

Colorado School of Mines – UNDERGRADUATE COUNCIL AGENDA
 March 9, 4:00-5:00 pm via Zoom

Attendees:

Voting Members: 19 total (11 - majority needed for quorum). Quorum was present

P	Jeff King (chair)	P	Andrew Pederson (EB)	P	Mike Nicholas (AMS)	P	Mona El Helbawy (EE)
P	Michael Barankin (CBE)	P	Jay Straker (HASS)	P	Corinne Packard (MME)	P	Nicole Smith (MN)
P	Dylan Domaille (CH)	P	Ge Jin (GP)	P	Jeff Paone (CS)	P	Bruce Trudgill (GE)
P	Linda Battalora (PE)	P	Hongyan Liu (CEE)	P	Oyvind Nilsen (ME)	P	Ethan Lewellin (USG)
P	Gyasi Evans (LB)	P	Chelsea Salinas (EDS)	P	Tim Ohno (PH)		

Other Regular Attendees and Guests

A	Fran Aguilar (MS)	P	Dixie Cirillo (PA)	A	Jennie Kenney (AA)	A	Kendra Stansbury (RO)
A	Karla Perez-Velez (CASA)	P	Vibhuti Dave (UGS)	P	Mara Green (AA)	P	Paul Myskiw (RO)
P	Deb Jordan (Trefny)	A	Josh Ramey (QBE)	A	Cheryl Medford (GE)	A	Terri Snyder (PE)
P	Katie Ludwin (CASA)						

Special Guest(s):

Welcome

Jeff King

Approval of Minutes – February 23, 2022

Jeff King

MOTION: To approve the Undergraduate Council minutes of February 23, 2022 by Barankin, seconded by Battalora. Motion passed unanimously.

Briefings and Information Items

Office of Undergraduate Studies

Vibhuti Dave

No updates from the Office of Undergraduate Studies.

Registrar's Office

Paul Myskiw

Add/Drop Dates

The drafted policy was shared with the Undergraduate Council chair, Graduate Council chair, and Faculty Senate President. Suggested, instead of going through the three processes of Council and Senate if the policy would be implemented and processed with the blessing of the Councils and Senate.

The policy would be effective Fall 2022, Monday following the first full week of classes; no changes to occur to the summer or online course add and drop dates. The drop date will remain Census Day. The dates for add and drop do not appear in the Catalog and could be processed administratively similarly to the start and end of the semester.

Myskiw would like the endorsement of the Councils and Senate prior to the change being brought to President Johnson and the Provost.

The proposed recommendation was as follows:

“Effective for the Fall 2022 Semester, all full term (16 week) fall and spring semester courses will be coded to allow students to add a course to their schedule through the Monday following the

first week of classes. The Drop date, with 100% refund, will remain on Census Day, as marked on the Academic Calendar. Census Day refers to the last day to drop course(s) without record on the student's transcript or institutional bill/account. Waitlists will remain intact through the last day to add a course(s). Summer and 8-week courses will remain unchanged. Students should refer to the Mines Academic Calendar or contact CASA or the Registrar's Office to confirm add deadlines and drop deadlines.

Classes Begin: August 22	Last Day to Add: August 29	Last Day to Drop: September 7
Classes Begin: January 10	Last Day to Add: January 16	Last Day to Drop: January 25

Currently, students may add courses in the fall and spring semesters 16 (+/-1) days into the semester. Late adds are disruptive to teaching and group assignments, adds additional strain on faculty to catch students up, and puts students behind in the coursework.

Faculty may make exceptions to adding a class late, up to Census, but it should be an exception. Reasonable exceptions include: errors in registration, swapping sections, late course cancellation due to low enrollment, or other reasons the faculty determines are valid."

MOTION: To endorse the proposed change of the add date scheduling to the Monday following the first full week of classes by Barankin, seconded by Ohno. Motion passed unanimously.

Prior to sending the change to all departments, Myskiw would obtain Council and Senate feedback.

