Semester: 16 credits

- MATH 325 - Linear Algebra (3)
- Restricted Elective (3)
- Essential Learning - Natural Science with Lab (4)
- STAT 200 - Probability and Statistics (3)
- Essential Learning - Humanities (3)

Junior Year, Fall Semester: 16 credits

- MATH 452 - Introduction to Real Analysis I (3) or MATH 490 - Abstract Algebra I (3)
- ESSL 290 - Maverick Milestone (3)
- ESSL 200 - Essential Speech (1)
- General Electives (3 courses) (9)

Junior Year, Spring Semester: 15 credits

- MATH 453 - Introduction to Real Analysis II (3) or MATH 491 - Abstract Algebra II (3)
- Restricted Elective (3)
- Electives (3 courses) (9)

Senior Year, Fall Semester: 14 credits

- MATH 452 - Introduction to Real Analysis I (3) or MATH 490 - Abstract Algebra I (3)
- MATH 484 - Senior Seminar I (2)
- Restricted Elective (3)
- General Electives (2 courses) (6)

Senior Year, Spring Semester: 11 credits

- MATH 494 - Senior Seminar II (2)
- General Electives (2 courses) (6)
- Restricted Elective (3)

Program Modification

Mathematics-Applied Mathematics: 3437

Degree Type: BS

Revision to program sheet: Yes ☑ No ☐

Description of modification:

Summary: Adjusting the core by rearranging courses (but not changing overall program requirements) and replacing STAT 311 with STAT 301 in the electives list.

1) Move "CSCI 110/100L or CSCI 111" to the core requirements
2) Move the following courses out of the Core Requirements and into the concentration Requirements
   a) MATH 240 - Introduction to Advanced Mathematics (4)
   b) MATH 325 - Linear Algebra (3)
   c) MATH 484 - Senior Seminar I (2)
   d) MATH 494 - Senior Seminar II (2)
3) Remove STAT 311: Statistical Methods from the Category 1 program electives list.
4) Remove STAT 412: Correlation and Regression from the Category 1 program electives list.
5) Add STAT 301: Computational Statistics to the Category 1 program electives list.
6) Add STAT 312: Correlation and Regression to the Category 1 program electives list.
7) Correct the course title of CSCI 111 and MATH 150 to match the catalog.

Justification:

(1)-(2) With the addition of the Actuarial Science concentration and the modification of the Statistics concentration, the Core Requirements had to be adjusted so that the core (+ foundation) would be consistent among all concentrations of Mathematics. The courses required for this concentration remain unchanged (except for items 3-6 described below).

(3) and (5) Replacing STAT 311 with STAT 301 on the program sheet: Material from STAT 311 will be covered in STAT 301 with the addition of using computational software. The statistics faculty believe that STAT 301 is a more valuable course for students. Note STAT 311 in an elective group of many courses.

(4) and (6) Replacing STAT 412 with STAT 312 on the program sheet. STAT 412 is being deleted and STAT 312 is being added to replace it.

(7) Clean up for accuracy.

Revision to SLOs: Yes ☐ No ☑

Other changes: Yes ☐ No ☑

Discussions with affected departments:

The mathematics and statistics faculty voted to accept these program modifications on 9/26/2018.

Proposed by: Lisa Driskell

Director of Teacher Education Signature:

Expected Implementation: Fall 2019

2019-2020 PROGRAM REQUIREMENTS
Degree: Bachelor of Science
Major: Mathematics
Concentration: Applied Mathematics

About This Major . . .
Applied mathematicians use mathematics to solve problems. This program provides mathematics coursework commonly found in applied math settings. Applied mathematics graduates can choose to find work in a variety of areas, or may choose to continue their educations by attending graduate school in areas such as applied mathematics, computer science and engineering. For more information on what you can do with this major, go to http://www.coloradomesa.edu/career/whatmajor.html and https://www.siam.org/careers/thinking.php.

All CMU baccalaureate graduates are expected to demonstrate proficiency in critical thinking, communication fluency, quantitative fluency, and specialized knowledge/applied learning. In addition to these campus-wide student learning outcomes, graduates of this major will be able to:

1. Use methods of applied mathematics to model and solve applied problems (Specialized Knowledge/Applied Learning/Quantitative Fluency)
2. Use mathematical software (including calculators) to aid in problem-solving and investigation, and understand its limitations. (Applied Learning)
3. Prove propositions deductively from definitions and theorems, using clear and precise prose. (Critical Thinking)
4. Demonstrate comprehension of applied mathematics and deliver a substantial written and oral presentation in an area of applied mathematics. (Specialized Knowledge/Communication Fluency)

Advising Process and DegreeWorks
This document is intended for informational purposes to help determine what courses and associated requirements are needed to earn a degree. The suggested course sequencing outlines how students could finish degree requirements. Some courses are critical to complete in specific semesters, while others may be moved around. Meeting with an academic advisor is essential in planning courses and altering the suggested course sequencing. It is ultimately the student's responsibility to understand and fulfill the requirements for her/his intended degree(s).

DegreeWorks is an online degree audit tool available in MAVzone. It is the official record used by the Registrar's Office to evaluate progress towards a degree and determine eligibility for graduation. Students are responsible for reviewing their DegreeWorks audit on a regular basis and should discuss questions or concerns with their advisor or academic department head. Discrepancies in requirements should be reported to the Registrar's Office.

Graduation Process
Students must complete the following in the first two months of the semester prior to completing their degree requirements:

- Review their DegreeWorks audit and create a plan that outlines how unmet requirements will be met in the final semester.
- Meet with their advisor and modify their plan as needed. The advisor must approve the final plan.
- Submit the "Intent to Graduate" form to the Registrar's Office to officially declare the intended graduation date and commencement ceremony plans.
- Register for all needed courses and complete all requirements for each degree sought.

Submission deadlines and commencement details can be found at http://www.coloradomesa.edu/registrar/graduation.html.

If a student's petition for graduation is denied, it will be her/his responsibility to consult the Registrar's Office regarding next steps.

INSTITUTIONAL DEGREE REQUIREMENTS

The following institutional degree requirements apply to all CMU baccalaureate degrees. Specific programs may have different requirements that must be met in addition to institutional requirements.

- 120 semester hours minimum.
- Students must complete a minimum of 30 of the last 60 hours of credit at CMU, with at least 15 semester hours in major discipline courses numbered 300 or higher.
- 40 upper-division credits (an alternative credit limit applies to the Bachelor of Applied Science degree).
- 2.00 cumulative GPA or higher in all CMU coursework.
- A course may only be used to fulfill one requirement for each degree/certificate.
- No more than six semester hours of independent study courses can be used toward the degree.
- Non-traditional credit, such as advanced placement, credit by examination, credit for prior learning, cooperative education and internships, cannot exceed 30 semester credit hours for a baccalaureate degree; A maximum of 15 of the 30 credits may be for cooperative education, internships, and practica.
- Pre-collegiate courses (usually numbered below 100) cannot be used for graduation.
- Capstone exit assessment/projects (e.g., Major Field Achievement Test) requirements are identified under Program-Specific Degree Requirements.
- The Catalog Year determines which program sheet and degree requirements a student must fulfill in order to graduate. Visit with your advisor or academic department to determine which catalog year and program requirements you should follow.
- See “Requirements for Undergraduate Degrees and Certificates” in the catalog for a complete list of graduation requirements.

PROGRAM-SPECIFIC DEGREE REQUIREMENTS

- 2.50 cumulative GPA or higher in coursework toward the major content area.
- At most one “D” may be used in completing major requirements.

ESSENTIAL LEARNING REQUIREMENTS (31 semester hours)
See the current catalog for a list of courses that fulfill the requirements below. If a course is an Essential Learning option and a requirement for your major, you must use it to fulfill the major requirement and make a different selection for the Essential Learning requirement.

English (6 semester hours, must receive a grade of "C" or better and must be completed by the time the student has 60 semester hours.)

- ☐ ENGL 111 - English Composition (3)
- ☐ ENGL 112 - English Composition (3)

Mathematics (3 semester hours, must receive a grade of "C" or better, must be completed by the time the student has 60 semester hours.)

- ☐ MATH 151 - Calculus I (5)
  3 credits apply to the Essential Learning requirements and 2 credits apply to elective credit.

Humanities (3 semester hours)

- ☐ Select one Humanities course (3)

Social and Behavioral Sciences (6 semester hours)

- ☐ Select one Social and Behavioral Sciences course (3)
- ☐ Select one Social and Behavioral Sciences course (3)

Natural Sciences (7 semester hours, one course must include a lab)

- ☐ Select one Natural Sciences course (3)
- ☐ Select one Natural Sciences course with a lab (4)

History (3 semester hours)

- ☐ Select one History course (3)

Fine Arts (3 semester hours)

- ☐ Select one Fine Arts course (3)

OTHER LOWER-DIVISION REQUIREMENTS

Wellness Requirement (2 semester hours)

- ☐ KINE 100 - Health and Wellness (1)
- ☐ Select one Activity course (1)

Essential Learning Capstone (4 semester hours)
Essential Learning Capstone must be taken after completion of the Essential Learning English and Mathematics requirements, and when a student has earned between 45 and 75 hours.

- ☐ ESSL 290 - Maverick Milestone (3)
- ☐ ESSL 200 - Essential Speech (1)

FOUNDATION COURSES (8 semester hours)

- ☐ MATH 152 - Calculus II (5)
- ☐ STAT 200 - Probability and Statistics (3)

BS, MATHEMATICS, APPLIED MATHEMATICS REQUIREMENTS (50-53 semester hours)
A 2.5 GPA is required in the major courses. At most one "D" may be used in completing major requirements.

