Faculty Senate Minutes
1/14/2020
4-5 pm
Kelly Steward

Present: Charie Faught (Chair), Atish Mitra, Matt Egloff, Chris Gammons, Katherine Zodrow, Karen Wesenberg, Dan Autenrieth, Mary North-Abbott, Rita Spear, Tony Patrick, Vickie Petritz, Ron White, Peter Lucon, Courtney Young, Miriam Young, Vice Chancellor Bev Hartline, Provost Doug Abbott, Dean Dave Gurchiek, Dean Dan Trudnowski.

Started @ 4:00pm. Quorum @4:10pm

I. Welcome and Minutes (https://www.mtech.edu/facultystaff/facultysenate/minutes/index.html)

Approvals for December 3, 2019: Motion and seconded. PASSED.

II. CRC Items

   a. Rename BS Network Technology CLSPS
      Motion and seconded. PASSED.

   b. CRC Request Restoration Field Methods
      Bev Hartline discussed the proposal. Motion and seconded. PASSED.

   c. Curriculum Proposal MS Ecological Restoration
      Bev Hartline discussed both thesis vs non-thesis versions. Motion and seconded. PASSED.

   d. Name Change AHSS to Exercise Science
      Motion and seconded. PASSED.

   d. Proposed Change AHSS
      Discussion about elimination of OSH 3516 etc. Motion and seconded. PASSED.

   f. EMET 427 and 527
   g. EMET 429 and 529
   h. EMET 428 and 528
      All three courses above taught earlier as special topics. Motion and seconded. PASSED.

   i. Name change from Drafting Technology to AEC Graphics Technology
      Discussion about the reasoning behind name change; the name change reflects the current terminology used in the industry. Motion and seconded. PASSED.
III. Request for Faculty Senate representation on Vice Chancellor for Admin and Finance Search Committee

Chair: Chancellor wants senate to participate in campus searches. Requested to have one representative from senate for the search for VC admin/finance. Options: ask for nominations and sent to faculty to vote, or nominate someone from senate. Senator: We should nominate someone with understanding of finance. Can be non-senator. Motion to nominate Todd Tregidga (Business) and seconded. PASSED.

IV. Request to amend Faculty Senate Bylaws to include representation of Writing Program
Comment from senator: writing is not a degree program, should that matter? Comment from senator: Writing program does impact a lot of students, so possibly this is a good idea. Senators requested to discuss with their departments, and this topic will be considered in a later meeting.

V. SSI Data Presentation
Will be presented in next meeting (Carrie Vath).

Faculty satisfaction survey will be discussed in a future meeting.

Regular meeting times this semester will be tentatively 1:00pm on Fridays. A more formal announcement will be sent out later.

VI. Activities and priorities for the upcoming year
a. Other
   i. Technical Report Series
      No discussion
   ii. Faculty Yearbook
      No discussion
   iii. Workload (see below for requirements)
      No discussion

VII. Other Items
a. Discuss what constitutes an action item, etc. on faculty senate agenda
   No discussion
b. Creating and filling of new positions
   No discussion
c. Faculty Staff Handbook Updates/Changes
   No discussion

Motion to adjourn @5:01pm
V.a.iv Workload Requirements (Faculty Staff Handbook and CBA):

- **Faculty Staff Handbook**
  - Assigning teaching duties equitably to the department’s faculty in such a manner as to take the greatest advantage of their individual expertise, interests and abilities;
  - Scheduling of classes and the arrangement of the teaching schedule in a manner that avoids intra and inter-department conflicts between required courses and allows faculty adequate time blocks to prepare for instruction, carry out research and serve the Institution and the community.
  - The Department Head, in consultation with the faculty of the department, is responsible for the continuing development of the curriculum and for its oversight. If it is individually accredited by an organization such as ABET, the Department Head is responsible for maintaining accreditation of the department’s degree program. The Department Head is normally expected to carry two-thirds of the teaching load assigned to faculty in the department.

- **CBA**
  
  **21.100 WORKLOAD ASSIGNMENT**

  Department Heads are responsible for assigning faculty workload, subject to the approval of the Dean and P/VCAA. The instructional portion of the workload shall be that deemed sufficient to meet programmatic needs as determined by the Department Head and Dean in consultation with department faculty.

  While it is not expected that the teaching portion of workloads be identical within and among departments, assignments will be made relative to the total activity of faculty including research, scholarship, creative activity, service and administrative duties. When assigning a faculty member’s workload, the Department Head may take into consideration such activities as listed below and make adjustments as deemed necessary:


  The above list is not intended to be all inclusive and the Dean or Department Head may make adjustments for additional activities as deemed appropriate. Normally, a full-time faculty member’s teaching load shall not be reduced to less than 12 credits per year.

  Members of the faculty shall post office hours during which they shall be available to students.
Date 01/07/2020
Dept. Biological Sciences
Program Restoration Field Methods Course

College North Campus
CRC Representative Dr. Joel Graff (Biological Sciences)
Dr. Beverly Hartline (Graduate School)

Description of Request:
We would like to propose a new 500 level course “Restoration Field Methods”. This course will be an elective for the IMS, the Restoration Certificate, and several engineering MS programs, as well as a senior level elective for the Biology and several other BS programs. It will be a required course for newly proposed MS degree in Ecological Restoration.

Current Course or Program Information:

Proposed Change

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Description of the new course (Restoration Field Methods): The goal of this course is to allow students to gain experience in a variety of field and laboratory techniques. Students are required to participate in labs and field work for a minimum of three topic areas (defined as a minimum of 20% of the course), including but not limited to: plant ecology, environmental chemistry, geology, geochemistry, hydrology, and soil science. Students should build knowledge in sampling techniques and practices in a manner that promotes comprehensive understanding of application. Specifically, students who complete this class should be comfortable to perform environmental assessments and projections as they related to the goal of ecological restoration.

This course is not taught in other MSU institutes therefore a course number was not assigned yet.

List of supporting documentation attached:
1. Syllabus

Assessment Leading to Request
Field work is a major component for any restoration project. Employers in the restoration field expect employees to be skilled at the full range of field methods. The proposed course will help students to gain hands on experience in a variety of field and laboratory techniques and skills.

Anticipated Impacts to “Other” Programs
This course would be available for other programs at Montana Tech and at other MUS institutes

Impact on Library: N/A

Date to take effect: Fall 2020
Syllabus: Restoration Field Methods

Advising faculty: Dr. Robert Pal

Topic faculties: Topic faculties can come from any departments and represent a specific research area that is part of the given restoration project.

Course Goal: The goal of this course is to allow students to gain experience in a variety of field techniques. Students are required to participate in labs and field work for a minimum of three topic areas (defined as a minimum of 20% of the course), including but not limited to: plant ecology, environmental chemistry, geology, geochemistry, hydrology, and soil science. Students should build knowledge in sampling techniques and practices in a manner that promotes comprehensive understanding of application. Specifically, students who complete this class should be comfortable to perform environmental assessments and projections as they related to the goal of ecological restoration.

Credit hours: As a 2-credit lab course, students are required to complete 28 three-hour segments. Some field experience may count for multiple segments; for example, a course instructor may require the graduate student to participate in lecture the week preceding the field experience, which may count for 2 segments. As stated, each topic area must be a minimum of 20% of the course (6 segments/18 contact hours).

Expectations: Students work with an advising faculty to identify key topic areas and design an approach to building a schedule worth two field credits at the graduate level. Each student’s course plan is expected to be unique; scheduling with select faculty and programs to participate in established lectures and labs that offer exposure to a given topic. Students must review course syllabi and arrange (in advance!) to attend lectures and labs that fulfill their topic areas. Students may also arrange to accompany a scientist during their field research or participate in a field station (i.e.: Flathead Biological Station) A minimum of 3 contact hours is required for an activity and must include practical application (modeling, sampling, identification, etc.).

Students are expected to write a summary paper for each topic area and maintain a lab notebook for all activities. Each lab entry should provide objectives, methods, outcomes, and associated recommendations for each topic. In addition, students are required to read at least one published paper, chapter, or related scientific reading that exemplifies the activity or protocol. Students should include a summary of each reading in the lab notebook at the end of each entry and are expected to be able to discuss the readings.

Topic Faculty: These faculty agree to host a graduate student during existing lecture and lab times. They may require the graduate to complete preliminary reading, participate in class activities (short presentations, papers, quizzes), and participate in lab activities. Faculty then provide each student with a grade (0-100) that reflects their participation and performance; this evaluation may include aforementioned activities and the write up in the student’s lab notebook. Some participating faculty may be asked to read a summary paper for a given topic area if the respective topic falls outside the advising faculty’s area of expertise.

Grading: Grading will be completed by the advising faculty based on a cumulation of all faculty grades weighted by the percentage of the course completed.
Montana Tech
Curriculum Change Request Form Dated 6 September 2018

APPROVALS

Department Head Approval

[Signature]

Date 4/7/20

Dean Approval

[Signature]

Date 12/7/20

Graduate Council Approval

[Signature]

Date 12/5/2019

CRC Approval

[Signature]

Date 1/10/2020

Faculty Senate Approval

[Signature]

Date

VCAA Approval (see below)

[Signature]

Date 1/7/20

Chancellor Approval (see below)

[Signature]

Date 1/7/20

LEVEL of Request

Please indicate the type of request(s) by selecting all that apply:

Faculty Approvals (directly to CRC, then Faculty Senate):

☐ Establish a new course for the catalog (please contact the Registrar of MUS CCN information)

☐ Changed course: addition, deletion or change of title, credit, course number, pre-reg, description, or cross listing.