- **Question** on student feedback; Lewellin brought the change to Undergraduate Student Government, students provided no strong opinions or objections to the change.

Councilor suggested against advertising the change to students through the DailyBlast; Myskiw noted communications would begin prior to registration, during the summer, and prior to the start of term in email.

Curriculum Item(s) for Vote – From 2/9/22
Significant Curriculum Changes

- 1.1 **COMPUTER SCIENCE** Jeff Paone
[CIM 1/26]
5 program changes: BS-CS: BS in Computer Science
MIN-COMPE: Minor in Computer Engineering
MIN-DSCI: Minor in Data Science
MIN-RIS: Minor in Robotics and Intelligent Systems
MINASI-CS: Minor/ASI in Computer Science
Updating courses to align with creation of new course sequence of CSCI 200 -> CSCI 220 in place of CSCI 261 -> CSCI 262.

MOTION: To approve the five program changes proposed in item 1.1 by Barankin, seconded by Nilsen. Motion passed unanimously.

- 1.1.1 [CIM 1/26; Provost 1/26]

1 new course:

CSCI220: DATA STRUCTURES AND ALGORITHMS

Last academic year, CSCI 101 was added as a prerequisite to CSCI 261. This change caused approximately two-thirds of the CSCI 261 material to become redundant and a repeat of the material from CSCI 101 with the only change being the programming language used (C++ instead of Python). A new course, CSCI 200 was created to replace CSCI 261 going forward. CSCI 200 is a much more rigorous introduction & application of foundational programming concepts and design. With the combination of CSCI 101 and CSCI 200, students will have a strong foundation of programming after two classes as opposed to the current arrangement of needing three classes.

Approximately 40% of the material in CSCI 262 consists of foundational C++ programming topics now covered in CSCI 200. Another 10% consists of introductory Data Structures concepts now covered in CSCI 200. CSCI 220 replaces CSCI 262 and excludes the 50% overlap with CSCI 200. This will permit the course to provide both breadth and depth exploring a greater range of data structures and related algorithms. Students in CSCI 220 will refine programming skills gained in CSCI 101 and CSCI 200 by implementing fundamental data structures and algorithms.

MOTION: To approve the new course in Computer Science CSCI220: Data Structures and Algorithms by Barankin, seconded by Straker. Motion passed unanimously.

1.1.2 **21 course changes:**

CSCI274: INTRODUCTION TO THE LINUX OPERATING SYSTEM

CSCI290: PROGRAMMING CHALLENGES I

CSCI303: INTRODUCTION TO DATA SCIENCE

CSCI306: SOFTWARE ENGINEERING

CSCI341: COMPUTER ORGANIZATION

CSCI403: DATA BASE MANAGEMENT

CSCI404: ARTIFICIAL INTELLIGENCE

CSCI406: ALGORITHMS

CSCI432: ROBOT ETHICS

CSCI436: HUMAN-ROBOT INTERACTION

CSCI437: INTRODUCTION TO COMPUTER VISION

CSCI441: COMPUTER GRAPHICS

CSCI442: OPERATING SYSTEMS

CSCI470: INTRODUCTION TO MACHINE LEARNING

Updating pre-/co-requisites to align with creation of new course sequence of CSCI 200 -> CSCI 220.

CSCI440: PARALLEL COMPUTING FOR SCIENTISTS AND ENGINEERS

CSCI446: WEB APPLICATIONS

CSCI471: COMPUTER NETWORKS I

CSCI473: HUMAN-CENTERED ROBOTICS

CSCI474: INTRODUCTION TO CRYPTOGRAPHY

CSCI475: INFORMATION SECURITY AND PRIVACY

CSCI478: INTRODUCTION TO BIOINFORMATICS

Updating courses to align with creation of new course sequence of CSCI 200 -> CSCI 220 in place of CSCI 261 -> CSCI 262.

MOTION: To approve the twenty-one course changes in Computer Science listed in item 1.1.2 by Ohno, seconded by Barankin. Motion passed unanimously.