Required Core Courses (~~18~~ 11 semester hours)

- ☐ MATH 150 - Topics and Careers in Mathematics (1)
- ☐ MATH 225 - Computational Linear Algebra (2)
- ~~☐ MATH 240 - Intro to Advanced Mathematics (4)~~
- ☐ MATH 253 - Calculus III (4)
- ☐ One of the following courses:
  CSCI 110 - Beginning Programming (3) with CSCI 110L - Beginning Programming Laboratory (1)
  CSCI 111 - ~~Computer Science~~ CS1: Foundations of Computer Science (4)
- ~~☐ MATH 325 - Linear Algebra (3)~~
- ~~☐ MATH 484 - Senior Seminar I (2)~~
- ~~☐ MATH 494 - Senior Seminar II (2)~~

Required Concentration Courses (~~23-25~~ 30-32 semester hours)

- ☐ ~~One of the following courses:~~
  ~~CSCI 110 - Beginning Programming (3) with CSCI 110L - Beginning Programming Laboratory (1)~~
  ~~CSCI 111 - Computer Science 1: Foundations (4)~~
- ☐ CSCI 130 - Introduction to Engineering Computer Science (3)
- ☐ CSCI 310 - Advanced Programming (1-3)
- ☐ MATH 240 - Intro to Advanced Mathematics (4)
- ☐ MATH 260 - Differential Equations (3)
- ☐ MATH 325 - Linear Algebra (3)
- ☐ MATH 360 - Methods of Applied Mathematics (3)
- ☐ MATH 365 - Mathematical Modeling (3)
- ☐ MATH 366 - Methods of Applied Mathematics II (3)
- ☐ MATH 466 - Methods of Applied Mathematics III (3)
- ☐ MATH 484 - Senior Seminar I (2)
- ☐ MATH 494 - Senior Seminar II (2)

Concentration Electives (9-10 semester hours)
Category 1 - select one of the following courses:

- ~~☐ STAT 311 - Statistical Methods (3)~~
- ☐ STAT 301 – Computational Statistics (3) ~~al Methods (3)~~
- ☐ STAT 3412 - Correlation and Regression (3)
- ☐ STAT 425 - Design and Analysis of Experiments (3)

Category 2 - select one of the following courses:

- ☐ MATH 361 - Numerical Analysis (4)
- ☐ MATH 362 - Fourier Analysis (3)
- ☐ MATH 369 - Discrete Structures I (3)
- ☐ CSCI 380 - Operations Research (3)

Category 3 - select one of the following courses:

- ☐ MATH 450 - Complex Variables (3)
- ☐ MATH 452 - Introduction to Real Analysis I (3)
- ☐ MATH 460 - Advanced Linear Algebra (3)
- ☐ PHYS 471 - Computational Physics I (3)

GENERAL ELECTIVES (All college level courses appearing on your final transcript, not listed above that will bring your total semester hours to 120 hours. 22-25 semester hours; 8-11 hours of upper division may be needed.)

- ☐ MATH 151 - Calculus I (2)
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

SUGGESTED COURSE SEQUENCING

Freshman Year, Fall Semester: 16 credits

- MATH 151 - Calculus I (5)
- ENGL 111 - English Composition (3)
- KINA Activity (1)
- KINE 100 - Health and Wellness (1)
- Essential Learning - Natural Science (3)
- Essential Learning - Social and Behavioral Sciences (3)

Freshman Year, Spring Semester: 16 credits

- MATH 152 - Calculus II (5)
- ENGL 112 - English Composition (3)
- MATH 150 - Topics and Careers in Mathematics (1)
- CSCI 111- Computer Science 1: Foundations (4) or CSCI 110/CSCI 110L - Beginning Programming and Laboratory (4)
- Essential Learning - Social and Behavioral Sciences (3)

Sophomore Year, Fall Semester: 16 credits

- MATH 240 - Intro to Advanced Mathematics (4)
- MATH 225 - Computational Linear Algebra (2)
- MATH 253 - Calculus III (4)
- Essential Learning - Fine Arts (3)
- Essential Learning - History (3)

Sophomore Year, Spring Semester: 16 credits

- MATH 260 - Differential Equations (3)
- MATH 325 - Linear Algebra (3)
- STAT 200 - Probability and Statistics (3)
- CSCI 130 - Introduction to Engineering Computer Science (3)
- Essential Learning - Natural Science with Lab (4)

Junior Year, Fall Semester: 14-16 credits

- MATH 360 - Methods of Applied Math (3)
- ESSL 290 - Maverick Milestone (3)
- ESSL 200 - Essential Speech (1)
- CSCI 310 - Advanced Programming (1-3)
- Concentration Elective (3)
- Essential Learning - Humanities (3)

Junior Year, Spring Semester: 15-16 credits

- MATH 366 - Methods of Applied Math II (3)
- MATH 365 - Mathematical Modeling (3)
- Concentration Elective (3-4)
- General Electives (6)

Senior Year, Fall Semester: 14 credits

- MATH 466 - Methods of Applied Math III (3)
- MATH 484 - Senior Seminar I (2)
- Concentration Elective (3)

- General Electives (6)

Senior Year, Spring Semester: 10-13 credits

- MATH 494 - Senior Seminar II (2)
- General Electives (8-11)

Program Modification

Mathematics-Secondary Education: 3430

Degree Type: BS

Revision to program sheet: Yes ☑ No ☐

Description of modification:

Summary: Creating "Core Requirements" and "Concentration Requirements" categories on the program sheet to align with the other concentrations in math. Replacing STAT 311 with STAT 301.

1) Replace the category "Core Courses" with "Required Concentration Courses"
2) Create a new heading "Required Core Courses"
3) Move "CSCI 110/100L or CSCI 111", MATH to the core requirements
4) Move the following courses into the new listing of Core Requirements)
   a) MATH 150 - Topics and Careers in Math (1)
   b) MATH 152 - Calclulus II (5)
   c) MATH 225 - Computational Linear Algebra (2)
   d) MATH 253 - Calculus III (4)
   e) CSCI 110/110L or CSCI 111 (4)
5) Remove STAT 311: Statistical Methods from program electives list.
6) Add STAT 301: Computational Statistical Methods to program electives list.
7) Correct the course titile of MATH 150 to match the catalog.

Justification:

(1)-(4) The rearrangement of courses is so that the Core Requirements (+ foundation) that are the same among all concentrations in Mathematics are evident.
(5)-(6) Replacing STAT 311 with STAT 301 on the program sheet: Material from STAT 311 will be covered in STAT 301 with the addition of using computational software. The statistics faculty believe that STAT 301 is a more valuable course to students. Note STAT 311 was in an elective group of three courses from which students must choose one course.

Revision to SLOs: Yes ☐ No ☑

Other changes: Yes ☐ No ☑

Discussions with affected departments:

The mathematics and statistics faculty voted to accept these program modifications on 9/26/2018.
Blake Bickham confirmed approval by the Department of Education on 9/26/2018.

Proposed by: Lisa Driskell

Director of Teacher Education Signature: Blake R. Bickham

Expected Implementation: Fall 2019

2019-2020 PROGRAM REQUIREMENTS
Degree: Bachelor of Science
Major: Mathematics
Concentration: Secondary Education

About This Major . . .
The major in mathematics with a concentration in secondary education will prepare students to teach in both middle schools and in high schools. While completing this degree, students develop problem-solving and critical thinking skills and are introduced to the logical and historical development of mathematical ideas. Students also learn the professional skills in teaching methods and content necessary for secondary mathematics teachers. Nationally recommended curriculum guidelines are followed in order to ensure that graduates have the mathematical content and conceptual understanding necessary for all high school mathematics courses. Graduates from this program are in great demand both locally and statewide with the scarcity of mathematics teachers in this country.

For more information on what you can do with this major, go to http://www.coloradomesa.edu/career/whatmajor.html and/or http://www.coloradomesa.edu/mathstat/links.html.

All CMU baccalaureate graduates are expected to demonstrate proficiency in critical thinking, communication fluency, quantitative fluency, and specialized knowledge/applied learning. In addition to these campus-wide student learning outcomes, graduates of this major will be able to:

1. Construct multi-step problem solving strategies, use mathematical software tools appropriately, and communicate solutions effectively in written form. (Critical Thinking / Communication Fluency)
2. Use mathematical software (including calculators) to aid in problem-solving and investigation, and understand its limitations. (Applied Learning)
3. Prove propositions deductively from definitions and theorems in clear and precise prose. (Quantitative Fluency)
4. Demonstrate familiarity with the logical and historical development of mathematics and the implications of this development. (Specialized Knowledge)
5. Effectively communicate mathematics using oral and written exposition appropriate for teachers of mathematics. (Communication Fluency)
6. Instruct K-12 students based on self-written learning plans to address individual learning and developmental patterns in Mathematics. (Specialized Knowledge)
7. Design a safe and supportive learning environment for elementary and secondary education students. (Applied Learning)
8. Apply Mathematics content knowledge while working with learners to access information in real world settings assuring learner mastery of the content. (Specialized Knowledge)
9. Integrate assessment, planning, and instructional strategies in coordinated and engaging ways through multiple means of communication. (Critical Thinking/Communication Fluency)
10. Engage in meaningful and intensive professional learning and self-renewal by regularly examining practice through ongoing study, self-reflection, and collaboration. (Applied Learning)

Advising Process and DegreeWorks
This document is intended for informational purposes to help determine what courses and associated requirements are needed to earn a degree. The suggested course sequencing outlines how students could finish degree requirements. Some courses are critical to complete in specific semesters, while others may be moved around. Meeting with an academic advisor is essential in planning courses and altering the suggested course sequencing. It is ultimately the student's responsibility to understand and fulfill the requirements for her/his intended degree(s).

DegreeWorks is an online degree audit tool available in MAVzone. It is the official record used by the Registrar's Office to evaluate progress towards a degree and determine eligibility for graduation. Students are responsible for reviewing their DegreeWorks audit on a regular basis and should discuss questions or concerns with their advisor or academic department head. Discrepancies in requirements should be reported to the Registrar's Office.