☐ Amend an existing degree program. Making changes to programs such as adding a writing course to a major, changing the list of accepted electives or removing a requirement of a minor

☐ New degree certification program of 29 credits or less

☐ Other:

Campus Approvals (must be approved by the VCAA prior to CRC submission):

☐ Placing a postsecondary educational program into moratorium

☐ Withdrawing a postsecondary educational program from moratorium

☐ Establishing, re-titling, terminating or revising a campus certificate of 29 credits or more

☐ Establishing a B.A.S./A.A./A.S. area of study

☐ Offering an existing postsecondary educational program via distance or online delivery

☐ Other:

OCHE Approvals (must be approved by the VCAA and Chancellor prior to CRC submission):

☐ Re-titling an existing postsecondary educational program

☐ Terminating an existing postsecondary educational program

☐ Consolidating existing postsecondary educational programs

☐ Establishing a new minor where there is a major or an option in a major

☐ Revising a postsecondary educational program

☐ Establishing a temporary C.A.S. or A.A.S. degree program Approval limited to 2 years

☐ Other:

Level II (must be approved by the VCAA and Chancellor prior to CRC submission):

☐ Establishing a new postsecondary educational program

☐ Exceeding the 120 credit maximum for baccalaureate degrees Exception to policy 301.11

☐ Forming, eliminating or consolidating an academic, administrative, or research unit

☐ Re-titling an academic, administrative, or research unit

☐ Other:
Date: 12/14/2019  
Dept: Biological Sciences  
Program: Ecological Restoration MS  
College: North Campus  
CRC Representative: Dr. Joel Graff (Biological Sciences)  
Dr. Beverly Hartline (Graduate School)

Description of Request:
We would like to propose a new MS degree program at Montana Tech. The Intent to Plan was approved in the spring of 2019, and now we propose the documents necessary for the LEVEL II evaluation. On December 5, 2019, the Graduate Council approved the proposed program and recommended to forward it to the Curriculum Review Committee.
The Master of Science in Ecological Restoration (MS/MSE) degree program will include thesis (30 credit-hour) and non-thesis (36 credit-hour) tracks to enable students to customize their studies to fit their career goals and objectives.

Current Course or Program Information:
The core courses of the proposed MS program will be the same as the courses in the current Restoration Certificate Program at Montana Tech. There is one new two-credit course proposed (Restoration Field Methods), see the syllabus in the attachment.

Proposed Change
The curriculum of the proposed MS program

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<td>Core Courses</td>
<td>NRSM 594</td>
<td>Restoration Seminar</td>
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<td>T.C. 5160</td>
<td>Graduate Writing Seminar</td>
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### List of supporting documentation attached:

1. Item #
2. Request form
3. Curriculum form
4. Fiscal form
5. Intent to Plan
Assessment Leading to Request
Since the creation of Montana Tech’s graduate certificate in restoration several students have integrated that curriculum to design and complete an interdisciplinary MS in restoration. Hence, a MS program in ecological restoration would be much more preferable and could be a more advantageous degree for the students on the job market. Since there was a demand for the degree, discussions started at the Graduate Council in 2016. The intent of plan was developed in 2018 and approved in 2019. A committee for the MS Restoration Curriculum was formed with 13 faculty from seven departments spanning from the College of Letters and Sciences to the School of Mining and Engineering who strongly supported the development of a MS Program in Ecological Restoration that would connect the different disciplines for a successful graduate program.

Anticipated Impacts to “Other” Programs
There is no other Master of Science in Ecological Restoration in the MUS or at other institutions in Montana. The proposed program will complement and fill a gap between bachelor’s degree programs in Biology, Environmental Engineering, Mining Engineering, Geological Engineering, Petroleum Engineering, and Chemistry at Montana Tech. It will also complement the Ecosystem Science and Restoration undergraduate program and the Ecological Restoration Minor at the W.A. Franke College of Forestry & Conservation at the University of Montana in Missoula, and the Land Rehabilitation MS Program at the Montana State University in Bozeman. Any MS Environmental Restoration students interested in continuing for a Ph.D. would be mentored and encouraged to apply and enroll in appropriate doctoral programs at UM-Missoula or MSU-Bozeman, into whichever campus and program best matches their interests and career aspirations. UM’s Systems Ecology Program is an already existing collaborative link for Ph.D. level education.

Impact on Library: No consultation is required since changes are only in the course number, course name, or course pre-requisites.

Date to take effect: Fall 2020
Montana Tech Curriculum Change Request Form Dated 6 September 2018

APPROVALS

Department Head Approval

Date Dec 18, 2019

Dean Approval

Date 12/18/15

Graduate Council Approval

Date Dec 5, 2019

CRC Approval

Date 11/9/2020

Faculty Senate Approval

Date

VCAA Approval (see below)

Date 12/18/19

Chancellor Approval (see below)

Date 12/18/19

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Anticipated Impacts to “Other” Programs
There is no other Master of Science in Ecological Restoration in the MUS or at other institutions in Montana. The proposed program will complement and fill a gap between bachelor's degree programs in Biology, Environmental Engineering, Mining Engineering, Geological Engineering, Petroleum Engineering, and Chemistry at Montana Tech. It will also complement the Ecosystem Science and Restoration undergraduate program and the Ecological Restoration Minor at the W.A. Franke College of Forestry & Conservation at the University of Montana in Missoula, and the Land Rehabilitation MS Program at the Montana State University in Bozeman. Any MS Environmental Restoration students interested in continuing for a Ph.D. would be mentored and encouraged to apply and enroll in appropriate doctoral programs at UM-Missoula or MSU-Bozeman, into whichever campus and program best matches their interests and career aspirations. UM’s Systems Ecology Program is an already existing collaborative link for Ph.D. level education.

Impact on Library: No consultation is required since changes are only in the course number, course name, or course pre-requisites.

Date to take effect: Fall 2020
Montana Tech

Curriculum Change Request Form Dated 6 September 2018

APPROVALS

Department Head Approval

[Signature] Date Dec 18, 2019

Dean Approval

[Signature] Date 11/18/19

Graduate Council Approval

[Signature] Date Dec 5, 2019

CRC Approval

[Signature] Date 1/19/2020

Faculty Senate Approval

[Signature] Date

VCAA Approval (see below)

[Signature] Date 12/18/19

Chancellor Approval (see below)

[Signature] Date 12/18/19

LEVEL of Request

Please indicate the type of request(s) by selecting all that apply:

Faculty Approvals (directly to CRC, then Faculty Senate):
- Establish a new course for the catalog (please contact the Registrar of MUS CCN information)
- Changed course: addition, deletion or change of title, credit, course number, pre-req, description, or cross listing.
- Amend an existing degree program. Making changes to programs such as adding a writing course to a major, changing the list of accepted electives or removing a requirement of a minor
- New degree certification program of 29 credits or less
- Other:

Campus Approvals (must be approved by the VCAA prior to CRC submission):
- Placing a postsecondary educational program into moratorium
- Withdrawing a postsecondary educational program from moratorium
- Establishing, re-titling, terminating or revising a campus certificate of 29 credits or more
- Establishing a B.A.S./A.A./A.S. area of study
- Offering an existing postsecondary educational program via distance or online delivery
- Other:

OCHE Approvals (must be approved by the VCAA and Chancellor prior to CRC submission):
- Re-titling an existing postsecondary educational program
- Terminating an existing postsecondary educational program
- Consolidating existing postsecondary educational programs
- Establishing a new minor where there is a major or an option in a major
- Revising a postsecondary educational program
- Establishing a temporary C.A.S. or A.A.S. degree program Approval limited to 2 years
- Other:

Level II (must be approved by the VCAA and Chancellor prior to CRC submission):
- Establishing a new postsecondary educational program
- Exceeding the 120 credit maximum for baccalaureate degrees Exception to policy 301.11
- Forming, eliminating or consolidating an academic, administrative, or research unit
- Re-titling an academic, administrative, or research unit
- Other:
Date: 3-Dec-19
Dept.: Metallurgical & Materials Engineering

College: School of Mines and Engineering
CRC Representative: Dr. Avimanyu Das

Description of Request: We request an official course number for “Advanced Pyro-Processing.” We wish to have the course cross-listed as EMET 427 and EMET 527.

Current Course or Program Information: Previously offered under EMET 595 – Special Topics

Proposed Change

<table>
<thead>
<tr>
<th>Course # Name</th>
<th>Credits</th>
<th>Pre-req.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMET 427/527 – Advanced Pyro-Processing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credits: 3 (Lecture)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prerequisites: Graduate standing and/or consent of instructor.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross-listing: as 427 and 527</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course Description: The course focuses on the analysis of selected pyrometallurgical and thermal processes and includes the application and integration of applicable environmental control technologies and efficient energy utilization practices. Emphasis is placed on the utilization of thermodynamic, kinetic, and engineering principles in process development, design, and operation applications.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcomes: Graduates of this course will:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• be able to analyze complex metallurgical and materials processes in order to identify potential methods for improving process efficiency, safety, and profitability.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• understand the factors that influence the technical and economic viability of a process</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• recognize the importance of designing metallurgical and materials processes to operate in a sustainable manner (i.e., be cognizant of the balance between environmental, social, and economic factors).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• understand the importance of safety in high-temperature industrial operations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

List of supporting documentation attached:
The syllabus for the proposed course is attached.

Assessment Leading to Request
The course has twice previously been offered under MET 595 Special Topics. The course draws well among graduate students and upper-level undergraduate students. The subject matter is highly relevant to those interested in careers in extractive metallurgy and materials processing.

Anticipated Impacts to “Other” Programs
None.

Impact on Library: Dr. Jerry Downey consulted with Scott Juskievich (4-Dec-19) at the Montana Tech library to ensure needed materials and media are available. They agreed that resources currently in place at the Montana Tech library are sufficient to meet course needs.

Date to take effect: Fall 2020
Montana Tech
Curriculum Change Request Form Dated 6 September 2019

APPROVALS

Department Head Approval

[Signature]
Date 4-Dec-19

Dean Approval

[Signature]
Date 12-4-19

Graduate Council Approval

[Signature]
Date 12-5-19

CRC Approval

[Signature]
Date 1/10/2020

Faculty Senate Approval

Date

VCAA Approval (see below)

Date

Chancellor Approval (see below)

Date

LEVEL of Request

Please indicate the type of request(s) by selecting all that apply:

Faculty Approvals (directly to CRC, then Faculty Senate):

☐ Establish a new course for the catalog (please contact the Registrar for MUS CCN information)
☐ Changed course: addition, deletion or change of title, credit, course number, pre-req, description, or cross listing.
☐ Amend an existing degree program. Making changes to programs such as adding a writing course to a major, changing the list of accepted electives or removing a requirement of a minor
☐ New degree certification program of 29 credits or less
☐ Other:

Campus Approvals (must be approved by the VCAA prior to CRC submission):

☐ Placing a postsecondary educational program into moratorium
☐ Withdrawing a postsecondary educational program from moratorium
☐ Establishing, re-titling, terminating or revising a campus certificate of 29 credits or more
☐ Establishing a B.A.S./A.A./A.S. area of study
☐ Offering an existing postsecondary educational program via distance or online delivery
☐ Other:

OCHE Approvals (must be approved by the VCAA and Chancellor prior to CRC submission):

☐ Re-titling an existing postsecondary educational program
☐ Terminating an existing postsecondary educational program
☐ Consolidating existing postsecondary educational programs
☐ Establishing a new minor where there is a major or an option in a major
☐ Revising a postsecondary educational program
☐ Establishing a temporary C.A.S. or A.A.S. degree program Approval limited to 2 years
☐ Other:

Level II (must be approved by the VCAA and Chancellor prior to CRC submission):

☐ Establishing a new postsecondary educational program
☐ Exceeding the 120 credit maximum for baccalaureate degrees Exception to policy 301.11
☐ Forming, eliminating or consolidating an academic, administrative, or research unit
☐ Re-titling an academic, administrative, or research unit
☐ Other:
INSTRUCTOR
Dr. Jerry Downey
ELC 208A; 406-496-4578
jdowney@mtech.edu
Office Hours: As posted

COURSE DESCRIPTION
The course focuses on the analysis of selected pyrometallurgical and thermal processes and includes the application and integration of applicable environmental control technologies and efficient energy utilization practices. Emphasis is placed on the utilization of thermodynamic, kinetic, and engineering principles in process development, design, and operation applications.