1.2 ENGINEERING, DESIGN, AND SOCIETY

Chelsea Salinas

[CIM 1/24]

3 program changes: BS-EGN: BS in Engineering

The Bachelor of Science in Engineering Program supports students with a disciplinary background in Design Engineering through multi-disciplinary educational opportunities. Students within the program are required to take design courses every semester through the EDS department. Engineering Fundamentals courses together with more specific Engineering Elective courses deepen technical knowledge for the students. Focus Area electives provide an opportunity for the students to advance their knowledge in fields/areas of which they are most passionate. The focus on design engineering and the multi-disciplinary technical background of the students supports the Mines@150 mission through hands-on, active learning, engineering design, and multi-disciplinary teamwork.

MIN-ECD: Minor in Engineering for Community Development

MIN-LSR: Minor in Leadership in Social Responsibility

To facilitate pathway to graduation, use existing faculty courses more effectively, and maintain the two distinctive flavors of our minors, we proposed an updated structure to the two minors (see CIM page/agenda item).

MOTION: To approve the program changes in EDS to BS-EGN: BS in Engineering, MIN-ECD: Minor in Engineering for Community Development, and MIN-LSR: Minor in Leadership and Social Responsibility by Barankin, seconded by Ohno. 17 for, 1 abstention.

1.3 APPLIED MATHEMATICS & STATISTICS

Mike Nicholas

[CIM 1/26]

6 course changes: MATH201: INTRODUCTION TO STATISTICS

Updated course title (Probability and Statistics for Engineers → Introduction to Statistics). This change is to modernize the course content. The probability content will be removed in favor of a statistical approach centered on actual data. Instead of deriving statistical results in terms of probability distributions, results will be discovered via sampling and bootstrapping. This is a more modern approach to teaching statistics that is in line with the recommendations of the American Statistical Association.

MATH424: INTRODUCTION TO APPLIED STATISTICS

Updated prerequisites. MATH335 added. ("MATH332 or MATH342" removed).

MATH432: SPATIAL STATISTICS

This is routine maintenance for our 400-level stats courses. With 332 no longer a prereq for 424, we want to add it here.

MATH436: ADVANCED STATISTICAL MODELING

With 332 no longer a prereq for 424, we want to add it here.

MATH437: MULTIVARIATE ANALYSIS

Updated prerequisites to include MATH424.

MATH438: STOCHASTIC MODELS

Added prerequisite MATH332.

MOTION: To approve the six course changes in AMS listed in item 1.3 by Straker, seconded by Barankin. Motion passed unanimously.

Minor Curriculum Changes –

The following minor course changes will not be discussed unless specifically requested by Council.

1.4 QUANTITATIVE BIOSCIENCES AND ENGINEERING

Josh Ramey

[CIM 1/26; Provost 1/26]

1 new course: BIOL301: INTRODUCTION TO QUANTITATIVE BIOLOGY II

This course will extend the applications of quantitative biology, building from the foundation in biological data analysis established in BIOL300. Students will learn how to model biological systems both mathematically and computationally and ultimately compare model predictions to experimental data.

1.5 ENGINEERING, DESIGN, AND SOCIETY

Chelsea Salinas

[CIM 1/19]

7 course changes: EDNS191: INTRODUCTION TO INTEGRATIVE DESIGN

Updated course title (Studio IA → Introduction to Integrative Design) to provide more clarity on course topics and content. No substantial change in course. Updates to breakdown of hours per week as associated with a lab portion to more easily satisfy a transfer between EDNS151 and EDNS191.

EDNS192: DESIGN AND HUMAN VALUES

Updated course title (Integrative Design Studio IB → Design and Human Values) to provide more clarity on course topics and content. No substantial change in course. Updates to breakdown of hours per week to more easily satisfy a transfer between EDNS192 and HASS100.

EDNS200: DESIGN COMMUNICATION

Updated course title (Communication → Design Communication) and description to provide better clarity on course content. Edited hour designation to better reflect the delivery/modality in terms of studio hours dedicated each week.