Graduation Process

Students must complete the following in the first two months of the semester prior to completing their degree requirements:

- Review their DegreeWorks audit and create a plan that outlines how unmet requirements will be met in the final semester.
- Meet with their advisor and modify their plan as needed. The advisor must approve the final plan.
- Submit the "Intent to Graduate" form to the Registrar's Office to officially declare the intended graduation date and commencement ceremony plans.
- Register for all needed courses and complete all requirements for each degree sought.

Submission deadlines and commencement details can be found at http://www.coloradomesa.edu/registrar/graduation.html.
If a student's petition for graduation is denied, it will be her/his responsibility to consult the Registrar's Office regarding next steps.

INSTITUTIONAL DEGREE REQUIREMENTS

The following institutional degree requirements apply to all CMU baccalaureate degrees. Specific programs may have different requirements that must be met in addition to institutional requirements.

- 120 semester hours minimum.
- Students must complete a minimum of 30 of the last 60 hours of credit at CMU, with at least 15 semester hours in major discipline courses numbered 300 or higher.
- 40 upper-division credits (an alternative credit limit applies to the Bachelor of Applied Science degree).
- 2.00 cumulative GPA or higher in all CMU coursework.
- A course may only be used to fulfill one requirement for each degree/certificate.
- No more than six semester hours of independent study courses can be used toward the degree.
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- Pre-collegiate courses (usually numbered below 100) cannot be used for graduation.
- Capstone exit assessment/projects (e.g., Major Field Achievement Test) requirements are identified under Program-Specific Degree Requirements.
- The Catalog Year determines which program sheet and degree requirements a student must fulfill in order to graduate. Visit with your advisor or academic department to determine which catalog year and program requirements you should follow.
- See "Requirements for Undergraduate Degrees and Certificates" in the catalog for a complete list of graduation requirements.

PROGRAM-SPECIFIC DEGREE REQUIREMENTS

- 2.80 cumulative GPA or higher in all CMU coursework.
- 2.80 cumulative GPA or higher in coursework toward the major content area.
- All EDUC prefix courses must be completed with a grade of "B" or better.
- Students must take the PRAXIS II exam in the content area prior to beginning the internship. Also, all other coursework toward the degree must be successfully completed prior to the internship.
- A grade of "C" or better must be earned in all required courses, unless otherwise stated.

ESSENTIAL LEARNING REQUIREMENTS (31 semester hours)
See the current catalog for a list of courses that fulfill the requirements below. If a course is an Essential Learning option and a requirement for your major, you must use it to fulfill the major requirement and make a different selection for the Essential Learning requirement.

English (6 semester hours, must receive a grade of "B" or better and must be completed by the time the student has 60 semester hours.)
- ☐ ENGL 111 - English Composition (3)
- ☐ ENGL 112 - English Composition (3)

Mathematics (3 semester hours, must receive a grade of "C" or better, must be completed by the time the student has 60 semester hours.)
- ☐ MATH 119 - Pre-Calculus Mathematics (5) or higher
  3 credits apply to the Essential Learning requirements and 2 credits apply to elective credit.

Humanities (3 semester hours)
- ☐ Select one Humanities course (3)

Social and Behavioral Sciences (6 semester hours)
- ☐ PSYC 233 - Human Growth and Development (3) (must receive a grade of "B" or higher)
- ☐ Select one Social and Behavioral Sciences course (3)
  GEOG 103 - World Regional Geography (3) recommended

Natural Sciences (7 semester hours, one course must include a lab)
- ☐ Select one Natural Science course (3)
- ☐ Select one Natural Science course with a lab (4)

History (3 semester hours)
- ☐ Select one History course (3)

Fine Arts (3 semester hours)
- ☐ Select one Fine Arts course (3)

OTHER LOWER-DIVISION REQUIREMENTS

Wellness Requirement (2 semester hours)
- ☐ KINE 100 - Health and Wellness (1)
- ☐ Select one Activity course (1)

Essential Learning Capstone (4 semester hours)
Essential Learning Capstone must be taken after completion of the Essential Learning English and Mathematics requirements, and when a student has earned between 45 and 75 hours.
- ☐ ESSL 290 - Maverick Milestone (3)
- ☐ ESSL 200 - Essential Speech (1)

FOUNDATION COURSES (8 semester hours)
- ☐ MATH 151 - Calculus I (5)
- ☐ STAT 200 - Probability and Statistics (3)

BS, MATHEMATICS SECONDARY EDUCATION REQUIREMENTS (42 semester hours, must pass all courses with a grade of "C" or higher, excepting one "D", at most, which may be used in completing the major requirements.)

Required Core Courses (16 semester hours)

- ☐ MATH 150 - Topics and Careers in Mathematics (1)
- ☐ MATH 152 - Calculus II (5)
- ☐ MATH 225 - Computational Linear Algebra (2)
- ☐ MATH 253 - Calculus III (4)
- ☐ One of the following courses:
  - CSCI 111 - CS1: Foundations of Computer Science (4)
  - CSCI 110 - Beginning Programming (3) with CSCI 110L - Beginning Programming Laboratory (1)

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Required ~~Core~~ Concentration Courses (26 semester hours)

- ~~☐ MATH 150 - Topics and Careers in Math (1)~~
- ~~☐ MATH 152 - Calculus II (5)~~
- ~~☐ MATH 225 - Computational Linear Algebra (2)~~
- ☐ MATH 240 - Intro to Advanced Mathematics (4)
- ~~☐ MATH 253 - Calculus III (4)~~
- ☐ MATH 325 - Linear Algebra (3)
- ~~☐ One of the following courses:~~
  - ~~CSCI 111 - CS1: Foundations of Computer Science (4)~~
  - ~~CSCI 110 - Beginning Programming (3) with CSCI 110L - Beginning Programming Laboratory (1)~~
- ☐ MATH 369 - Discrete Structures I (3)
- ☐ MATH 380 - History of Mathematics (3)
- ☐ MATH 386 - Geometries (4)
- ☐ MATH 352 - Advanced Calculus (3)
- ☐ One of the following courses:
  - MATH 415 - Abstract Algebra for Secondary Education (3)
  - MATH 490 - Abstract Algebra I (3)
- ☐ One of the following courses:
  - MATH 310 - Number Theory (3)
  - MATH 365 - Mathematical Modeling (3)
  - ~~STAT 3011 – Computational Statistical Methods (3)~~
  - ☐ STAT 301 – Computational Statistics (3)

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GENERAL ELECTIVES (All college level courses appearing on your final transcript, not listed above that will bring your total semester hours to 120 hours. 4 semester hours. MATH 340 is an option for students.)

- ☐ MATH 119 - Pre-Calculus Mathematics (2)
- ☐ _____
- ☐ _____
- ~~☐ _____~~
- ~~☐ _____~~

SECONDARY EDUCATION REQUIREMENTS (29 semester hours)

Program Requirements: ENGL 111, ENGL 112, PSYC 233, EDUC 115 and 215 (all with a grade of B or better) and formal acceptance to the Teacher Education Program.

- ☐ EDUC 115 - What It Means to be an Educator (1) (8 field experience hours)
- ☐ EDUC 215 - Teaching as a Profession (1) (12 field experience hours)
- ☐ EDUC 342 - Pedagogy and Assessment: Secondary and K-12 (3) (20 field experience hours)
- ☐ EDUC 343 - Teaching to Diversity (3) (20 field experience hours)
- ☐ EDUC 442 - Integrating Literacy across the Curriculum: Secondary and K-12 Art (3) (60 field experience hours)
- ☐ EDUC 475 - Classroom Management (1)
- ☐ EDUC 497 - Content Methodology Practicum (3) (80 field experience hours)
- ☐ EDUC 497C - Methods of Teaching Secondary Mathematics (2)

This course is only offered in the fall semester. It may be taken with either the 300-level or 400-level EDUC courses but must be taken before the student teaching semester.

- ☐ EDUC 499G - Teaching Internship and Colloquia: Secondary (12) (600 field experience hours)

All EDUC prefix courses listed above must be completed with a grade of B or better to progress through the program sequence. EDUC 497C - Methods of Teaching Secondary Mathematics is only offered in the fall semester. It may be taken with either the 300-level or 400-level EDUC courses but must be taken before the student teaching (internship) semester.
Students must take the PRAXIS II exam in the content area prior to commencing the internship. Also, all other coursework toward the degree must be successfully completed prior to the internship.

SUGGESTED COURSE SEQUENCING

Freshman Year, Fall Semester: 15 credits

- MATH 119 - Pre-Calculus Mathematics (5)
- ENGL 111 - English Composition (3)
- Essential Learning - Humanities (3)
- Essential Learning - Fine Arts (3)
- KINA Activity (1)

Freshman Year, Spring Semester: 16 credits

- MATH 151 - Calculus I (5)
- MATH 150 - Topics and Careers in Mathematics (1)
- ENGL 112 - English Composition (3)
- Essential Learning - Social/Behavioral Science (3)
- Essential Learning - History (3)
- KINE 100 - Health and Wellness (1)

Sophomore Year, Fall Semester: 16 credits

- MATH 152 - Calculus II (5)
- MATH 225 - Computational Linear Algebra (2)
- General Elective (2)
- Essential Learning - Natural Science (3)
- PSYC 233 - Human Growth and Development (3)
- EDUC 115 - What It Means to be an Educator (1)

Sophomore Year, Spring Semester: 15 credits

- MATH 253 - Calculus III (4)
- MATH 240 - Introduction to Advanced Mathematics (4)
- Essential Learning - Natural Science with Lab (4)
- STAT 200 - Probability and Statistics (3)

Junior Year, Fall Semester: 18 credits

- MATH 325 - Linear Algebra I (3)
- CSCI 111 - CS1: Foundations of Computer Science (4) or CSCI 110/110L - Beginning Programming (4)
- MATH 352 - Advanced Calculus (3)
- ESSL 290 - Maverick Milestone (3)
- ESSL 200 - Essential Speech (1)
- EDUC 215 - Teaching as a Profession (1)
- MATH 310 - Number Theory (3) or MATH 365 - Mathematical Modeling (3) or STAT 301 ~~–~~ Computational Statistics ~~Methods~~ (3)

Junior Year, Spring Semester: 16 credits

- MATH 380 - History of Mathematics (3)
- MATH 386 - Geometries (4)
- MATH 369 - Discrete Structures (3)
- EDUC 342 - Pedagogy and Assessment: Secondary and K-12 (3)

- EDUC 343 - Teaching to Diversity (3)

Senior Year, Fall Semester: 12 credits

- MATH 415 - Abstract Algebra for Secondary Education (3) or MATH 490 - Abstract Algebra I (3)
- EDUC 442 - Integrating Literacy Across the Curriculum (3)
- EDUC 475 - Classroom Management (1)
- EDUC 497 - Content Methodology Practicum (3)
- EDUC 497C - Methods of Teaching Secondary Mathematics (2)

Senior Year, Spring Semester: 12 credits

- EDUC 499G - Teaching Internship and Colloquia (12)

Program Modification

Mathematics-Statistics: 3434

Degree Type: BS

Revision to program sheet: Yes ☑ No ☐

Description of modification:

Summary: Revamp program by removing upper division math courses and adding upper division statistics courses.