CREDITS AND CLASS MEETINGS
Lecture 3 credit-hours. The class is scheduled to meet in <Room No.> from <time> on <days>.

DESIGNATION
Advanced Pyro-Processing is offered as a graduate course (EMET 527) or an undergraduate elective course (EMET 427). Courses that are cross listed with both undergraduate and graduate sections cannot be taken at both levels for credit by an individual student.

PREREQUISITES
Graduate standing and/or consent of instructor.

TEXTBOOK AND REFERENCES
No textbook is required. Selected reading from supplemental literature will be assigned in class and/or posted on Moodle.

TOPICS
Three to five topics are covered in detail each semester; topic selection is largely based on student preferences and career aspirations. Lecture topics may be drawn from the following list:

1. Property measurements in high temperature systems (e.g. TGA/DTA/DSC, density, viscosity, surface tension, diffusion coefficients, emissivity)
2. High temperature oxidation of metals
3. Physical chemistry of ionic melts (slags, glasses, and molten salts)
4. Iron and steelmaking
5. Direct reduction of iron
6. Flash smelting and converting technologies
7. Silicon manufacturing and refining
8. Molten salt electrolysis
9. Energy audits of commercial processes (e.g. the Bayer Process, the Hall-Heroult Process)
10. Biomass pyrolysis and gasification
11. Plasma process technologies
12. Vapor phase metallurgy
OBJECTIVES AND OUTCOME

The course provides detailed examinations of a selected few current and/or emerging thermal processes. The application of physical chemistry (thermodynamics, kinetics) and chemical engineering (heat and mass transfer, fluid flow, plant design, energy) principles to process technology are emphasized. Specific course objectives are that, on completion of this course, the student will:

- be able to analyze complex metallurgical and materials processes in order to identify potential methods for improving process efficiency, safety, and profitability.
- understand the factors that influence the technical and economic vailability of a process
- recognize the importance of designing metallurgical and materials processes to operate in a sustainable manner (i.e., be cognizant of the balance between environmental, social, and economic factors).
- understand the importance of safety in high-temperature industrial operations

The course objectives and outcome are responsive to the following ABET Criteria skills, knowledge, and behaviors:

1. identify, formulate, and solve complex Materials Science and Engineering problems by applying principles of engineering, science, and mathematics

2. apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

EVALUATION AND GRADING CRITERIA

Attendance: is a factor in course grade determination. Students are permitted three (3) absences without penalty. Thereafter, 1% is subtracted from the student's final weighted average for each unexcused absence. In order to obtain an excused absence because of field trips, athletics, or other school-sanctioned events that force them to miss class, students are responsible for notifying the instructor in advance and for submitting assignments and/or sitting for quizzes in advance of the absence.

Regardless of the reason for absence, students are responsible for all material covered or assigned in class and reading assignments. Students should arrange to obtain class notes from another student; students will not be permitted to borrow the instructor's lecture notes or grading keys. It is the student's responsibility to complete the assignments and deliver their presentations on the scheduled dates and times. As a general rule, late papers or presentations are not accepted. Exceptions are decided on a case-by-case basis for unavoidable absences resulting from sudden illness or other extraordinary emergencies.

Examinations: students are required to complete an open-notes take-home examination subsequent to the completion of each major lecture topic. Students are expected to complete the examinations and submit papers that reflect graduate-level work. Each examination will have a firm due date and late papers will not be accepted. When determining course grades at the end of the semester, the student's lowest examination score will be discarded.

In lieu of a comprehensive final examination, each student will independently research a pyro-processing topic of their choice, prepare a technical paper (9 page maximum, excluding cover sheet and references), and present the paper to the class. Students must submit their topics and outlines for instructor prior to Spring Break. TMS format is strongly recommended for the paper. Twenty minutes are allowed for the presentation, followed by five minutes of questions from the audience. Presentations will be scheduled for the normal class meeting times during the final week of the semester and during the time scheduled for the final exam, which is decided by the Registrar’s Office.
(posted at the outset of each semester). The paper and presentation are graded on a 200-point basis (total) according to technical content and depth, professionalism, delivery, and responsiveness. To complete the exercise, students must forward their PowerPoint slides, handout materials, etc. to the instructor.

**Homework:** students may expect to receive homework assignments that relate to the specific major lecture topics. Collaboration among students enrolled in the class is encouraged but each student is personally responsible for completing and submitting the assignments on time. In order to receive full or partial credit, problem solutions that involve computations and/or derivations must show all steps, state assumptions, express the answers using proper engineering units, and clearly indicate the final answer. Students are advised to take the time necessary to make their papers presentable – illegible or incomplete work receives the score of zero.

**Quizzes:** are generally intended to reinforce the learning process and may be given with or without advance notice (i.e. a “pop quiz”). Subject matter covered during previous and present lectures and/or the associated readings is considered fair game. Pop quiz frequency correlates directly to the occurrence of classroom disruptions during lecture. Disruptions include but are not necessarily limited to late arrivals or early departures by students, extraneous conversations, cell phone usage, or other activities that disrupt class or distract other students. Make-up quizzes are not given in instances of unexcused absence.

**Course grades** are determined according to the following formula:

For Graduate students (EMAT 527):
- Quizzes + homework: 25%
- Examinations: 50%
- Term paper: 25%
- Attendance adjustment: -1% deduction for each unexcused absence after the 3rd

For Undergraduate students (EMAT 427):
- Quizzes + homework: 33.3%
- Examinations: 66.7%
- Attendance adjustment: -1% deduction for each unexcused absence after the 3rd

where the total will determine the student’s final grade according to the following scale:

- A = > 90%
- B = > 80% to 90%
- C = > 70% to 80%
- D = > 60% to 70%
- F = ≤ 60%

Plus and minus grades will be assigned at the instructor’s discretion.

Each student receives feedback on his or her current class standing when graded examinations are returned. The feedback includes the student’s exam score, the class average for the exam, the student’s current cumulative average, and the student’s current grade.

**Academic Integrity:** Students enrolled in the Metallurgical and Materials Engineering courses are expected to maintain an integrity standard that is consistent with the applicable fundamental canons of the NSPE Code of Ethics for Engineers. Specifically, students are expected to conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession.

Academic dishonesty or cheating will not be tolerated. Students are expected to adhere to the Montana Tech Academic Honesty policy (see addendum and/or the Montana Tech student handbook).
If it is determined that a student has deliberately cheated on a quiz or examination, the student will be dropped from the course with an "F" grade. In compliance with Montana Tech policy, all cases of academic dishonesty will be reported to the Office of the Vice Chancellor for Academic Affairs.

With one exception, electronic devices are not to be activated or evident during lectures, quizzes, and examinations. This restriction includes but is not limited to programmable calculators, cell phones, laptop computers, mp3 players, dvd players, and all types of recording or communication devices. The exception is that students are permitted to use a nonprogrammable calculator during lectures, quizzes, and exams. Students that possess unapproved calculators or electronic communication devices during a quiz or exam are subject to dismissal from the classroom.

No student is allowed to record, tape, or photograph any classroom or laboratory activity without the express written consent of the instructor. In case that a student believes that he/she needs to record or tape classroom activities due to disability, the student must request an appropriate accommodation. If such an accommodation is arranged, the material may not be further copied, distributed, published, or otherwise used for any other purpose without the express written consent of the instructor.

**Disability Accommodations:** Students that need academic accommodation because of disabilities must:

1. Register with and provide documentation to the Montana Tech Student Disability Coordinator
2. Provide the instructor with a letter that states the need and type of accommodation. This should be done during the first week of class.

**Professional Component:**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Topics</td>
<td>100%</td>
</tr>
<tr>
<td>Design Component</td>
<td>Yes</td>
</tr>
<tr>
<td>Computer Usage</td>
<td>Yes</td>
</tr>
<tr>
<td>Ethics</td>
<td>No</td>
</tr>
<tr>
<td>Statistics</td>
<td>No</td>
</tr>
<tr>
<td>Safety</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Prepared by: J. P. Downey
Finalized on <date>
Date: 3-Dec-19  
Dept: Metallurgical & Materials Engineering  
College: School of Mines & Engineering  
CRC Representative: Dr. Avimanyu Das

Description of Request: We request an official course number for “Materials Recycling and Waste Remediation.” We wish to have the course cross-listed as EMET 428 and EMET 528.