EDNS291: DESIGN UNLEASHED

Updated course title (Integrative Design Studio IIA → Design Unleashed) and description to provide better clarity on course content. Edited hour designation to better reflect delivery/modality in terms of studio hours dedicated each week.

EDNS292: DESIGN FOR A GLOBALIZED WORLD

Updated course title (Integrative Design Studio IIB → Design for a Globalized World) and description to provide better clarity on course content. Edited hour designation to better reflect the delivery/modality in terms of studio hours dedicated each week.

EDNS391: DESIGN & MODELING OF INTEGRATED SYSTEMS

Updated course title (Integrative Design Studio IIIA → Design & Modeling of Integrated Systems) and description to provide better clarity on course content. Edited hour designation to better reflect the delivery/modality in terms of studio hours dedicated each week.

EDNS392: SYNTHESIZE DESIGN IDENTITY

Updated course title (Integrative Design Studio IIIB → Synthesize Design Identity) and description to provide better clarity on course content. Edited hour designation to better reflect the delivery/modality in terms of studio hours dedicated each week.

1.6 ENERGY

Dylan Domaille

[CIM 1/25; Provost 1/26]

1 new course: ENGY475: INTRODUCTION TO NUCLEAR ENGINEERING

This course serves as a streamlined and simplified undergraduate entry point for the Interdisciplinary graduate nuclear science and engineering program for new students who do not have a background in nuclear engineering, which opens up the NE degree program to a wider range of educational backgrounds from outside of Mines and it opens up the Nuclear Engineering 4+1 degree program tracks to more majors from within Mines and allows students to choose to enter the 4+1 program at later points in their undergraduate studies.

1.7 **HUMANITIES, ARTS, AND SOCIAL SCIENCE**

Seth Tucker

[CIM 1/24]

1 program change: MIN-CCC: Minor in Culture, Creativity, and Communication
Course numbers have changed—they have been updated in the course lists for HASS303 (changed from HASS201 Spring2022), HASS 302 (changed from HASS300 Spring 2022).

1.7.1 **1 new course:** HASS413: ENVIRONMENTAL FILM

Jay Straker

This class explores the ways in which films convey competing narratives about the relationship between humans and the environment. Students will learn to analyze and interpret visual culture in order to understand how cinematic narratives have shaped our societal understandings of the so-called “natural” world and our engagement with energy sources.

1.7.2 **4 course changes:** HASS302: INTERMEDIATE SHORT FICTION WRITING WORKSHOP

Co-requisite updated to HASS303 or instructor approval.

HASS400: ADVANCED SHORT FICTION WRITING WORKSHOP

Updated co-requisites to reflect course number changes: addition of HASS300 and HASS302.

HASS401: ADVANCED POETRY WRITING WORKSHOP

Updated co-requisite to include HASS301.

HASS408: CREATIVE NONFICTION WRITING: LIFE STORIES

Removal of HASS300 co-requisite; senior level course is needed by too many students to justify having co-requisites.

1.8 **APPLIED MATHEMATICS & STATISTICS**

Carolyn Freedman

[CIM 2/1]

2 course changes: DSCI403: INTRODUCTION TO DATA SCIENCE

Updated prerequisites to align with recent prerequisite changes to the CSCI303 cross-listed course.

DSCI470: INTRODUCTION TO MACHINE LEARNING

Updating prerequisites to align with recent prerequisite changes in the CSCI470 cross-listed course.

Councilor commented on the need to update the prerequisites of the cross-listed courses with the newly approved CSCI200 course; the change was made in session.

1.9 **CHEMICAL & BIOLOGICAL ENGINEERING**

Josh Ramey

[CIM 1/26; Provost 1/26]

1 new course: CBEN455: INTERNATIONAL GENETIC ENGINEERED MACHINE SEMINAR
CBEN455 is a 1-credit hour seminar course that supports the Mines iGEM students in this process through discussions of previous iGEM projects, initial brainstorming of project ideas, discussion

of experimental design, training in lab safety and standard molecular biology protocols and team dynamics.