1) Add the option of CSCI 110/110L to the CSCI 111 requirement.
2) Move "CSCI 110/100L or CSCI 111" into the core requirements
3) Move the following courses out of the Core Requirements and into the concentration requirements or electives
   a) MATH 240 - Introduction to Advanced Mathematics (4)
   b) MATH 484 - Senior Seminar I (2)
4) Move the following courses from the Concentration Requirements to the Concentration Electives
   a) STAT 313: Sampling Techniques
5) Remove the following courses from the program

Originally in the core requirements
   a) MATH 325 - Linear Algebra (3)
   b) MATH 494 - Senior Seminar II (2)

Originally in the Concentration Requirements
   c) STAT 311: Statistical Methods (3)
   d) STAT 412: Correlation and Regression (3)
   e) MATH 452: Real Analysis I or MATH 460: Advanced Linear Algebra (3)

6) Add the following courses to the program Concentration Requirements
   a) CSCI 260: Introduction to Database (3)
   b) STAT 301: Computational Statistical Methods (3)
   c) STAT 312: Correlation and Regression (3)
   d) STAT 492: Senior Capstone (1)
7) Add Concentration Electives Category with various groups of options
   a) Choose MATH 240: Introduction to Advanced Mathematics or MATH 369: Discrete Structures I
   b) Choose three courses. At least two of which must come from Group A

  Group A
     i. STAT 313: Sampling Techniques (3) (originally in concentration requirement)
     ii. STAT 430: Categorical Data Analysis (3) (new course)
     iii. STAT 435: Introduction to Time Series (3) (new course)

  Group B (All courses not previously in the statistics concentration)
     i. MATH 361: Numerical Analysis (4)
     ii. MATH 362: Fourier Analysis (3)
     iii. MATH 365: Mathematical Modeling (3)

8) Correct the course title of CSCI 111 and MATH 150 on the program sheet to match the course catalog.

Justification:

See Section (e) below for more justification and rationale for the changes to the program.
Note, the desire to update the statistics program initialed the modifications in the other mathematic programs.

(1) Faculty determined that students would benefit from CSCI 110/110L and thus wish to allow the option of CSCI 110/110L (Beginning Programming) or CSCI 111 (CS1: Foundations of Computer Science).

(2)-(3) Some rearrangement to ensure the Core Requirements are consistent among all concentrations of Mathematics.

Program Modification

(4a) With the addition of new statisitcs courses, STAT 313 (Sampling Techniques) will be moved to a list a restricted electives. Students will choose at least two of three statistics electives that interest them (see (7b, Group A).

(5a) Remove MATH 325 (Linear Algebra). Computational Linear Algebra (MATH 225) is sufficient for students with a concentration in statistics. MATH 325 is a theoretical, proof-based course. Removing this course will allow flexibility for more releveant 300-level math courses to be chosen from the Group B concentration electives.

(5b) and (6d) Replace MATH 494 (Senior Seminar II (2)) with STAT 492 (Senior Capstone (1)): Part of the math capstone course, MATH 494, is preparing for the field test in math. Statistic students are not required to take this test and therefore a statistics captone experience is more appropriate.

(5c) and (6b) Replacing STAT 311 with STAT 301 on the program sheet: Material from STAT 311 will be covered in STAT 301 with the addition of using computational software. The statistics faculty believe that STAT 301 is a more valuable course for students. Note STAT 311 in an elective group of many courses.

(5d) and (6c) Replacing STAT 412 with STAT 312 on the program sheet. STAT 412 is being deleted and STAT 312 is being added to replace it.

(5e) Remove the requirement of MATH 452 (Real Analysis I) or MATH 460 (Advanced Linear Algebra) Both courses in this option are senior-level theoretical pure mathematics courses. Removing this requirement allows for the requirement of 400-level statistics course more relevant to the major to be chosen from the Group A concentration electives.

(6a) Addition of CSCI 260 (Introduction to Database): this course is a new as of Fall 2018. The course is relevant to the training benefial to statitics majors.

(7a) Previously, MATH 240 (Introduction to Advanced Mathematics) was required. We now offer the choice of MATH 240 or MATH 369 (Discrete Structures I). Both courses provide an introduction to proof-based mathematics and the choice will offer more flexibility for students.

(7b) Concentration electives are split into two groups to ensure students take at least two additional statistics courses while also allowing the option of a mathematics course. The courses in Group B will provide valuable experience outside of a direct statistics course. The restricted electives allow the studens to choose the courses that are of interest to them and that fit their schedules.

(8) Clean up for accuracy.

Revision to SLOs: Yes ☑ No ☐

1)2)3) Program Student Learning Outcomes (Linkage to Institutional SLO)(Course(s) for assessment)
o Construct multi-step problem solving strategies, and communicate solutions effectively in written form. (Specialized Knowledge, Quantitative Fluency) (MATH 253)
o Use mathematical/statistical software (including calculators) to aid in problem-solving and investigation, and understand its limitations. (Applied Learning) (STAT 301 and STAT 312)
o Apply appropriate statistical procedures and justify chosen assumptions. (Applied Learning, Personal and Social Responsibility) (STAT 301 and STAT 312)
o Draw statistical conclusions and evaluate the validity of others' conclusions. (Critical Thinking, Information Literacy) (STAT 312)
o Demonstrate comprehension of an advanced topic in statistics through a summative project (Specialized Knowledge, Communication Fluency) (STAT 492)

2) The Program Student Learning outcomes align with Institutional Student Learning Objectives (for

undergraduates) in Specialized Knowledge, Applied Learning, Quantitative Fluency, Communication Fluency, Critical Thinking, Information Literacy, and Personal and Social Responsibility (Ethical Reasoning). See the linkage in (1) above.

4) In each of the courses indicated in the Curriculum Map above, student work will be gathered and assessed using a rubric reflecting the Student Learning Outcomes identified.

Other changes: Yes ☑ No ☐

*Program Goals for the Bachelor of Science in Statistics are listed below:

1. Provide coursework for undergraduates interested in enhancing their knowledge of theoretical and applied statistics.
2. Provide students the opportunity to develop an understanding of statistical reasoning, necessary assumptions, and correct use of statistical procedures.
3. Prepare students for employment in a statistical role across a variety of industries.
4. Prepare students for success in graduate programs in fields such as statistics, data science, and decision science.

These program goals align well with institutional goals, as follows.
(a) CMU's Role and Mission includes serving as a general baccalaureate and graduate institution with selective admission standards, and to serve as a regional education provider. All three of the program goals support this Role and Mission statement.
(b) Goal 1 of the CMU 2020 Strategic Plan seeks to "raise the level of educational attainment in the 14-county region through the delivery of a wide array of quality programs that respond to regional needs..." All three of the program goals support this strategic planning goal for CMU.

*Program Strengths etc.
There are very few standalone undergraduate statistics degrees across the state of Colorado. By establishing a degree with more statistics and a shift in the mathematics focus, we can both better prepare students for futures in the workforce or graduate studies and make CMU an attractive destination for students interested in statistics.

Students will be afforded practical experience through a capstone project, and the ability to offer a wide range of topical courses within statistics will make this program competitive with others nationwide.

*Accreditation, professional associations etc.
The following items reflect various outside factors that have helped shape the program's curriculum.

1. This program was created in order to enhance and replace the current BS in mathematics with a concentration in statistics. The current concentration in statistics limits the students' exposure to many relevant subfields of statistics such as time series and categorical data methodologies. The programs follows closely to suggested topics by the American Statistical Association (ASA).
2. With regard to program accreditation, we are not aware of accrediting agencies for a degree in statistics.
3. A comparative analysis was done with similar programs offered at other institutions, and this helped shape our program by (a) confirming the shared value of certain core courses while also (b) identifying certain competitive advantages the expertise our faculty can bring to the program, especially through our elective course offerings.
4. An internet search for best practices in undergraduate programs in statistics did generate relevant results. We feel the results can be summarized as follows (taken from Vanderbilt University Center for Teaching).

Svetlana Tishkovskaya and Gillian Lancaster recently reviewed research on statistics education as well as web-based resources in the field (Tishkovskaya and Lancaster, 2012). They note that five principles of learning from cognitive theory, applied to statistical education by Lovett and Greenhouse, encapsulate current thought on the most effective approaches to teaching statistics (Lovett and Greenhouse, 2000). Tishkovskaya and Lancaster describe these principles in the following way:

Program Modification

- Students learn best what they practice and perform on their own.
- Knowledge tends to be specific to the context in which it is learned.
- Learning is more efficient when students receive real-time feedback on errors.
- Learning involves integrating new knowledge with existing knowledge.
- Learning becomes less efficient as the mental load students must carry increases.

Our modified program aligns well with these best practices as we will be serving and fostering communities of practice and lifelong learning; using technology appropriate and effectively in the implementation of statistical methodologies; and our curriculum will be student centered and will include problem-based projects.