Current Course or Program Information: Previously offered under EMET 595 – Special Topics

Proposed Change

<table>
<thead>
<tr>
<th>Course # Name</th>
<th>Credits</th>
<th>Pre-req.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMET 428/528 Materials Recycling &amp; Waste Remediation</td>
<td>3 (Lecture)</td>
<td></td>
</tr>
<tr>
<td>Prerequisites: Graduate standing and/or consent of instructor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross-listing: as 428 and 528</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course Description: The course surveys the environmental legislation and regulations relevant to metallurgical and materials processes including RCRA, TSCA, and CERCLA. Hazardous waste classifications are defined, as are alternatives for disposal, delisting, or exclusion. Application of physical, aqueous, and/or thermal processing technologies to remediate waste is illustrated through commodity-specific case histories. The energy, environmental, and economic benefits of recycling are emphasized to help students realize the potential that waste minimization, waste treatment, and recycling holds for valuable materials recovery and, in some cases, energy production. The course includes guest lectures delivered by subject matter experts.</td>
<td></td>
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</tr>
<tr>
<td>Outcomes: Graduates of this course will:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• understand the evolution and current status of environmental regulations and practices relevant to the metallurgical and materials industries.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• understand the potential environmental, social, and economic (including legal) consequences of improper transport, treatment, and/or disposal of hazardous waste.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• be able to conceptualize potentially applicable process alternatives based on physical and chemical characteristics of discarded materials or waste.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• recognize the importance of designing metallurgical and materials processes to operate in a sustainable manner (i.e., be cognizant of the balance between environmental, social, and economic factors).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

List of supporting documentation attached:  
The syllabus for the proposed course is attached.

Assessment Leading to Request  
The course has twice previously been offered under EMET 595 Special Topics. The course draws well among upper—level undergraduate students and graduate students. The subject matter is highly relevant for students who intend to pursue careers in the industry or government.

Anticipated Impacts to “Other” Programs  
None.

Impact on Library: Dr. Jerry Downey consulted with Scott Juskiewicz (4-Dec-19) at the Montana Tech library to ensure needed materials and media are available. They agreed that resources currently in place at the Montana Tech library are sufficient to meet course needs.

Date to take effect: Fall 2020
APPROVALS

Department Head Approval

Date 4-06-19

Dean Approval

Date 12-4-19

Graduate Council Approval

Date 12-5-19

CRC Approval

Date 1/18/2020

Faculty Senate Approval

Date

VCAA Approval (see below)

Date

Chancellor Approval (see below)

Date

LEVEL of Request

Please indicate the type of request(s) by selecting all that apply:

Faculty Approvals (directly to CRC, then Faculty Senate):

☐ Establish a new course for the catalog (please contact the Registrar for MUS CCN information)
☐ Changed course: addition, deletion or change of title, credit, course number, pre-req, description, or cross listing.
☐ Amend an existing degree program. Making changes to programs such as adding a writing course to a major, changing the
list of accepted electives or removing a requirement of a minor
☐ New degree certification program of 29 credits or less
☐ Other:

Campus Approvals (must be approved by the VCAA prior to CRC submission):

☐ Placing a postsecondary educational program into moratorium
☐ Withdrawing a postsecondary educational program from moratorium
☐ Establishing, re-titling, terminating or revising a campus certificate of 29 credits or more
☐ Establishing a B.A.S./A.A./A.S. area of study
☐ Offering an existing postsecondary educational program via distance or online delivery
☐ Other:

OCHE Approvals (must be approved by the VCAA and Chancellor prior to CRC submission):

☐ Re-titling an existing postsecondary educational program
☐ Terminating an existing postsecondary educational program
☐ Consolidating existing postsecondary educational programs
☐ Establishing a new minor where there is a major or an option in a major
☐ Revising a postsecondary educational program
☐ Establishing a temporary C.A.S. or A.A.S. degree program Approval limited to 2 years
☐ Other:

Level II (must be approved by the VCAA and Chancellor prior to CRC submission):

☐ Establishing a new postsecondary educational program
☐ Exceeding the 120 credit maximum for baccalaureate degrees Exception to policy 301.11
☐ Forming, eliminating or consolidating an academic, administrative, or research unit
☐ Re-titling an academic, administrative, or research unit
☐ Other:
MONTANA TECH
Metallurgical & Materials Engineering Department

EMET 428/528 – MATERIALS RECYCLING & WASTE REMEDIATION
SYLLABUS

INSTRUCTOR
Dr. Jerry Downey
ELC 208A; 406-496-4578
jdowney@mtech.edu
Office Hours: As posted

COURSE DESCRIPTION: The course surveys the environmental legislation and regulations relevant to metallurgical and materials processes including RCRA, TSCA, and CERCLA. Hazardous waste classifications are defined, as are alternatives for disposal, delisting, or exclusion. Application of physical, aqueous, and/or thermal processing technologies to remediate waste is illustrated through commodity-specific case histories. The energy, environmental, and economic benefits of recycling are emphasized to help students realize the potential that waste minimization, waste treatment, and recycling holds for valuable materials recovery and, in some cases, energy production. The course includes guest lectures delivered by subject matter experts.

CREDITS AND CLASS MEETINGS
Lecture 3 credit-hours. The class is scheduled to meet in <Room No.> from <time> on <days>.

DESIGNATION
Materials Recycling & Waste Remediation is offered as a graduate course (EMET 528) or as an undergraduate elective course (EMET 428). Courses that are cross listed with both undergraduate and graduate sections cannot be taken at both levels for credit by an individual student.

PREREQUISITES
Graduate standing and/or consent of instructor.

TEXTBOOK: None. Selected reading assignments may be provided.

OBJECTIVES AND OUTCOME
The course illustrates the application of conventional and emerging process technologies to treat various waste materials for resource recovery or disposal. Specific course objectives are that, on completion of this course, the student will:

- understand the evolution and current status of environmental regulations and practices relevant to the metallurgical and materials industries.
- understand the potential environmental, social, and economic (including legal) consequences of improper transport, treatment, and/or disposal of hazardous waste.
- be able to conceptualize potentially applicable process alternatives based on physical and chemical characteristics of discarded materials or waste.
- recognize the importance of designing metallurgical and materials processes to operate in a sustainable manner (i.e., be cognizant of the balance between environmental, social, and economic factors).
The objectives and outcome are responsive to the following (ABET a-k Criteria) skills, knowledge, and behaviors:

2. apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

4. recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

EVALUATION AND GRADING CRITERIA

The course includes periodic homework assignments and quizzes. In lieu of a comprehensive final examination, students must complete a term project.

Attendance: is a factor in course grade determination. Students are permitted three (3) absences without penalty. Thereafter, 1% is subtracted from the student’s final weighted average for each unexcused absence. In order to obtain an excused absence because of field trips, athletics, or other school-sanctioned events that force them to miss class, students are responsible for notifying the instructor in advance and for submitting assignments and/or sitting for quizzes in advance of the absence.

Regardless of the reason for absence, students are responsible for all material covered or assigned in class and reading assignments. Students should arrange to obtain class notes from another student; students will not be permitted to borrow the instructor’s lecture notes or grading keys. It is the student’s responsibility to complete the assignments and deliver their presentations on the scheduled dates and times. As a general rule, late papers or presentations are not accepted. Exceptions are decided on a case-by-case basis for unavoidable absences resulting from sudden illness or other extraordinary emergencies.

Examinations: students are required to complete an open-notes take-home examination subsequent to the completion of each major lecture topic. Students are expected to complete the examinations and submit papers that reflect graduate-level work. Each examination will have a firm due date and late papers will not be accepted. When determining course grades at the end of the semester, the student’s lowest examination score will be discarded.

Students who enroll in the course for graduate credit will independently research a pyro-processing topic of their choice, prepare a technical paper (9 page maximum, excluding cover sheet and references), and present the paper to the class. Students must submit their topics and outlines for instructor prior to Spring Break. TMS format is strongly recommended for the paper. Fifteen to twenty minutes are allowed for the presentation, followed by five minutes of questions from the audience. Presentations will be scheduled for the normal class meeting times during the final week of the semester and during the time scheduled for the final exam, which is decided by the Registrar’s Office (posted at the outset of each semester). The paper and presentation are graded on a 200-point basis (total) according to technical content and depth, professionalism, delivery, and responsiveness. To complete the exercise, students must forward their PowerPoint slides, handout materials, etc. to the instructor.

Homework: students may expect to receive homework assignments that relate to the specific major lecture topics. Collaboration among students enrolled in the class is encouraged but each student is personally responsible for completing and submitting the assignments on time. In order to receive full or partial credit, problem solutions that involve computations and/or derivations must show all steps, state assumptions, express the answers using proper engineering units, and clearly indicate the final answer. Students are advised to take the time necessary to make their papers presentable – illegible or incomplete work receives the score of zero.
**Quizzes:** are generally intended to reinforce the learning process and may be given with or without advance notice (i.e. a “pop quiz”). Subject matter covered during previous and present lectures and/or the associated readings is considered fair game. Pop quiz frequency correlates directly to the occurrence of classroom disruptions during lecture. Disruptions include but are not necessarily limited to late arrivals or early departures by students, extraneous conversations, cell phone usage, or other activities that disrupt class or distract other students. Make-up quizzes are not given in instances of unexcused absence.

**Course grades** are determined according to the following formula:

**Graduate students (EMAT 528):**
- Quizzes + homework: 25%
- Examinations: 50%
- Term paper: 25%
- Attendance adjustment: -1% deduction for each unexcused absence after the 3rd

**Undergraduate students (EMAT 428):**
- Quizzes + homework: 33.3%
- Examinations: 66.7%
- Attendance adjustment: -1% deduction for each unexcused absence after the 3rd

where the total will determine the student’s final grade according to the following scale:

- A = > 90%
- B = > 80% to 90%
- C = > 70% to 80%
- D = > 60% to 70%
- F = ≤ 60%

Plus and minus grades will be assigned at the instructor’s discretion.

Each student receives feedback on his or her current class standing when graded examinations are returned. The feedback includes the student’s exam score, the class average for the exam, the student’s current cumulative average, and the student’s current grade.

**Disability Accommodations:** Students that require academic accommodation because of disabilities must:

1. Register with and provide documentation to the Student Disability Coordinator (406-496-4429)
2. Provide the instructor with a letter that states the need and type of accommodation. This should be done during the first week of class.

**PROFESSIONAL COMPONENT**

- Engineering Topics: 100%
- Design Component: Yes
- Computer Usage: Yes
- Ethics: Yes
- Statistics: Yes
- Safety: Yes

**PREPARED BY**

J. Downey
Finalized: <date>
Date: 12/03/19

Dept.: Metallurgical and Materials Engineering
Program: BS and MS in Mineral Processing and Extractive Metallurgy

College: SME
CRC Representative: Avimanyu Das

Description of Request: The course, Advanced Separations, was taught as a special topic (EMET 595) with 2 credits. A 529 course number is requested for this course with 3 credits. It is also requested to have it cross-listed as a 429 course as a tech elective.