1.10 **MECHANICAL ENGINEERING**
[CIM 2/2]

Oyvind Nilsen

1 course deactivation: MEGN413: AEROSPACE STRUCTURES

Replaced by identical course MEGN453 with a new number to match the MEGN number system.

1.10.1 [CIM 2/1; Provost 2/2]

1 new course: MEGN453: AEROSPACE STRUCTURES

This is a course replacing (exactly) MEGN413. The new course number will be inline with the current MEGN courses within the Aerospace Minor (+ASI).

MOTION: To approve the Undergraduate Council minutes of February 23, 2022 by Ohno, seconded by Barankin. Motion passed unanimously.

New Curriculum Item(s)

Significant Curriculum Changes

2.1 **ELECTRICAL ENGINEERING**
[CIM 2/19]

Mona El Helbawy

1 program change: BS-EE: BS in Electrical Engineering

Updated distributed sciences so that students must choose two from the following list: CSCI101, CBEN110, GEGN101, CHGN122, or CHGN125. This is how this was listed in the 2019 catalog; it was updated when CSCI101 was made a prereq for CSCI261, but we realized that requiring CSCI101 was a disservice to students coming into Mines with transfer credit for CSCI261. Updated the "Energy Systems and Power Electronics" (ESPE) emphasis area to "Power and Energy Systems" (PES) to better describes the emphasis area. Added CSCI410 as an "Integrated Circuits and Electronics" (ICE) emphasis area elective. Justification for adding CSCI410: Elements of Computing Systems, looks at the design of a computer system from logic gates to a functional CPU using a hardware description language. The range of topics explore in this class works well with the Integrated Circuits and Electronics track because of this track looks at the design of electronic system containing a large number of individual circuit elements that work together to produce useful emergent behavior. CSCI 410 complements the required ICE course like VLSI design and semiconductor manufacturing by showing students how they would apply the principles learned in these classes to the application of building a computer.

The program shifted the sequence of courses and degree requirements for students.

2.1.1 [CIM 2/18]

2 course changes: EENG475: INTERCONNECTION OF RENEWABLE ENERGY, INTEGRATED POWER ELECTRONICS, POWER SYSTEMS, AND POWER QUALITY

Updating course description to better describe the course. Additional prerequisites will better prepare students for the course. EENG389 is the core course for ESPE or now PES

EENG470: INTRODUCTION TO HIGH POWER ELECTRONICS

Additional prerequisite will better prepare students for the course. EENG389 is the core course for ESPE or now PES emphasis. It provides engineering science analysis of electrical machines. In addition, it includes topics on DC, single-phase and three-phase AC circuit analysis; magnetic circuit concepts and materials; transformer analysis and operation; analysis of rotating synchronous, poly-phase induction, and DC machines; as well as laboratory study of external characteristics of machines and transformers. As such, it is required as a prerequisite for power systems and power electronics related subjects.

2.3 HUMANITIES, ARTS, AND SOCIAL SCIENCE

Jay Straker

[CIM 2/21]

1 course deactivation: HASS325: CULTURAL ANTHROPOLOGY

Faculty departure.

Request made to move item 2.3 to major curriculum items for further discussion. Councilor provided information on student and faculty involvement in anthropology and expressed concern in deactivating the course. Councilor noted HASS being one of eight courses listed as an elective in the Humanitarian Engineering ASI where students pick two electives; deactivation of HASS325 would significantly reduce student options. Councilor noted the value of the course for engineers and undergraduates due to working with various people and diverse environments including multicultural, various age groups, physical abilities, and gender. Removal of the course may disservice undergraduates' ability to be given support on working in different environments and various perspectives.

Councilor noted the faculty did not depart Mines but moved from HASS to EDS; Councilor suggested the course be offered through EDS.

Councilor made note there had not been interest in HASS to teach the 325 course.