* Rationale for the program such as evidence of employer/student demand:
This program responds to the need for a more thorough statistics degree than the one currently offered as a concentration within the mathematics degree. Recent CMU mathematics alums are working at companies such as Apple, Geico, Rocky Mountain Health Plans, Lockton Incorporated, SquareTwo Financial, the United States Department of Agriculture, and the Mesa County Health Department. Students have regularly suggested the need for a more thorough statistics degree.

Multiple publications, including US News & World Report, indicate that statistics is and will continue to be one of the most in-demand fields, and a large number of current CMU math alumni are doing work that is statistical in nature. Of current CMU mathematics graduates, a large portion are under the statistics concentration. By modifying the statistics degree, we believe that we can recruit even more students who would not consider the program as is.

*Relationship to similar state programs
Colorado State University's statistics program is nationally recognized, and the course sequence and requirements for our proposed degree closely resemble theirs.

Discussions with affected departments:

Many discussions during Spring 2018 and Fall 2018 with mathematics faculty.
The mathematics and statistics faculty voted to accept these program modifications on 9/26/2018.

Proposed by: Richard Ott

Director of Teacher Education Signature:

Expected Implementation: Fall 2019

2019-2020 PROGRAM REQUIREMENTS
Degree: Bachelor of Science
Major: Mathematics
Concentration: Statistics

About This Major . . .
The statistics concentration in mathematics prepares students for graduate work in statistics or to enter the job force. With some additional job-specific training, students entering the job market could function as applied statisticians working in areas such as actuarial science, wildlife management, marketing, quality control, and epidemiology to name a few.

For more information on what you can do with this major, go to http://www.coloradomesa.edu/career/whatmajor.html.

All CMU baccalaureate graduates are expected to demonstrate proficiency in critical thinking, communication fluency, quantitative fluency, and specialized knowledge/applied learning. In addition to these campus-wide student learning outcomes, graduates of this major and concentration will be able to:

1. Construct multi-step problem-solving strategies, and communicate solutions effectively in written form. (Specialized Knowledge, ~~/~~Quantitative Fluency)
2. Use mathematical software (including calculators) to aid in problem-solving and investigation, and understand its limitations. (Applied Learning)
3. Apply appropriate statistical procedures and justify chosen assumptions. (Applied Learning, ~~/Ethical Reasoning~~ Personal and Social Responsibility)
4. Draw statistical conclusions and evaluate the validity of others' conclusions. (Critical Thinking, Information Literacy)
5. ~~Communicate technical analyses to non-specialists. (Communication Fluency)~~
5. Demonstrate comprehension of an advanced topic in statistics through a summative project (Specialized Knowledge, ~~/~~Communication Fluency)

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Advising Process and DegreeWorks
This document is intended for informational purposes to help determine what courses and associated requirements are needed to earn a degree. The suggested course sequencing outlines how students could finish degree requirements. Some courses are critical to complete in specific semesters, while others may be moved around. Meeting with an academic advisor is essential in planning courses and altering the suggested course sequencing. It is ultimately the student's responsibility to understand and fulfill the requirements for her/his intended degree(s).

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Students must complete the following in the first two months of the semester prior to completing their degree requirements:

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- Meet with their advisor and modify their plan as needed. The advisor must approve the final plan.
- Submit the "Intent to Graduate" form to the Registrar's Office to officially declare the intended graduation date and commencement ceremony plans.
- Register for all needed courses and complete all requirements for each degree sought.

Submission deadlines and commencement details can be found at http://www.coloradomesa.edu/registrar/graduation.html.

If a student's petition for graduation is denied, it will be her/his responsibility to consult the Registrar's Office regarding next steps.

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- Students must complete a minimum of 30 of the last 60 hours of credit at CMU, with at least 15 semester hours in major discipline courses numbered 300 or higher.
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- 2.00 cumulative GPA or higher in all CMU coursework.
- A course may only be used to fulfill one requirement for each degree/certificate.
- No more than six semester hours of independent study courses can be used toward the degree.
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- See “Requirements for Undergraduate Degrees and Certificates” in the catalog for a complete list of graduation requirements.

PROGRAM-SPECIFIC DEGREE REQUIREMENTS

- 2.50 cumulative GPA or higher in coursework toward the major content area
- At most one “D” may be used in completing major requirements.

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See the current catalog for a list of courses that fulfill the requirements below. If a course is an Essential Learning option and a requirement for your major, you must use it to fulfill the major requirement and make a different selection for the Essential Learning requirement.

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- ☐ ENGL 111 - English Composition (3)
- ☐ ENGL 112 - English Composition (3)

Mathematics (3 semester hours, must receive a grade of "C" or better, must be completed by the time the student has 60 semester hours.)
- ☐ MATH 151 - Calculus I (5)
  3 credits apply to the Essential Learning requirements and 2 credits apply to Elective credit.

Humanities (3 semester hours)
- ☐ Select one Humanities course (3)

Social and Behavioral Sciences (6 semester hours)
- ☐ Select one Social and Behavioral Sciences course (3)
- ☐ Select one Social and Behavioral Sciences course (3)

Natural Sciences (7 semester hours, one course must include a lab)
- ☐ Select one Natural Sciences course (3)
- ☐ Select one Natural Sciences course with a lab (4)

History (3 semester hours)
- ☐ Select one History course (3)

Fine Arts (3 semester hours)
- ☐ Select one Fine Arts course (3)

OTHER LOWER-DIVISION REQUIREMENTS

Wellness Requirement (2 semester hours)
- ☐ KINE 100 - Health and Wellness (1)
- ☐ Select one Activity course (1)

Essential Learning Capstone (4 semester hours)
Essential Learning Capstone must be taken after completion of the Essential Learning English and Mathematics requirements, and when a student has earned between 45 and 75 hours.
- ☐ ESSL 290 - Maverick Milestone (3)
- ☐ ESSL 200 - Essential Speech (1)

FOUNDATION COURSES (8 semester hours)
- ☐ MATH 152 - Calculus II (5)
- ☐ STAT 200 - Probability and Statistics (3)

BS, MATHEMATICS, STATISTICS REQUIREMENTS (4~~3~~4 - 46 semester hours. A 2.5 GPA is required in the major courses. At most one "D" may be used in completing major requirements.))

Required Core Courses (~~18~~ 11 semester hours)

- ☐ MATH 150 - Topics and Careers in Mathematics (1)
- ☐ MATH 225 - Computational Linear Algebra (2)
- ☐ ~~MATH 240 - Introduction to Advanced Mathematics (4)~~
- ☐ MATH 253 - Calculus III (4)
- ☐ ~~MATH 325 - Linear Algebra (3)~~
- ☐ ~~MATH 484 - Senior Seminar I (2)~~
- ☐ ~~MATH 494 - Senior Seminar II (2)~~
- ☐ One of the following courses:
  - CSCI 110 - Beginning Programming (3) with CSCI 110L - Beginning Programming Laboratory (1)
  - CSCI 111 - ~~Computer Science~~ CS1: Foundations of Computer Science~~—~~ (4)

Required Concentration Courses (21~~5~~ semester hours)

- ☐ ~~CSCI 111 - Computer Science 1: Foundations (4)~~
- ☐ CSCI 260 – Introduction to Database ~~Design~~ (3)
- ☐ ~~One of the following courses:~~
  - ~~MATH 452 - Introduction to Real Analysis I (3)~~
  - ~~MATH 460 - Advanced Linear Algebra (3)~~
- ☐ ~~STAT 311 - Statistical Methods (3)~~
- ☐ STAT 301- Computational Statistics~~al Methods~~ (3)
- ☐ STAT 312- Correlation and Regression (3)
- ☐ ~~STAT 313 - Sampling Techniques (3)~~
- ☐ STAT 350 - Mathematical Statistics I (3)
- ☐ STAT 351 - Mathematical Statistics II (3)
- ☐ ~~STAT 412 - Correlation and Regression (3)~~
- ☐ STAT 425 - Design and Analysis of Experiments (3)
- ☐ MATH 484 - Senior Seminar I (2)
- ☐ STAT 492 – Senior Capstone (1)

Concentration Electives (12-14 semester hours)

- ☐ One of the following courses:
  - MATH 240 – Introduction to Advanced Mathematics (4)
  - MATH 369 – Discrete Structures I (3)

Choose three courses from the groups below. At least two courses must be from Group A and the third course may be from Group A or Group B. ~~You must choose at least two courses from Group A and a total of three courses from Groups A and B combined.~~

Group A:

- STAT 313 - Sampling Techniques (3)
- STAT 430 – Categorical Data Analysis (3)
- STAT 435 – Introduction to Time Series (3)

Group B:

- MATH 361 - Numerical Analysis (4)
- MATH 362 - Fourier Analysis (3)
- MATH 365 – Mathematical Modeling (3)

- ☐ _____
- ☐ _____
- ☐ _____

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GENERAL ELECTIVES (All college level courses appearing on your final transcript, not listed above that will bring your total semester hours to 120 hours. ~~32~~29-31 semester hours, ~~12~~8-10 additional upper division hours may be needed.)