Current Course or Program Information: EMET 595 (2 cr – 2 lec)

Proposed Change

<table>
<thead>
<tr>
<th>Course # Name</th>
<th>Credits</th>
<th>Pre-req</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMET 429/529 Advanced Separations</td>
<td>3 (changed from 2)</td>
<td>Pre-req: EMET 232 or Equivalent or Instructor’s Approval (no change)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Co-req: None (no change)</td>
</tr>
<tr>
<td>Cross-listing: As 429 (currently not cross-listed)</td>
<td></td>
<td>Course description will remain the same.</td>
</tr>
</tbody>
</table>

Outcomes: Graduates of this course will or will be able to:
1. Understand and apply advanced separation techniques to metallurgical and materials processing
2. Accomplish effective separation of solids from other solids, liquids and gases as applicable to M&ME
3. Gain knowledge for liquid-liquid, gas-liquid and gas-gas separation systems in metallurgy
4. Develop metallurgical and materials processing flowsheets requiring any type of above separations

List of supporting documentation attached:
1. Syllabus

Assessment Leading to Request
The course generated quite a bit of interest. With two 50-minute lectures a week, it was not possible to do justice to a significant part of the syllabus in general and the last two topics in particular. Cross-listing as 429 will allow the UG students to take this course as tech elective without unduly burdening them.

Anticipated Impacts to “Other” Programs
None

Impact on Library: No consultation is required since changes are only in the course number and course credit.

Date to take effect: 08/25/20
LEVEL of Request

Please indicate the type of request(s) by selecting all that apply:

Faculty Approvals (directly to CRC, then Faculty Senate):
- ☐ Establish a new course for the catalog (please contact the Registrar for MUS CCN information)
- ☐ Changed course; addition, deletion or change of title, credit, course number, pre-req, description, or cross listing.
- ☐ Amend an existing degree program. Making changes to programs such as adding a writing course to a major, changing the list of accepted electives or removing a requirement of a minor
- ☐ New degree certification program of 29 credits or less
- ☐ Other:

Campus Approvals (must be approved by the VCAA prior to CRC submission):
- ☐ Placing a postsecondary educational program into moratorium
- ☐ Withdrawing a postsecondary educational program from moratorium
- ☐ Establishing, re-titling, terminating or revising a campus certificate of 29 credits or more
- ☐ Establishing a B.A.S./A.A./A.S. area of study
- ☐ Offering an existing postsecondary educational program via distance or online delivery
- ☐ Other:

OCHE Approvals (must be approved by the VCAA and Chancellor prior to CRC submission):
- ☐ Re-titling an existing postsecondary educational program
- ☐ Terminating an existing postsecondary educational program
- ☐ Consolidating existing postsecondary educational programs
- ☐ Establishing a new minor where there is a major or an option in a major
- ☐ Revising a postsecondary educational program
- ☐ Establishing a temporary C.A.S. or A.A.S. degree program Approval limited to 2 years
- ☐ Other:

Level II (must be approved by the VCAA and Chancellor prior to CRC submission):
- ☐ Establishing a new postsecondary educational program
- ☐ Exceeding the 120 credit maximum for baccalaureate degrees Exception to policy 301.11
- ☐ Forming, eliminating or consolidating an academic, administrative, or research unit
- ☐ Re-titling an academic, administrative, or research unit
- ☐ Other:
MONTANA TECH  
Department of Metallurgical & Materials Engineering  

EMET 429/529: Advanced Separations  

Instructor: Dr. A. Das  
Office Hours: ELC 213, TBA  
Lecture: TBA  
Prerequisites: EMET 232 (or equivalent) or Consent of Instructor  
Co-Requisite: None  

Designation: Advanced Separations is offered as a graduate course (EMET 529) or as an undergraduate elective course (EMET 429). Courses that are listed with both undergraduate and graduate sections cannot be taken at both levels for credit by an individual student.  

Catalog Description:  
Advanced separation processes relevant to metallurgical and materials processing are detailed. Separation of solids from other solids, liquids and gases are discussed. Liquid-liquid and gas-liquid separations relevant to metallurgical processing are covered. Separation of gaseous species in metallurgical processing from gas mixtures are dealt with.  

Credits: 3 Credit-Hours (Lecture)  
Textbook: No required text book  
References: Books and journal article references will be given in the class for each topic  

Outcomes: Graduates of this course will or will be able to:  
1. Understand and apply advanced separation techniques to metallurgical and materials processing  
2. Accomplish effective separation of solids from other solids, liquids and gases as applicable to M&ME  
3. Gain knowledge for liquid-liquid, gas-liquid and gas-gas separation systems in metallurgy  
4. Develop metallurgical and materials processing flowsheets requiring any type of above separations  

Topics: The course will cover the topics as listed below.  
1. Introduction and review of separation systems in M&ME  
2. Solid-solid separation: advanced gravity, magnetic and electrostatic separation systems  
3. Solid-liquid separation: thickening, filtration, evaporation, elutriation, centrifuging, desliming, drying  
4. Solid-gas separation: air cyclone, electrostatic precipitators, baghouse filters, venturi cleaners  
5. Liquid-liquid separation: solvent extraction, ion exchange, fractional distillation  
6. Liquid-gas separation: vacuum degassing, stirring, displacement purging in M&ME systems  
7. Gas-Gas separation: selective adsorption and sequestration  

Examinations: This course has one midterm test and a final examination for all students. There will be a Term Project for the graduate students only.
Grading Policy: The final grade will be weighted from the following course elements approximately as follows:

<table>
<thead>
<tr>
<th>Course Element</th>
<th>UG (%)</th>
<th>Grad (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework Assignments</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Quizzes &amp; Class Participation</td>
<td>20</td>
<td>10</td>
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<tr>
<td>Midterm Examination</td>
<td>20</td>
<td>20</td>
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<td>Final Examination</td>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td>Term Project</td>
<td>00</td>
<td>30</td>
</tr>
</tbody>
</table>

Professional Component: Engineering Topics (three credits)

ABET Outcomes Covered: 1, 3, 7, 9 and 10
1. identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
3. communicate effectively with a range of audiences
7. acquire and apply new knowledge as needed, using appropriate learning strategies
9. integrate the understanding of the scientific and engineering principles underlying the four major elements of the field: structure, properties, processing and performance related to metallurgical and materials systems appropriate to the field, and
10. apply and integrate knowledge from each of the above four elements of the field using experimental, computational and statistical methods to solve materials problems including selection and design consistent with the program educational objectives.

Prepared by: Avimanyu Das

Date: December 3, 2019
Montana Tech

Curriculum Change Request Form Dated 6 September 2018

Date 01/07/2020
Dept. Biological Sciences
Program B.S. Applied Health and Safety Science
College Letters, Sciences and Professional Studies
CRC Representative Amy Kuenzi

Description of Request:


Current Course or Program Information: Degree requirements attached

Proposed Change

<table>
<thead>
<tr>
<th>Course # Name</th>
<th>Credits</th>
<th>Pre-req.</th>
</tr>
</thead>
<tbody>
<tr>
<td>No new courses</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

List of supporting documentation attached:

1. Degree Requirements

Assessment Leading to Request

As part of the program prioritization process, the B.S. Applied Health and Safety Science degree was recently moved from the Safety, Health, and Industrial Hygiene department in the School of Mines and Engineering to the Biological Sciences department in the College of Letters, Sciences and Professional Studies. We have found that the current programmatic emphasis on occupational health does not fit the college mission, resources, or align with student needs. Therefore, this program is currently being revised to align with meeting the professional needs of students and reduce time to graduation; we are removing the Occupational Safety and Health courses from the curriculum and reducing the number of credits for graduation from 128 to 120. In order to reflect the new program curriculum and provide an accurate and appropriate program name we are requesting the name change. We also anticipate that this name change will aid in recruiting students and provide a universal understanding of the degree for employers and graduate programs.

Anticipated Impacts to "Other" Programs

We have consulted with Dr. Julie Hart head of the department of Safety, Health, and Industrial Hygiene as three OSH classes were eliminated from the curriculum. While this may lead to a slight decreased enrollment in these courses, Dr. Hart did not think it would have a significant impact on the SHH program and was supportive of the curriculum and name changes.

Impact on Library: Since there are no new courses included in this proposal, the Montana Tech library was not consulted.

Date to take effect: Fall 2020
**Montana Tech**

**BS in Applied Health and Safety Sciences (AHSS)**

Effective 2020-2021

Accredited by the Applied Science Accreditation Commission of ABET http://www.abet.org

<table>
<thead>
<tr>
<th>First (Freshman) Year</th>
<th>Grade/Term</th>
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<tr>
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<tr>
<td>CAPP 131</td>
<td>Math Office</td>
</tr>
<tr>
<td>CHMW 121</td>
<td>Intro to General Chem</td>
</tr>
<tr>
<td>M 101</td>
<td>Pharmacology</td>
</tr>
<tr>
<td>PSYX 100</td>
<td>Intro to Psychology</td>
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<tr>
<td>WRT 101</td>
<td>College Writing I</td>
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<tr>
<td>WRT 121 OR</td>
<td>Intro to Technical Writing</td>
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<table>
<thead>
<tr>
<th>Spring Semester Courses</th>
<th>Grade/Term</th>
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<tbody>
<tr>
<td>BIOD 160</td>
<td>Prine of Living Systems</td>
</tr>
<tr>
<td>BIOD 161</td>
<td>Prine of Living Systems Lab</td>
</tr>
<tr>
<td>CHMW 123</td>
<td>Intro to Oroph &amp; Biochem</td>
</tr>
<tr>
<td>CHMW 270 OR</td>
<td>Survey of Organic Chem</td>
</tr>
<tr>
<td>COMX 111 OR</td>
<td>Intro to Public Speaking</td>
</tr>
<tr>
<td>COMX 200 OR</td>
<td>Proceeding Technical Info</td>
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<tr>
<td>M 142 OR</td>
<td>Math for Bus &amp; Social Science</td>
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<tr>
<td>PSYX 133 OR</td>
<td>Calculus I</td>
</tr>
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<td>---</td>
<td>FREE ELECTIVE</td>
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<th>Second (Sophomore) Year</th>
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<td>Fall Semester Courses</td>
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<td>BIOL 20101 OR &amp; Human A&amp;P I</td>
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<td>CHMW 2202 OR Human A&amp;P I</td>
<td>1 / 1</td>
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<tr>
<td>CHMW 141</td>
<td>College Chem I</td>
</tr>
<tr>
<td>CHMW 142</td>
<td>College Chem I Lab</td>
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<tr>
<td>OSH 2455 OR</td>
<td>Skill Occupations &amp; Programs OR</td>
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<tr>
<td>OSH 3969</td>
<td>Safety Eng &amp; Tech (spring only)</td>
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<td>PHSX 121</td>
<td>Fundamentals of Physics II</td>
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</table>