- **Question** on the enrollment numbers from the course; in 2020 there were 36 students (course capped at 35), in 2019 there were 39 (course capped at 38) and taught by an adjunct, in Fall 2018 there were 39 students with a cap of 45.

Councilor suggested an inactive status where students may count the course toward the ASI rather than deactivating the course fully. Councilor also made note that there was a preference to have an individual with a PhD in anthropology teaching the course.

Continuing Curriculum Item(s) – From 2/23/22

Significant Curriculum Changes

3.1 CIVIL & ENVIRONMENTAL ENGINEERING

Junko Munakata Marr

[CIM 2/16; Provost 2/16]

1 new program: BS-CTRST: Bachelor of Science in Construction Engineering

This program ultimately supports multiple Mines@150 goals: to be a leader and preferred partner in producing highly desired STEM-educated leaders, use-inspired research and innovation, and alumni affinity, visibility and involvement. Our existing expertise in geotechnical engineering, innovative construction and structural engineering materials, environmental

science and engineering, and hydrology provides a solid foundation to tackle our departmental goal of becoming the go-to institution in addressing the challenge of smart, sustainable urban infrastructure. This program will leverage current strengths at Mines to educate students in the high-demand area of construction engineering. This is specifically appealing to traditional employers of Mines engineering students, as a significant portion of engineering projects become construction projects. The US has only 16 ABET-accredited Construction Engineering B.S. programs, with only three west of Texas (Arizona State, University of New Mexico, and San Diego State); other construction-oriented programs are one ABET-accredited Construction Engineering and Management B.S. program (Virginia Tech) and one ABET-accredited Civil and Construction Engineering B.S. program (U of Arkansas-Little Rock). Mines thus has an opportunity to create an exemplary program in a relatively small competitive landscape, extending the impact of our current programs in advancing Mines@150 priorities to the construction engineering arena. This degree program, in particular, represents a prime opportunity to engage alumni in the project-based curriculum, as their interest has been a driving force behind the program development.

This will be a residential program, building on the hands-on, experiential learning that is already part of CEE's two existing degree programs.

Minor Curriculum Changes –

The following minor course changes will not be discussed unless specifically requested by Council.

3.2 MECHANICAL ENGINEERING

Oyvind Nilsen

[CIM 2/16; Provost 2/16]

1 new course: MEGN475: INTRODUCTION TO NUCLEAR ENGINEERING

It advances several areas of Mines@150, including Expanding pathways to Mines and Increasing offerings and options for professionally oriented post-graduate education. This course serves as a streamlined and simplified undergraduate entry point for the Interdisciplinary graduate nuclear science and engineering program for new students who do not have a background in nuclear engineering, which opens up the NE degree program to a wider range of educational backgrounds from outside of Mines and it opens up the Nuclear Engineering 4+1 degree program tracks to more majors from within Mines and allows students to choose to enter the 4+1 program at later points in their undergraduate studies.

Subcommittee Updates

Tracks and Emphasis Definitions

Vibhuti Dave

Dave noted the process for submitting the proposed changes was unclear. Feedback was received from department heads and the deans. A concrete proposal may then be distributed to undergraduate program directors or undergraduate curriculum committee chairs to socialize and move forward to Undergraduate Council. King made note that changes within the Catalog are not fully delegated to Council and would be brought to Faculty Senate for full discussion and approval following Council recommendation.

Myskiw informed Councilors of the process following approval and noted each page would be updated for the next cycle of Catalog changes.

Similar discussion would take place with Graduate Council for more concrete and consistent language throughout the Catalog.

Council requested department head feedback document.

Course Learning Outcomes

Vibhuti Dave

Subcommittee met with Green on the Curriculum Inventory Management (CIM) system capabilities and proposed meeting with Courseleaf representative on how to integrate a more centralized repository in a public area in the Catalog.

Miscellaneous / New Business

Adjourn

Jeff King

Meeting adjourned: 5:04 pm.

Next meeting: March 23, 4:00-5:00 pm via Zoom.