- ☐ MATH 151 - Calculus I (2)
- ☐ _____
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SUGGESTED COURSE SEQUENCING

Freshman Year, Fall Semester: 16 credits

- MATH 151 - Calculus I (5)
- CSCI 111 - ~~Computer Science~~ CS1: Foundations of Computer Science (4) or CSCI 110/CSCI 110L - Beginning Programming and Laboratory (4)
- ~~CSCI 111 - Computer Science 1: Foundations (4)~~
- ENGL 111 - English Composition (3)
- KINA Activity (1)
- Essential Learning - Social and Behavioral Sciences (3)

Freshman Year, Spring Semester: 16 credits

- MATH 150 - Topics and Careers in Mathematics (1)
- MATH 152 - Calculus II (5)
- Essential Learning - History (3)
- ENGL 112 - English Composition (3)
- KINE 100 - Health and Wellness (1)
- Essential Learning - Social and Behavioral Sciences (3)

Sophomore Year, Fall Semester: 15 credits

- MATH 225 - Computational Linear Algebra (2)
- MATH 253 - Calculus III (4)
- Essential Learning - Fine Arts (3)
- Essential Learning - Humanities (3)
- STAT 200 - Probability and Statistics (3)

Sophomore Year, Spring Semester: 14 ~~15~~ credits

- MATH 240 - Introduction to Advanced Mathematics (4) or MATH 369 – Discrete Structures I (3)
- CSCI 260 – Introduction to Database ~~Design~~ (3)
- Essential Learning - Natural Science with Lab (4)
- ESSL 290 - Maverick Milestone (3)
- ESSL 200 - Essential Speech (1)
- ~~General Elective (3)~~

Junior Year, Fall Semester: 15 credits

- ~~MATH 325 - Linear Algebra I (3)~~
- ~~STAT 311 - Statistical Methods (3)~~
- STAT 301 – Computational Statistics~~al Methods~~ (3)
- STAT 350 - Mathematical Statistics I (3)
- Essential Learning - Natural Science (3)
- General Elective (6~~3~~)

Junior Year, Spring Semester: 15 credits

- ~~STAT 313 - Sampling Techniques (3)~~
- STAT 312 – Correlation and Regression (3)
- STAT 351 - Mathematical Statistics II (3)
- Concentration Elective from Group A or B (3)
- General Electives (6~~9~~)

Senior Year, Fall Semester: 14 ~~15~~ credits

- ~~MATH 452 - Introduction to Real Analysis I (3) or MATH 460 - Linear Algebra II (3)~~
- ~~STAT 412 - Correlation and Regression (3)~~
- STAT 425 - Design and Analysis of Experiments (3)
- Concentration Elective from Group A or B (3-4)
- MATH 484 - Senior Seminar I (2)
- General Electives (6)

2019-20 BS, Mathematics, Statistics (3434). Posted:

Senior Year, Spring Semester: 13-154 credits

- ~~STAT 425 - Design and Analysis of Experiments (3)~~
- ~~MATH 494 - Senior Seminar II (2)~~
- STAT 492 – Senior Capstone (1)
- Concentration Elective from Group A or B (3)
- General Electives (~~9~~9-11)

Program Modification

Statistics: M465

Degree Type: Minor

Revision to program sheet: Yes ☑ No ☐

Description of modification:

Summary: Adjust program electives to reflect new, modified, and deleted courses.
1) Remove STAT 311: Statistical Methods from program electives list.
2) Remove STAT 412: Correlation and Regression from program electives list.
3) Add STAT 301: Computational Statistics to program electives list.
4) Add STAT 312: Correlation and Regression to program electives list.
5) Add STAT 430: Categorical Data Analysis to program electives list.
6) Add STAT 435: Introduction to Time Series to program electives list.

Justification:

(1) and (3) Replacing STAT 311 with STAT 301 on the program sheet: STAT 311 material will be covered in STAT 301 with the addition of computational methods. Statistics faculty feel that this course will be more valuable to students so STAT 301 will replace STAT 311 on the program sheet.

(2) and (4) Replacing STAT 412 with STAT 312 on the program sheet: STAT 412 is being deleted and STAT 312 is being added to replace it.

(5) and (6) STAT 430 and STAT 435 are new courses and they are appropriate electives for the minor. Adding these courses to the program electives list will offer more options to students.

Revision to SLOs: Yes ☐ No ☑

Other changes: Yes ☐ No ☑

NA

Discussions with affected departments:

The mathematics and statistics faculty voted to accept these program modifications on 9/26/2018.

Proposed by: Lisa Driskell

Director of Teacher Education Signature:

Expected Implementation: Fall 2019

2019-2020 PROGRAM REQUIREMENTS
Minor: Statistics

About This Minor. . .
A minor in statistics is a natural enhancement to many majors outside mathematics where an understanding of statistical analysis of data is needed (e.g. biology, business, psychology, sociology, history, human performance and wellness, political science). A minor in statistics enables non-mathematics majors to complete a focused course of study in statistics on a smaller scale.

Advising Process and DegreeWorks
This document is intended for informational purposes to help determine what courses and associated requirements are needed to earn a minor. Meeting with an academic advisor is essential in planning courses and developing a suggested course sequencing. It is ultimately the student's responsibility to understand and fulfil the requirements for her/his intended minor.

DegreeWorks is an online degree audit tool available in MAVzone. It is the official record used by the Registrar's Office to evaluate progress towards a minor. Students are responsible for reviewing their DegreeWorks audit on a regular basis and should discuss questions or concerns with their advisor or academic department head for the minor. Discrepancies in requirements should be reported to the Registrar's Office.

Graduation Process
A minor cannot be awarded by itself. It must be combined with a baccalaureate degree outside the major field of study. Students should follow the graduation process outlined for the baccalaureate degree and list their majors and minors on the "Intent to Graduate" form.

If a student's petition for graduation is denied, it will be her/his responsibility to consult the Registrar's Office regarding next steps.

INSTITUTIONAL MINOR REQUIREMENTS

The following institutional requirements apply to all CMU minors. Specific programs may have different requirements that must be met in addition to institutional requirements.

- A minor consists of 15-24 semester hours. There may be prerequisites required for the minor which will increase the total number of credit hours for a student who has not already taken those prerequisites.
- Courses taken to satisfy Essential Learning, major requirements, or electives **can** be counted toward the minor if applicable.
- At least 33 percent of the credit hours required for the minor must be in courses numbered 300 or above.
- At least 25 percent of the classes must be taken at CMU.
- 2.00 cumulative GPA or higher for the courses used for the minor.
- A minor is not a degree by itself and must be earned at the same time as a baccalaureate degree.
- A minor must be outside the major field of study.
- A student may earn up to five minors with any baccalaureate degree at CMU.
- The Catalog Year determines which program sheet and degree requirements a student must fulfill in order to graduate. Visit with your advisor or academic department to determine which catalog year and program requirements sheet you should follow.
- See "Requirements for Undergraduate Degrees and Certificates" in the catalog for a complete list of graduation requirements.

PROGRAM-SPECIFIC MINOR REQUIREMENTS

- 18-21 semester hours for the Minor in Statistics.

REQUIRED COURSES FOR THE STATISTICS MINOR (18-21 semester hours)

☐ One of the following courses:
STAT 200 - Probability and Statistics (3)
STAT 215 - Statistics for Social and Behavioral Sciences (4)
STAT 241 - Introduction to Business Analysis (3)
CISB 241 - Introduction to Business Analysis (3)

☐ One of the following courses:
MATH 121 - Business Calculus (3)
MATH 135 - Engineering Calculus I (4)
MATH 146 - Calculus for Biological Sciences (5)
MATH 151 - Calculus I (5)

Choose 12 semester hours from the list below:

STAT 301- Computational Statistics~~sal Methods~~ (3)
STAT 305 - Statistics and Quality Control for Engineering (3)
~~STAT 311 - Statistical Methods (3)~~
STAT 3~~4~~12 - Correlation and Regression (3)
STAT 313 - Sampling Techniques (3)
STAT 350 - Mathematical Statistics I (3)
STAT 351 - Mathematical Statistics II (3)
STAT 396 - Topics (1-3)
~~STAT 412 - Correlation and Regression (3)~~
STAT 425 - Design and Analysis of Experiments (3)
STAT 430 – Categorical Data Analysis (3)
STAT 435 – Introduction to Time Series (3)

STAT 496 - Topics (1-3)

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Department: Engineering

Course Additions

EECE 225 Credit Hours 3

Course Title: Introduction to Circuits and Electronics

Abbreviated Title: Intro Circuits and Electronics

Contact hours per week: Lecture 3 Lab Field Studio Other

Type of Instructional Activity: Lecture

Academic engagement minutes: 2250 Student preparation minutes: 4500

Intended semesters for offering this course: Fall ☑ J-Term ☐ Spring ☐ Summer ☐

Intended semester to offer course 1st time: Fall 2019

Number of times course may be taken for credit: 1

Essential Learning Course: Yes ☐ No ☑

Prerequisites: Yes ☑ No ☐

PHYS 132 and 132L; MATH 236 (can be taken concurrently)

Prerequisite for other course(s): Yes ☑ No ☐

Co-requisites: Yes ☐ No ☑

Requirement or listed choice for any program of study: Yes ☑ No ☐

Course is a requirement for a new program:

BS Electrical and Computer Engineering (CMU/CU Partnership)

Overlapping content with present courses offered on campus: Yes ☐ No ☑

Additional faculty FTE required: Yes ☑ No ☐

The addition of this course will require the hire of a tenure-track faculty member with expertise in electrical and/or computer engineering. A position announcement is posted and a search is under way.

Additional equipment required: Yes ☑ No ☐

The engineering department is able to support initial offerings of this course until enrollment in the program increases. After that, additional electronics equipment will be required.

Additional lab facilities required: Yes ☑ No ☐

The engineering department is able to support initial offerings of this course until enrollment in the program increases. After that, additional lab facilities will be required.

Course description for catalog:

Analysis of electric circuits by use of Ohm's law, network reduction, node and loop analysis, Thevenin's and Norton's theorems, DC and AC signals, transient response of simple circuits, transfer functions, basic diode and transistor circuits, and operational amplifiers.

Justification:

The addition of this course supports the new Electrical and Computer Engineering partnership program with CU Boulder. This course covers required competencies for successful completion of this degree.

Topical course outline:

Basic Circuit Analysis, Digital Systems, Electronic Devices and Circuits, and Electromechanics

Student Learning Outcomes:

1. Apply knowledge of mathematics, science, and engineering. Use of mathematical methods such as matrices, complex numbers, integral and differential calculus and differential equations address this

outcome. Application of science and engineering will be addressed through study of pertinent electrical engineering theorems, semiconductors and MEMS.

2. Design and conduct experiments, as well as to analyze and interpret data.
3. Identify, formulate, and solve engineering problems.
4. Use the techniques, skills, and modern engineering tools necessary for engineering practice.