<table>
<thead>
<tr>
<th>Spring Semester Courses</th>
<th>Grade/Term</th>
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</thead>
<tbody>
<tr>
<td>BIOL 2101 OR Human A&amp;P II</td>
<td>3 / 1</td>
</tr>
<tr>
<td>BIOL 22012 OR Human A&amp;P II Lab</td>
<td>1 / 1</td>
</tr>
<tr>
<td>ECP 120</td>
<td>Emergency Medical Responder</td>
</tr>
<tr>
<td>PSYX 133</td>
<td>Fundamentals of Physics II</td>
</tr>
<tr>
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<td>Fall Semester Courses</td>
<td>Grade/Term</td>
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<tr>
<td>KHE 320</td>
<td>Exercise Physiology</td>
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<tr>
<td>KHE 322</td>
<td>Kinesiology</td>
</tr>
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<td>KH 298</td>
<td>Human Perf Lab Test Tech</td>
</tr>
<tr>
<td>WRT 311W OR</td>
<td>Adv Tech Writing</td>
</tr>
<tr>
<td>WRT 322W OR</td>
<td>Adv Bus Writing</td>
</tr>
<tr>
<td>WRT 325W OR</td>
<td>Writing in the Sciences</td>
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</table>

<table>
<thead>
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<tbody>
<tr>
<td>KHE 310</td>
<td>Pier &amp; Care of Ath Injuries</td>
</tr>
<tr>
<td>PHL 302W</td>
<td>Professional Ethics</td>
</tr>
<tr>
<td>ECHQ 201</td>
<td>Prine of Microecon</td>
</tr>
<tr>
<td>ECHQ 202 OR</td>
<td>Prine of Microecon</td>
</tr>
<tr>
<td>ECHQ 203 OR</td>
<td>Prine of Science &amp; Micro</td>
</tr>
<tr>
<td>NUTR 208</td>
<td>Fundamentals of Nutrition</td>
</tr>
<tr>
<td>STAY 211 OR</td>
<td>Intro to Biostatistics</td>
</tr>
<tr>
<td>STAY 219 OR</td>
<td>How to Statistic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fourth (Senior) Year</th>
<th>Grade/Term</th>
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</thead>
<tbody>
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<td>Fall Semester Courses</td>
<td>Grade/Term</td>
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<tr>
<td>BMGT 329</td>
<td>Human Resource Management</td>
</tr>
<tr>
<td>BMGT 350W OR</td>
<td>Management &amp; Org</td>
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<tr>
<td>BMGT 350W OR</td>
<td>Organizational Behavior</td>
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<tr>
<td>KH 410</td>
<td>Adv Stds &amp; Training Cond</td>
</tr>
<tr>
<td>KH 455</td>
<td>Internship</td>
</tr>
<tr>
<td>OSH 414</td>
<td>Ergonomics</td>
</tr>
<tr>
<td>PSYX 320 OR</td>
<td>Developmental Psych</td>
</tr>
<tr>
<td>PSYX 340 OR</td>
<td>Abnormal Psych</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spring Semester Courses</th>
<th>Grade/Term</th>
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</thead>
<tbody>
<tr>
<td>KH 415W</td>
<td>CAPSTONE: Adv En Test &amp; Press</td>
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<tr>
<td>KH 449</td>
<td>Health Fitness Instructor</td>
</tr>
<tr>
<td>---</td>
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</tr>
</tbody>
</table>

**Minimum Credits for B.S. Degree in Applied Health and Safety Sciences: 120**

*Students must complete all courses as indicated by college entrance or COMPASS scores and not the required equivalent. This may increase the total degree credits.*

*Students who complete the required courses will be awarded the B.S. degree in Applied Health and Safety Sciences.*

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LEVEL of Request
Please indicate the type of request(s) by selecting all that apply:

Faculty Approvals (directly to CRC, then Faculty Senate):
- Establish a new course for the catalog (please contact the Registrar of MUS CCM information)
- Changed course: addition, deletion or change of title, credit, course number, pre-reg, description, or cross listing.
- Amend an existing degree program. Making changes to programs such as adding a writing course to a major, changing the list of accepted electives or removing a requirement of a minor
- New degree certification program of 25 credits or less
- Other:

CRC Approval (must be approved by the VCAA prior to CRC submission):
- Placing a postsecondary educational program into moratorium
- Withdrawing a postsecondary educational program from moratorium
- Establishing, re-titling, terminating or revising a campus certificate of 29 credits or more
- Establishing a B.A.S./A.A. or A.A.S. area of study
- Offering an existing postsecondary educational program via distance or online delivery
- Other:

VCAA Approval (must be approved by the VCAA and Chancellor prior to CRC submission):
- X Re-titling an existing postsecondary educational program
- Terminating an existing postsecondary educational program
- Consolidating existing postsecondary educational programs
- Establishing a new minor where there is a major or an option in a major
- Revising a postsecondary educational program
- Establishing a temporary C.A.S. or A.A.S. degree program Approval limited to 2 years
- Other:

Level II (must be approved by the VCAA and Chancellor prior to CRC submission):
- Establishing a new postsecondary educational program
- Exceeding the 120 credit maximum for baccalaureate degrees
- Forming, eliminating or consolidating an academic, administrative, or research unit
- Re-titling an academic, administrative, or research unit
- Other:
Montana Board of Regents

**ACADEMIC PROPOSAL REQUEST FORM**

**ITEM XXX-XXXX-XXXX**

**Submission Month or Meeting:** January, 2020

**Institution:** Montana Tech

**CIP Code:**

**Program/Center/Institute Title:** College of Letters Science and Professional Studies

**Includes (please specify below):**

- Online Offering

**Please mark the appropriate type of request and submit with an Item Template and any additional materials, including those listed in parentheses following the type of request. For more information pertaining to the types of requests listed below, how to complete an item request, or additional forms please visit [http://musc.edu/cha/area/academicproposals.asp](http://musc.edu/cha/area/academicproposals.asp).**

---

**A. Level I:**

**Campus Approvals**

1. Placing a postsecondary educational program into moratorium (Program Termination and Moratorium Form)

2. Withdrawing a postsecondary educational program from moratorium

---

3. Establishing, re-titling, terminating or revising a campus certificate of 29 credits or less

---

4. Establishing a B.A.S./A.A./A.S. area of study

---

5. Offering an existing postsecondary educational program via distance or online delivery

---

**OCHE Approvals**

X 6. Re-titling an existing postsecondary educational program

---

7. Terminating an existing postsecondary educational program (Program Termination and Moratorium Form)

---

8. Consolidating existing postsecondary educational programs (Curriculum Proposal Form)

---

9. Establishing a new minor where there is a major or an option in a major (Curriculum Proposal Form)

---

10. Revising a postsecondary educational program (Curriculum Proposal Form)

---

11. Establishing a temporary C.A.S. or A.A.S. degree program Approval limited to 2 years

---
B. Level II:

1. Establishing a new postsecondary educational program [Curriculum Proposal and Completed Intent to Plan Form]

2. Exceeding the 120 credit maximum for baccalaureate degrees Exception to policy 301.11

3. Forming, eliminating or consolidating an academic, administrative, or research unit [Curriculum or Center/Institute Proposal and Completed Intent to Plan Form, except when eliminating or consolidating]

4. Re-titling an academic, administrative, or research unit

Proposal Summary [360 words maximum]

at

The College of Letters, Science, and Professional Studies at Montana Tech requests authorization from the Montana Board of Regents to change the name of the bachelors of science in applied health and safety science to bachelors of science in exercise and sports science

Explaination

part of the program prioritization process, the B.S. Applied Health and Safety Science degree was recently moved from the Health, and Industrial Hygiene department in the School of Mines and Engineering to the Biological Sciences Department in the College of Letters, Sciences and Professional Studies. We have found that the current programmatic emphasis on occupational health does not fit the college mission, resources, or align with student needs. Therefore, this program is currently being revised to align with meeting the professional needs of students along with reducing time to graduation; we are removing the majority of Occupational Safety and Health courses from the curriculum and reducing the number of credits for graduation from 128 to 120. In order to reflect the new program curriculum and provide an accurate and appropriate program name we are requesting the name change. We also anticipate that this name change will aid in recruiting new students and provide a universal understanding of the degree for employers and graduate programs.

Current Degree Requirements
Request to rename the B.S. Applied Health and Safety Science degree program to B.S. Exercise and Sports Science

THAT
Montana Tech requests authorization from the Montana Board of Regents to change the name of the bachelors of science in applied health and safety science to bachelors of science in exercise and sports science

EXPLANATION
As part of the program prioritization process, the B.S. Applied Health and Safety Science degree was recently moved from the Safety, Health, and Industrial Hygiene department in the School of Mines and Engineering to the Biological Sciences department in the College of Letters, Sciences and Professional Studies. We have found that the current programmatic emphasis on occupational health does not fit the college mission, resources, or align with student needs. Therefore, this program is currently being revised to align with meeting the professional needs of students along with reducing time to graduation; we are removing the majority of Occupational Safety and Health courses from the curriculum and reducing the number of credits for graduation from 128 to 120. In order to reflect the new program curriculum and provide an accurate and appropriate program name we are requesting the name change. We also anticipate that this name change will aid in recruiting students and provide a universal understanding of the degree for employers and graduate programs.