Discussions with affected departments:

Requirement of MATH 236 as a prereq was discussed via email with Lori Payne on 9/28/18 and the requirement of PHYS 132/132L as a prereq was discussed with Russ Walker via phone on 9/24/18 - there are no issues with requiring these courses to be taken prior to the proposed course.

Proposed by: Sarah Lanci Expected Implementation: Fall 2019

Course Additions

EECE 226 Credit Hours 3

Course Title: Circuits as Systems

Abbreviated Title: Circuits as Systems

Contact hours per week: Lecture 3 Lab Field Studio Other

Type of Instructional Activity: Lecture

Academic engagement minutes: 2250 Student preparation minutes: 4500

Intended semesters for offering this course: Fall ☐ J-Term ☐ Spring ☑ Summer ☐

Intended semester to offer course 1st time: Spring 2020

Number of times course may be taken for credit: 1

Essential Learning Course: Yes ☐ No ☑

Prerequisites: Yes ☑ No ☐

EECE 225; MATH 236

Prerequisite for other course(s): Yes ☑ No ☐

Co-requisites: Yes ☐ No ☑

Requirement or listed choice for any program of study: Yes ☑ No ☐

Course is a requirement for a new program:

BS Electrical and Computer Engineering (CMU/CU Partnership)

Overlapping content with present courses offered on campus: Yes ☐ No ☑

Additional faculty FTE required: Yes ☑ No ☐

The addition of this course will require the hire of a tenure-track faculty member with expertise in electrical and/or computer engineering. A position announcement is posted and a search is under way.

Additional equipment required: Yes ☑ No ☐

The engineering department is able to support initial offerings of this course until enrollment in the program increases. After that, additional electronics equipment will be required.

Additional lab facilities required: Yes ☑ No ☐

The engineering department is able to support initial offerings of this course until enrollment in the program increases. After that, additional lab facilities will be required.

Course description for catalog:

Continued analysis of basic circuits, Laplace transform techniques, transfer functions, frequency response, Bode diagrams, resonant circuits, Fourier series expansions, and convolution.

Justification:

The addition of this course supports the new Electrical and Computer Engineering partnership program with CU Boulder. This course covers required competencies for successful completion of this degree.

Topical course outline:

- Circuit analysis in the s-domain
- Node-voltage analysis in the s-domain
- Network/system functions
- Impulse and step response
- Sinusoidal steady-state response
- Phase and magnitude of frequency response
- Bode plots
- Low-pass and high-pass filters

Course Additions

- Bandpass and bandstop filters
- Frequency response and step response
- Fourier series
- Fourier transform
- Impulse response and convolution
- Active filter design

Student Learning Outcomes:

1. Demonstrate understanding of transformations as tools, including Laplace transform, s-domain circuit analysis, and Fourier series.
2. Demonstrate understanding of network system functions for first and second order systems, including poles and zeros, and unit impulse responses.
3. Demonstrate understanding of frequency domain design/analysis, including frequency responses, Bode plots, and filter specifications.
4. Demonstrate understanding of circuit analysis and design tools, including LTSpice and Matlab.

Discussions with affected departments:

Requirement of MATH 236 as a prereq was discussed via email with Lori Payne on 9/28/18 - there are no issues with requiring this course to be taken prior to the proposed course.

Proposed by: Sarah Lanci Expected Implementation: Fall 2019

Course Additions

EECE 227 Credit Hours 3

Course Title: Electronics Design Laboratory

Abbreviated Title: Electronics Design Laboratory

Contact hours per week: Lecture Lab 6 Field Studio Other

Type of Instructional Activity: Laboratory: Academic/Clinical

Academic engagement minutes: 4500 Student preparation minutes: 2250

Intended semesters for offering this course: Fall ☐ J-Term ☐ Spring ☑ Summer ☐

Intended semester to offer course 1st time: Spring 2020

Number of times course may be taken for credit: 1

Essential Learning Course: Yes ☐ No ☑

Prerequisites: Yes ☑ No ☐

EECE 225; EECE 226 (can be taken concurrently)

Prerequisite for other course(s): Yes ☐ No ☑

Co-requisites: Yes ☐ No ☑

Requirement or listed choice for any program of study: Yes ☑ No ☐

Course is a requirement for a new program:

BS Electrical and Computer Engineering (CMU/CU Partnership)

Overlapping content with present courses offered on campus: Yes ☐ No ☑

Additional faculty FTE required: Yes ☑ No ☐

The addition of this course will require the hire of a tenure-track faculty member with expertise in electrical and/or computer engineering. A position announcement is posted and a search is under way.

Additional equipment required: Yes ☑ No ☐

The engineering department is able to support initial offerings of this course until enrollment in the program increases. After that, additional electronics equipment will be required.

Additional lab facilities required: Yes ☑ No ☐

The engineering department is able to support initial offerings of this course until enrollment in the program increases. After that, additional lab facilities will be required.

Course description for catalog:

Introduction to analysis, modeling, design, and testing of analog electronic circuits in a practical laboratory setting. The laboratory is centered around a robot platform and includes design, SPICE simulations, prototyping and testing of circuits necessary to drive and remotely control the robot.

Justification:

The addition of this course supports the new Electrical and Computer Engineering partnership program with CU Boulder. This course covers required competencies for successful completion of this degree.

Topical course outline:

- o Lab 1: Lab equipment, circuit prototyping, de-bugging and simulations
- o Lab 2: Speed sensor & Robot DC motor characterization
- o Lab 3: Motor drive and speed control circuits
- o Lab 4: Microcontroller based speed and position control
- o Lab 5: Robot remote control
- o Lab 6: Final Project

Student Learning Outcomes:

Course Additions

o Demonstrate laboratory skills and competence
- Proficiency in use of laboratory equipment
- Ability to read, understand, and create circuit diagrams
- Experience in design, testing and debugging electronic circuits, working with discrete and IC components
o Demonstrate proficiency in simulation, analysis, and design tools
- Spice simulation as a design verification and debugging tool
- MATLAB analysis of data
o Demonstrate ability to apply core electrical engineering theory
- Time-domain response: 1st and 2nd order, distortion
- Frequency-domain response: Bode plots, filters
- Active components, nonlinearity: op-amps, diodes, BJTs, MOSFETs
- Feedback and control

Discussions with affected departments:

n/a

Proposed by: Sarah Lanci Expected Implementation: Fall 2019

Course Additions

EECE 235 Credit Hours 3

Course Title: Digital Logic

Abbreviated Title: Digital Logic

Contact hours per week: Lecture 3 Lab Field Studio Other

Type of Instructional Activity: Lecture

Academic engagement minutes: 2250 Student preparation minutes: 4500

Intended semesters for offering this course: Fall ☐ J-Term ☐ Spring ☑ Summer ☐

Intended semester to offer course 1st time: Spring 2020

Number of times course may be taken for credit: 1

Essential Learning Course: Yes ☐ No ☑

Prerequisites: Yes ☑ No ☐

CSCI 130

Prerequisite for other course(s): Yes ☐ No ☑

Co-requisites: Yes ☐ No ☑

Requirement or listed choice for any program of study: Yes ☑ No ☐

Course is a requirement for a new program:

BS Electrical and Computer Engineering (CMU/CU Partnership)

Overlapping content with present courses offered on campus: Yes ☑ No ☐

Content overlaps with CSCI 241, however the proposed EECE 235 course focuses more on applications of hardware supplemented by integration of software and a higher level of mathematics whereas the CSCI 241 course focuses on software programming, supplemented by concepts and applications of related hardware and a lower level of mathematics. In addition, CSCI 241 is a 4-credit course (3 credit lecture with 1 credit for lab) and requires knowledge of college-level algebra whereas the proposed EECE 235 will be a 3-credit lecture course and requires knowledge of calculus.

Additional faculty FTE required: Yes ☑ No ☐

The addition of this course will require the hire of a tenure-track faculty member with expertise in electrical and/or computer engineering. A position announcement is posted and a search is under way.

Additional equipment required: Yes ☑ No ☐

The engineering department is able to support initial offerings of this course until enrollment in the program increases. After that, additional electronics equipment will be required.

Additional lab facilities required: Yes ☑ No ☐

The engineering department is able to support initial offerings of this course until enrollment in the program increases. After that, additional lab facilities will be required.

Course description for catalog:

Design and applications of digital logic circuits, including both combinational and sequential logic circuits. Introduces hardware descriptive language, simulating and synthesis software, and programming of field programmable arrays (FPGAs).

Justification:

The addition of this course supports the new Electrical and Computer Engineering partnership program with CU Boulder. This course covers required competencies for successful completion of this degree.

Topical course outline:

1. Boolean algebra

Course Additions

2. Logic gates and networks
3. The Verilog HDL (Hardware Description Language)
4. Combinational logic circuit synthesis and optimization
5. Number representation and arithmetic circuits
6. CMOS technology and programmable logic
7. Flip-flops, registers, and counters
8. Finite state machines
9. Synchronous sequential circuits
10. Digital system design
11. Asynchronous sequential circuits
12. Testing and testability of logic circuits

Student Learning Outcomes:

1. Recognize and understand logic level models, including Boolean algebra, finite state machines, arithmetic circuits and hardware description languages.
2. Recognize and understand logic gates and memory, including CMOS gates, flip-flops, arrays, and programmable logic.
3. Recognize and understand how to use design tools, both manual and computerized, for design, optimization and test of logic circuits.
4. Recognize and understand how to identify design criteria, including area, speed, power consumption, and testability.

Discussions with affected departments:

Requirement of CSCI 130 as a prereq was discussed via email with Lori Payne on 9/28/18 - there are no issues with requiring this course to be taken prior to the proposed course.

Proposed by: Sarah Lanci Expected Implementation: Fall 2019

Note about the included program sheet:

The proposed EECE courses are included in the BSECE, Electrical and Computer Engineering CMU/CU-Boulder partnership program. Because this degree is awarded by CU-Boulder (and the program is owned by CU-Boulder), no program modification is required by UCC. The following program sheet is provided to allow the committee to see how the proposed courses fit into the overall program.

Name: _____ CMU ID #:_____

IMPORTANT NOTE: This sheet is only a worksheet to track your progress in the CMU/CU-Boulder Electrical & Computer Engineering Partnership Program. An official review of your coursework will be performed by CU administration to ensure completion of all graduation requirements.

- **In order to take any Math, Science or Engineering courses, each listed prerequisite (or an equivalent course) must be completed with a grade of "C" or better.**
- **All engineering students must take ENGL 111 and 112 unless they meet or exceed one of the following criteria: ACT ENGL 24 or SAT Verbal 550 or AP English (Lit & Comp or Lang & Comp) 4 or IB English 4.**

Minimum credits to graduate: 128 hrs

CMU/CU-BOULDER Electrical & Computer ENGINEERING REQUIRED COURSES:

Course No	Title	Sem.hrs	Grade	Term/Trns
Mathematics and Computer Science: 19 semester hours				
MATH 135	Engineering Calculus I	4	_____	_____
MATH 136	Engineering Calculus II	4	_____	_____
MATH 253	Calculus III	4	_____	_____
MATH 236	Differential Equations & Linear Algebra	4	_____	_____
MATH 369	Discrete Structures I	3	_____	_____
CSCI 130	Intro to Engr Computing	3	_____	_____
Physical Science: 10 semester hours				
PHYS 131	Fundamental Mechanics	4	_____	_____
PHYS 131L	Fundamental Mechanics Laboratory	1	_____	_____
PHYS 132	Electromagnetism & Optics	4	_____	_____
PHYS 132L	Electromagnetism & Optics Laboratory	1	_____	_____
Freshman Elective: 3 semester hours				
_____	_____ _____	3	_____	_____
Science Elective: 3 semester hours. Must be selected from: PHYS 230, PHYS 231, BIOL 209 & 209L or CHEM 311				
_____	_____ _____	3	_____	_____
Basic Engineering: 16 semester hours				
ENGR 101	Introduction to Engineering	1	_____	_____
EECE 225	Intro to Circuits & Elect.	3	_____	_____
EECE 226	Circuits as Systems	3	_____	_____
EECE 227	Electronics Design Lab	3	_____	_____
EECE 235	Digital Logic	3	_____	_____
Sophomore Elective: 6 semester hours. May be replaced by Advanced Concentration Electives. Must be selected from: Renewable Energy, Application of Embedded Systems, or Electronics for Wireless Communication				
_____	_____ _____	3	_____	_____
_____	_____ _____	3	_____	_____

Course No	Title	Sem.hrs	Grade	Term/Trns
CU-Boulder Electrical & Computer Engineering Core: 27 semester hours				
CSCI 2270	Data Structures	3	_____	_____
ECEN 3250	Microelectronics	3	_____	_____
ECEN 3300	Linear Systems	3	_____	_____
ECEN 3350	Prog of Digital Systems	3	_____	_____
ECEN 3360	Digital Design Lab	3	_____	_____
ECEN 3810	Probability	3	_____	_____
ECEN 4593	Comp. Org. Tech. Elective	3	_____	_____
ECEN 4610	Capstone (Part 1)	3	_____	_____
ECEN 4620	Capstone (Part 2)	3	_____	_____
ELECTIVE COURSES:				
Software Elective: 3 semester hours				
ECEN	____ _____	____		_____
Advanced Concentration Electives: 15 semester hours				
ECEN	____ _____	____		_____
ECEN	____ _____	____		_____
ECEN	____ _____	____		_____
ECEN	____ _____	____		_____
ECEN	____ _____	____		_____
Free Electives: 8 semester hours				
_____	_____ _____	____		_____
_____	_____ _____	____		_____
_____	_____ _____	____		_____
Humanities and Social Science: 18 semester hours. Check website for complete list of courses. Link given at end of worksheet.				
9 semester hours Lower Division Humanities & Social Science				
SOCI 120	Technology & Society	3	_____	_____
_____	_____ _____	____		_____
_____	_____ _____	____		_____
6 semester hours Upper Division Humanities & Social Science				
_____	_____ _____	____		_____
_____	_____ _____	____		_____
ENGL 325	Writing for Engineers	3	_____	_____

This is a recommended sequence of course-work. Certain courses may have prerequisites or are only offered during the fall or spring semesters. It is the responsibility of the student to meet regularly with their assigned advisor.

		Freshman Year			
Fall Semester		Cr Hr	Spring Semester		Cr Hr
MATH 135	Engineering Calculus I	4	MATH 136	Engineering Calculus II	4
PHYS 131	Fundamental Mechanics	4	PHYS 132	Electromagnetism & Optics	4
PHYS 131L	Fundamental Mechanics Lab	1	PHYS 132L	Electromagnetism & Optics Lab	1
ENGR 101	Intro to Engineering	1	CSCI 130	Intro to Engineering Computing	3
	Freshman Elective*	3		HUM/SS Elective (Lower Div)	3
	HUM/SS Elective (Lower Div)	3			
	Total	**16**		**Total**	**15**
		Sophomore Year			
MATH 236	Differential Eqs & Linear Alg	4	MATH 253	Engineering Calculus III	4
EECE 225	Intro to Circuits & Electronics	3	EECE 226	Circuits as Systems	3
MATH 369	Discrete Structures I	3	EECE 227	Electronics Design Lab	3
	Sophomore Electives**	6	EECE 235	Digital Logic	3
				Science Elective***	3
	Total	**16**		**Total**	**16**
		Junior Year			
ECEN 3350	Prog of Digital Systems	3	ECEN 3360	Digital Design Lab	3
CSCI 2270	Data Structures	3	ECEN 4593	Comp. Org. Tech. Elective	3
ECEN 3250	Microelectronics	3	ECEN 3300	Linear Systems	3
ECEN 3810	Probability	3	ECEN XXXX	Advanced Concentration Elective	3
SOCI 120	Technology & Society	3	ECEN XXXX	Advanced Concentration Elective	3
			ENGL 325	Writing for Engineers	3
	Total	**15**		**Total**	**18**
		Senior Year			
ECEN 4610	Capstone (Part 1)	3	ECEN 4620	Capstone (Part 2)	3
ECEN XXXX	ECEN Software Elective	3	ECEN XXXX	Advanced Concentration Elective	3
ECEN XXXX	Advanced Concentration Elective	3	ECEN XXXX	Advanced Concentration Elective	3
	HUM/SS Elective (Upper Div)	3		HUM/SS Elective (Upper Div)	3
	Free Electives	4		Free Electives	4
	Total	**16**		**Total**	**16**
				Total Credits	**128**

Black – CMU courses, red – CU courses

* Courses that fulfill the 3-credits of Freshman Elective are: ENGR 140, CHEM 131 or CHEM 151

** Courses that fulfill the 6-credits of Sophomore Elective are: Choose 2 from Renew able Energy, Application of Embedded Systems or Electronics for Wireless Communications

***Courses that fulfill the 3-credits of Science Elective are: PHYS 230, PHYS 231, BIOL 209 & 209L, CHEM 311, ENGR 312, or MCEN 3012

Acceptable Course Substitutions
MATH 151 (5) for MATH 135 (4)
MATH 152 (5) for MATH 136 (4)

Humanities & Social Science Electives
See: http://www.coloradomesa.edu/engineering/documents/HSSAcceptableClasses-August2015Update.pdf

Advanced Concentration Electives:
Course availability varies year to year. Courses highlighted in yellow are not currently offered through the CU Boulder/CMU Partnership and may be taken on the Boulder campus.

Course Number	Course Name	Prerequisite (all minimum C)
ECEN 4341	Bioelectromagnetics	ECEN 3400 and ECEN 3810 or APPM 3570 or MATH 4510
ECEN 4242	Communication Theory	ECEN 3300 and ECEN 3810
ECEN 4652	Communication Lab	ECEN 4242
ECEN 4632	Intro to Digital Filtering	ECEN 3300
ECEN 4532	DSP Lab	ECEN 4632
ECEN 4138	Control Systems Analysis	ECEN 3300
ECEN 4638	Controls Lab	ECEN 4138
ECEN 3410	EM Waves & Transmission	ECEN 3400
ECEN 4634	Microwave & RF Lab	ECEN 3410
ECEN 4797	Intro to Power Electronics	ECEN 3250
ECEN 4517	Power Electronics Lab	ECEN 4797
ECEN 4827	Analog IC Design	ECEN 3250
ECEN 3170	Energy Conversion 1	ELCE 226 and PHYS 132
ECEN 4606	Undergraduate Optics Lab	ECEN 3400

Grade Requirements
The minimum passing grade for prerequisite and co-requisite classes in the BSECE curriculum is a C. This includes courses completed outside the department (MATH, PHYS, etc.). The minimum passing grade for standalone classes is a D-. In addition, students need to have a cumulative and major GPA of at least 2.25 in order to graduate from the CU Boulder College of Engineering.

Free Electives
College level coursework accepted by CU Boulder not used otherwise to satisfy BSECE degree requirements. Use Transferology.com to verify that courses will transfer to CU Boulder.

Course Work Not Accepted for Transfer Credit

The following course work will not be accepted for transfer credit and will not count toward a degree at Boulder:

- any courses in which the grade earned is below a C- (1.70)
- courses identified by CU Boulder as remedial, such as remedial English, mathematics, science and developmental reading
- vocational-technical courses that are offered at two-year and proprietary institutions (exceptions may be granted only by the CU Boulder dean responsible for the student's curriculum—when exceptions appear to be warranted, appropriate department heads make recommendations to their respective deans regarding credit for such courses)
- courses in religion that constitute specialized religious training or that are doctrinal in nature
- credits earned for work experience or through a cooperative education program
- outdoor leadership education course work
- credits earned in physical education activity courses
- courses or programs identified as college orientation