ATTACHMENTS
Current Course Requirements
## Montana Tech

### BS in Exercise and Sports Science

**Accredited by the Applied Science Accreditation Commission of ABET**

**http://www.abet.org**

**Effective 2020-2021**

### First (Freshman) Year

<table>
<thead>
<tr>
<th>Fall Semester Courses</th>
<th>Grade / Term</th>
<th>Spring Semester Courses</th>
<th>Grade / Term</th>
</tr>
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<tbody>
<tr>
<td>CAPP 131</td>
<td>3 /</td>
<td>Bob 160</td>
<td>3 /</td>
</tr>
<tr>
<td>CHMY 121</td>
<td>3 /</td>
<td>Bob 161</td>
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<tr>
<td>M 101</td>
<td>4 /</td>
<td>CHMY 123</td>
<td>3 /</td>
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<td>PSYX 100</td>
<td>3 /</td>
<td>CHMY 210 OR</td>
<td>3 /</td>
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<td>WRIT 101 OR</td>
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<td>Com 111</td>
<td>3 /</td>
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<td>3 /</td>
<td>Intro to Organic &amp; Biochem</td>
<td>3 /</td>
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<td>Intro to Technical Writing</td>
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<td>Presenting Technical Info</td>
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<td>M 142</td>
<td>3 /</td>
<td>M 142</td>
<td>3 /</td>
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<tr>
<td>M 171 OR</td>
<td>3 /</td>
<td>Calculus 3</td>
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### Second (Sophomore) Year

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<td>BICH 211/212 &amp; Human A&amp;P II</td>
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<td>3 /</td>
<td>ECP 120 Emergency Medical Responder</td>
<td>3 /</td>
</tr>
<tr>
<td>CHMY 142</td>
<td>3 /</td>
<td>Phyx 123 Fundamentals of Physics II</td>
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<td>OSH 2246</td>
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<td></td>
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<td>10 /</td>
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<td>14 /</td>
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</table>

### Third (Junior) Year

<table>
<thead>
<tr>
<th>Fall Semester Courses</th>
<th>Grade / Term</th>
<th>Spring Semester Courses</th>
<th>Grade / Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIN 122</td>
<td>3 /</td>
<td>AMAT 210</td>
<td>3 /</td>
</tr>
<tr>
<td>KIN 222</td>
<td>4 /</td>
<td>PBL 320W Professional Ethics</td>
<td>3 /</td>
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<td>KIN 223</td>
<td>3 /</td>
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<td>3 /</td>
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<tr>
<td>WRIT 330W OR</td>
<td>3 /</td>
<td>ECNS 302 OR Pnic of Microecon</td>
<td>3 /</td>
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<tr>
<td>WRIT 320W OR</td>
<td>3 /</td>
<td>ECNS 303 OR Pnic of Macro &amp; Micro</td>
<td>3 /</td>
</tr>
<tr>
<td>WRIT 320W OR</td>
<td>3 /</td>
<td>NUTR 258 Fundamentals of Nutrition</td>
<td>2 /</td>
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<tr>
<td>WRIT 322 OR</td>
<td>3 /</td>
<td>STAT 131 Intro to Biostatistics</td>
<td>3 /</td>
</tr>
<tr>
<td>WRIT 322 OR</td>
<td>3 /</td>
<td>STAT 711 Intro to Statistics</td>
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### Fourth (Senior) Year

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<th>Grade / Term</th>
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</thead>
<tbody>
<tr>
<td>BCRT 320</td>
<td>3 /</td>
<td>KIN 415W Capstone: Adv Ex Test &amp; Presc</td>
<td>3 /</td>
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<tr>
<td>BMGT 320W OR</td>
<td>3 /</td>
<td>KIN 460 ECG Assessment</td>
<td>3 /</td>
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<tr>
<td>BMGT 320W OR</td>
<td>3 /</td>
<td>KIN 495 Health Fitness Instructor</td>
<td>3 /</td>
</tr>
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<td>KIN 410</td>
<td>3 /</td>
<td></td>
<td>3 /</td>
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<tr>
<td>KIN 415</td>
<td>3 /</td>
<td></td>
<td>3 /</td>
</tr>
<tr>
<td>OSH 454</td>
<td>3 /</td>
<td></td>
<td>3 /</td>
</tr>
<tr>
<td>PSYX 330 OR</td>
<td>3 /</td>
<td></td>
<td>3 /</td>
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<tr>
<td>PSYX 340 OR</td>
<td>3 /</td>
<td></td>
<td>3 /</td>
</tr>
<tr>
<td>PSYX 341 OR</td>
<td>3 /</td>
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<td>PSYX 430 OR</td>
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<td>PSYX 440 OR</td>
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<td>PSYX 441 OR</td>
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<td></td>
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<td>12 /</td>
</tr>
</tbody>
</table>

### Minimum Credits for B.S. Degree in Applied Health and Safety Sciences: 120

1. Students will register for 6 credit hours of MATH courses and fulfill the required sequence. This may become the student's degree credits.
2. CHMY 142 can be taken with CHMY 121 or 141.
3. Professional Electives: 30 credit hours in exercise science, sport science, biology, chemistry, physics, or 3 credit hours in a 300 level or higher elective course.
5. Lifespan Health: Any course, 110 level or higher.
6. Students will register for 3 credit hours in PHXK 123, 124, and 125 and fulfill the required sequence. This may become the student's degree credits.
7. Students who earn a C or above in CHMY 141 may substitute Professional Electives (see 3) for the 3 credit hours substituted in CHMY 121.

### Additional Courses

<table>
<thead>
<tr>
<th>Grade / Term</th>
<th>Grade / Term</th>
</tr>
</thead>
</table>
Protocol: The department requesting curriculum change holds a discussion at the departmental level, and if agreed upon by the department head, discuss with the Dean for approval. Forward the completed form along with supporting information to the CRC chair after approval from the department head, dean, and graduate council if necessary. Final changes are then made by the registrar after faculty senate approval. Guidance: https://www.umt.edu/provost/faculty/curriculum/default.php.

Date 12/06/2019
Dept. Biological Sciences College College of Letters, Sciences, and Professional Studies (CLSPS)

Program: Applied Health and Safety Sciences

Description of Request/Summary:

AHSS 2020 Proposed Curriculum Changes:

- Freshman year. No changes
- Sophomore year: previously both OSH 224 and OSH 226 were required. We are now requiring only one of the two. Students have a choice to take OSH 224 in the fall or OSH 226 in the spring.
- Junior year: Fall: eliminate OSH 3516 Industrial Toxicology
- Senior year, Fall:
  - Replace OSH 421 with OSH 454 Ergonomics
  - Change "Free Electives" from 2 to 3 credit
- Senior year, Spring:
  - Eliminate option for OSH 422/OSH 454

Total reduction of credits:
- Professional electives senior year change from 2 to 3, net of 1.
- OSH 224 OR OSH 226, reduction of 3
- OSH 421 reduction of 3
- OSH 351 reduction of 3
- Total reduction: 8

These changes reduce total credits from 128 to 120

Current Course Program Information: See attached current curriculum list and proposed curriculum list with changes
Establishing a B.A.S./A.A./A.S. area of study

Offering an existing postsecondary educational program via distance or online delivery

Other:

OCHE Approvals (must be approved by the VCAA and Chancellor prior to CRC submission):

- Re-titling an existing postsecondary educational program
- Terminating an existing postsecondary educational program
- Consolidating existing postsecondary educational programs
- Establishing a new minor where there is a major or an option in a major
- Revising a postsecondary educational program
- Establishing a temporary C.A.S. or A.A.S. degree program Approval limited to 2 years
- Other:

Level II (must be approved by the VCAA and Chancellor prior to CRC submission):

- Establishing a new postsecondary educational program
- Exceeding the 120 credit maximum for baccalaureate degrees Exception to policy 301.11
- Forming, eliminating or consolidating an academic, administrative, or research unit
- Re-titling an academic, administrative, or research unit
- Other:

APPROVALS

Department Head Approval [Signature] Date 1/6/20

Dean Approval [Signature] Date 1/6/20

VCAA Approval (see above) [Signature] Date 1/6/20

Chancellor Approval (see above) [Signature] Date 1/6/20

Graduate Council Approval [Signature] Date

CRC Approval [Signature] Date 1/10/2020

Faculty Senate Approval [Signature] Date
# BS in Applied Health and Safety Sciences (AHSS)

**Effective 2018-2019**

Accredited by the Applied Science Accreditation Commission of ABET - http://www.abet.org

## First (Freshman) Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Grade Term</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Grade Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPR 131</td>
<td>Basic HS Office</td>
<td>3</td>
<td>BIO 151</td>
<td>Histology Lab</td>
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<tr>
<td>CHEM 121</td>
<td>Intro to General Chem 1*</td>
<td>3</td>
<td>CHEM 161</td>
<td>Histology</td>
<td>3</td>
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<tr>
<td>M 151</td>
<td>Precalculus 1</td>
<td>3</td>
<td>CHEM 122</td>
<td>Intro to Organic &amp; Biochem</td>
<td>3</td>
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<tr>
<td>PHSY 110</td>
<td>Intro to Psychology</td>
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<td>CHEM 210</td>
<td>Survey of Organic Chem</td>
<td>3</td>
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<tr>
<td>WRIT 101</td>
<td>College Writing I</td>
<td>3</td>
<td>CHEM 211</td>
<td>Intro to Public Speaking</td>
<td>3</td>
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<tr>
<td>WRIT 121</td>
<td>Intro to Technical Writing</td>
<td>3</td>
<td>CHEM 253</td>
<td>Presenting Technical Info</td>
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**Second (Sophomore) Year**

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<th>Course Title</th>
<th>Grade Term</th>
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<tbody>
<tr>
<td>BIOL 20201</td>
<td>Human A&amp;P I</td>
<td>3</td>
<td>BIC 2131</td>
<td>Human A&amp;P I</td>
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<tr>
<td>BIOL 20202</td>
<td>Human A&amp;P II</td>
<td>3</td>
<td>BIC 21311</td>
<td>Human A&amp;P I Lab</td>
<td>3</td>
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<tr>
<td>CHEM 141</td>
<td>College Chem I</td>
<td>3</td>
<td>BCR 130</td>
<td>Emergency Medical Responder</td>
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<tr>
<td>CHEM 142</td>
<td>College Chem I Lab</td>
<td>3</td>
<td>CHEM 254</td>
<td>Safety, Erg &amp; Tech</td>
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<tr>
<td>GED 2241</td>
<td>CPR &amp; First Aid</td>
<td>3</td>
<td>PMHS 102</td>
<td>Fundamentals of Physics</td>
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<tr>
<td>PMHS 123</td>
<td>Fundamentals of Physics II</td>
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**Third (Junior) Year**

<table>
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<tr>
<th>Course Code</th>
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<th>Course Title</th>
<th>Grade Term</th>
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<tbody>
<tr>
<td>KN 320</td>
<td>Exercise Physiology</td>
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<td>Histology</td>
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<td>KN 322</td>
<td>Kinesiology</td>
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<td>PHL 3250</td>
<td>Psychological Ethics</td>
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<tr>
<td>KN 325</td>
<td>Human Perf Lab Tech</td>
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<td>GCNS 201</td>
<td>Phys of Respiration</td>
<td>3</td>
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<tr>
<td>GED 3441</td>
<td>Industrial Technology</td>
<td>3</td>
<td>GCNS 202</td>
<td>Phys of Respiration</td>
<td>3</td>
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<tr>
<td>WRIT 311W</td>
<td>Job Technical Writing</td>
<td>3</td>
<td>GCNS 203</td>
<td>Phys of Stress &amp; Health</td>
<td>3</td>
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<tr>
<td>WRIT 322W</td>
<td>Job Business Writing</td>
<td>3</td>
<td>NURS 150</td>
<td>Fundamentals of Nursing</td>
<td>3</td>
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<tr>
<td>WRIT 323W</td>
<td>Writing in the Sciences</td>
<td>3</td>
<td>STAT 115</td>
<td>Intro to Biostatistics</td>
<td>3</td>
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<tr>
<td>_</td>
<td>_</td>
<td>3</td>
<td>STAT 215</td>
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## Fourth (Senior) Year

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<tr>
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<th>Course Code</th>
<th>Course Title</th>
<th>Grade Term</th>
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<tbody>
<tr>
<td>BMST 320</td>
<td>Human Resource Management</td>
<td>3</td>
<td>KN 4150</td>
<td>Career Adv. Int.</td>
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<tr>
<td>BMST 335W</td>
<td>Management &amp; Org</td>
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<td>KN 450</td>
<td>Erg. Assessment</td>
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<tr>
<td>BMST 335W</td>
<td>Organizational Behavior</td>
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<td>KN 465</td>
<td>HEA. Fitness Instructor</td>
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<tr>
<td>KN 410</td>
<td>Job Ethics &amp; Tech Card</td>
<td>3</td>
<td>GCNS 4529</td>
<td>Hist - Physical Health</td>
<td>3</td>
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<tr>
<td>KN 430</td>
<td>Performance</td>
<td>3</td>
<td>GCNS 4545</td>
<td>Exercise - Fall</td>
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<tr>
<td>GED 4255</td>
<td>HL - Chem &amp; Bio Hazard</td>
<td>3</td>
<td>PMHS 130</td>
<td>Developmental Psych</td>
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<tr>
<td>PHSY 253</td>
<td>Abnormal Psych</td>
<td>3</td>
<td>_</td>
<td>FREE ELECTIVES</td>
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</tr>
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</table>

**Minimum Credits for B.S. Degree in Applied Health and Safety Sciences** 128

* Students are required to complete a 2.0 grade point average in their major courses.
* Students are required to complete a minimum of 128 credits in the major.
* Students are required to complete 128 credits with a grade of C or better.
* Students are required to complete 128 credits with a grade of C or better.

**Additional Classes**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Grade Term</th>
</tr>
</thead>
</table>

**Updated 9/10/19**
Montana Tech

Curriculum Change Request Form Dated 6 September 2018

Date 10/28/19
Dept. Network Technology
Program B.S. Network Technology
College CLIPS
CRC Representative Ed Metesh

Description of Request:

Rename B.S. Network Technology to B.S. Cybersecurity and Network Administration

Current Course or Program Information: Current degree requirements attached

Proposed Change

<table>
<thead>
<tr>
<th>Course #</th>
<th>Name</th>
<th>Credits</th>
<th>Pre-req</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No new courses</td>
<td></td>
<td></td>
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</table>

List of supporting documentation attached:

1. Degree Requirements

Assessment Leading to Request

The B.S. Network Technology degree at Montana Tech has undergone curriculum changes in the past 3 years to adopt more courses in the computer/network/information/cybersecurity field. According to the Department of Labor's most recent employment projections, demand for Information Security Analysts is expected to very high. This field is in the top 15 of the fastest growing detailed occupations requiring post-secondary education.

Our previous curriculum changes are in support of our application to the National Security Agency and the Department of Homeland Security in the pursuit of designation as a Center of Academic Excellence in Information Assurance/Cyber Defense. This designation requires the alignment of course outcomes to specific knowledge units, making it necessary to restructure the existing course offerings.

Anticipated Impacts to “Other” Programs

None

Impact on Library: Since there are no new courses included in this proposal, the Montana Tech library was not consulted.

Date to take effect: January 2020
# Bachelor of Science Degree - Network Technology

**Freshman**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ITS 130</td>
<td>Cybersecurity Essentials</td>
<td>3</td>
</tr>
<tr>
<td>NTS 104</td>
<td>CCNA 1 - Introduction to Networks</td>
<td>4</td>
</tr>
<tr>
<td>NTS 105</td>
<td>CCNA 2 - Routing &amp; Switching</td>
<td>4</td>
</tr>
<tr>
<td>ITS 280</td>
<td>Computer Repair &amp; Maintenance</td>
<td>3</td>
</tr>
<tr>
<td>CSCI 116</td>
<td>Introduction to Python Programming</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>Total</strong></td>
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<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ITS 210</td>
<td>Network Operating Systems - Desktop</td>
<td>3</td>
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<tr>
<td>NTS 294</td>
<td>CCNA 3 - Routing Networks</td>
<td>3</td>
</tr>
<tr>
<td>NTS 205</td>
<td>CCNA 4 - Connecting Networks</td>
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<tr>
<td>ITS 224</td>
<td>Introduction to Linux</td>
<td>3</td>
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<td>M 121</td>
<td>College Algebra</td>
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**Sophomore**

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<tr>
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<tr>
<td>ITS 238</td>
<td>Network Security Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>ITS 212</td>
<td>Network Operating Systems - Server Admin.</td>
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</tr>
<tr>
<td>PSYX 100</td>
<td>General Psychology</td>
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<tr>
<td><strong>Total</strong></td>
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<tr>
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<th>Course Title</th>
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<tbody>
<tr>
<td>ITS 354</td>
<td>Advanced Linux</td>
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<tr>
<td>ITS 230</td>
<td>Fundamentals of Wireless LANs</td>
<td>3</td>
</tr>
<tr>
<td>ITS 214</td>
<td>Network Operating Systems - Infrastructure</td>
<td>3</td>
</tr>
<tr>
<td>COMX 250</td>
<td>Presenting Technical Information OR</td>
<td>3</td>
</tr>
<tr>
<td>COMX 111</td>
<td>Principles of Speaking</td>
<td>3</td>
</tr>
<tr>
<td>ITS 274</td>
<td>Ethical Hacking &amp; Network Defense</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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**Junior**

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<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ITS 316</td>
<td>Network Oper. Sys. - Directory Services</td>
<td>3</td>
</tr>
<tr>
<td>ITS 364</td>
<td>CCNP: Switching</td>
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</tr>
<tr>
<td>STAT 216</td>
<td>Introduction to Statistics</td>
<td>3</td>
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<tr>
<td>XXXX</td>
<td>Humanities Elective</td>
<td>3</td>
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<tr>
<td>XXXX</td>
<td>Physical or Life Science Elective</td>
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<tbody>
<tr>
<td>ITS 357</td>
<td>Network Operating Systems - Virtualization</td>
<td>3</td>
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<tr>
<td>ITS 318</td>
<td>Network Security</td>
<td>3</td>
</tr>
<tr>
<td>ITS 301</td>
<td>Storage Area Networks</td>
<td>3</td>
</tr>
<tr>
<td>ITS 494</td>
<td>Internship</td>
<td>3</td>
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<tr>
<td>XXXX</td>
<td>Social Science Elective</td>
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**Senior**

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<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ITS 305</td>
<td>Web Server Administration</td>
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</tr>
<tr>
<td>ITS 362</td>
<td>CCNP: Routing</td>
<td>4</td>
</tr>
<tr>
<td>ITS 355</td>
<td>IP Telephony</td>
<td>3</td>
</tr>
<tr>
<td>PHL 232W</td>
<td>Professional Ethics</td>
<td>3</td>
</tr>
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<thead>
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<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>ITS 366</td>
<td>CCNP: Troubleshooting</td>
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<td>ITS 399W</td>
<td>Network Technology Capstone</td>
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<td>XXXX</td>
<td>Physical or Life Science Elective (w/Lab)</td>
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<tr>
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</table>

**Total HS Total: 120**

*Courses from: IT 117, IT 120, PTC 2606, or CSCI 331*
Montana Tech  Curriculum Change Request Form Dated 6 September 2018

APPROVALS
Department Head Approval  
Date 10/21/19

Dean Approval  

Graduate Council Approval  

CRC Approval  
Date 1/7/2020

Faculty Senate Approval  
Date 11/14/2020

VCAA Approval (see below)  
Date 10/28/19

Chancellor Approval (see below)  
Date 10/28/19

LEVEL of Request
Please indicate the type of request(s) by selecting all that apply:
Faculty Approvals (directly to CRC, then Faculty Senate):
- Establish a new course for the catalog (please contact the Registrar and MUS CCN information)
- Changed course: addition, deletion or change of title, credit, course number, pre-req, description, or cross listing
- Amend an existing degree program. Making changes to programs such as adding a writing course to a major, changing the list of accepted electives or removing a requirement of a minor
- New degree certification program of 29 credits or less
- Other:

Campus Approvals (must be approved by the VCAA prior to CRC submission):
- Placing a postsecondary educational program in moratorium
- Withdrawing a postsecondary educational program from moratorium
- Establishing, re-titling, terminating or revising a campus certificate of 29 credits or more
- Establishing a B.A.S./A.A.S. area of study
- Offering an existing postsecondary educational program via distance or online delivery
- Other:

OHE Approvals (must be approved by the OHE and Chancellor prior to CRC submission):
- Re-titling an existing postsecondary educational program
- Terminating an existing postsecondary educational program
- Consolidating existing postsecondary educational programs
- Establishing a new minor where there is a major or an option in a major
- Re-branding a postsecondary educational program
- Establishing a temporary C.A.S. or A.A.S. degree program Approval limited to 2 years
- Other:
Level II (must be approved by the VCAA and Chancellor prior to CRC submission):
- Establishing a new postsecondary educational program
- Exceeding the 120 credit maximum for baccalaureate degrees Exception to policy 301.11
- Forming, eliminating or consolidating an academic, administrative, or research unit
- Re-titling an academic, administrative, or research unit
- Other: