

Colorado School of Mines – UNDERGRADUATE COUNCIL MEETING MINUTES
February 1, 4:00 – 5:00 pm, via Zoom

Attendees:

Voting Members: 19 total (10 needed for quorum). Quorum was present.

P	Joseph Horan (chair)	P	Andrew Pederson (EB)	P	Mike Nicholas (AMS)	P	Chuck Stone (PH)
P	Michael Barankin (CBE)	P	Cortney Holles (HASS)	P	Corinne Packard (MME)	P	*Kadri Dagdelen (MN) proxy for Nicole Smith (MN)
P	Dylan Domaille (CH)	P	Ge Jin (GP)	P	Rob Thompson (CS)	P	Dave Benson (GE)
P	Linda Battalora (PE)	P	Hongyan Liu (CEE)	P	Oyvind Nilsen (ME)	P	Emmelia Ashton (USG)
P	Chelsea Salinas (EDS)	P	Brianna Buljung (LB)	P	Hisham Sager (EE)		

Other Regular Attendees and Guests

A	Sam Spiegel (Mines Online)	P	Dixie Cirillo (PA)	P	Mara Green (AA)	A	Kendra Stansbury (RO)
A	Karla Perez-Velez (CASA)	P	Vibhuti Dave (UGS)	P	Deb Jordan (Trefny Center)	A	Paul Myskiw (RO)
A	Katie Ludwin (CASA)	A	Danielle Boileau (CASA)	A	Cheryl Medford (GE)	A	Rachel McDonald (PE)
P	D. Scott Heath (RO)						

Special Guest(s): Cj McClelland (EDS), Derek Morgan (Dean of Students)

Welcome

Joe Horan

Approval of Minutes – January 25, 2023

Joe Horan

MOTION: To approve the January 25, 2023 Undergraduate Council minutes by Barankin, seconded by Jin. Motion passed unanimously.

Briefings and Information Items

Office of Undergraduate Studies

Vibhuti Dave

All Council representatives, department heads, associate department heads, and program directors received an email detailing what is needed to make the upcoming 3/1 deadline for program changes. A checklist was made available for programs' four-year plan tables. Dave noted the tables are useful for the Registrar's Office to extract the first four semester plans to complete enrollment projections and advise departments on seats needed each semester. Dave asked for these to be completed by 2/15 to share with the Registrar's Office.

- **Question** on what stops students from waiting to take EBG201 and HASS200; Dave noted the new CASES/STFutures course would be piloted in Fall 2023 with an approximate enrollment of seventy-five students. Students waiting to take courses like EBG201 and HASS200 may delay graduation due to limited course availability. Current students would still fall under the Catalog requiring EBG201 and HASS200 and there may be additional exceptions over the next few years.

Dave reported CASA would be informed on ensuring advisors are providing messaging to students on course requirements but noted not all students are required to meet with CASA and there are

limitations there.

Registrar's Office

D. Scott Heath

No updates from the Registrar's Office.

Student Life – Core Curriculum

Derek Morgan

Horan opened the floor for questions on the four memorandums presented to Council at the 1/25 meeting.

- **Question** on creating more structure and formalized processes for PAGN courses switching to one credit; Cirillo reported there is a proposal to eliminate PAGN101 and PAGN102 and the remainder of the 200-level courses meet in person or are academic-based. Three classes remaining in the 200 series are independent but require check-in times at the Rec Center.
- **Question** on providing additional information on the student learning outcomes of CSM101; Keefer and Morgan are participating in the Foundations of Course Design with the Trefny Center and rehashing learning objectives. Councilor noted there may be overlap with the CSCI128 course addressing personal development.
- **Question** raised by Councilor regarding trained faculty and staff instructing CSM202 and what training and specialization may be expected; Morgan noted faculty and staff have not been identified for the course but twelve to fifteen instructors are currently planned with solicitation expected. Training would be developed, instructors expected to be comfortable with topics covered in the course and instructors should be able to engage students in the various activities and experiences. Derek noted a coordinator search process is in progress through Human Resources.

Comment said course objectives for CSM202 would be appreciated to vote. Morgan provided the current learning outcomes of CSM202 and noted these may change for the one credit course.

CSM202 Learning Outcomes (subject to change(s)):

1. Analyze your personal well-being using tools and resources associated with the seven well-being dimensions.
 2. Construct a personal well-being plan based on what you learn about yourself regarding the seven well-being dimensions.
 3. Implement your personal well-being plan continuously reflecting on your personal goals and progress.
 4. Revise your personal goals and well-being plan to support and maintain a healthy lifestyle.
- **Question** on developing other courses that may count as a "Success & Wellness" credit like CSM250, CSM275, CSM350, or any PAGN2XX; Morgan noted this has not been established yet, but all courses would go through Council for approval.

Curriculum Item(s) for Council Vote from 1/11/23

1.1

APPLIED MATHEMATICS & STATISTICS

Mike Nicholas

[CIM 12/14]

1 program change: BS-AMS: BS in Applied Mathematics and Statistics

This is a small change for the Computational and Applied Math major. We are adding MATH324 to the list of required courses and removing MATH335 from that list. The

the Mines community and attract a diverse population of new students to enroll in Mines' CS programs. This Bridge Seminar course is required for all incoming Bridge Students, and has a direct connection to the Mines@150 mission to be a "top-of-mind and first-choice university for students" and expand the pathways into Mines, and Computer Science by offering opportunities for "professionally oriented pre and post graduate education". This course will be delivered in a residential manner, with weekly in-person sessions. There will be a mixture of course instructor lectures, guest speakers, in-class group discussions and exercises to reinforce weekly topics.

CSCI210: SYSTEMS PROGRAMMING

To prepare students for upper-level courses better, thorough coverage of the Linux operating system concepts, from command line skills to writing code to perform system level management, is needed. To achieve these goals, this proposed 3-credit course will extend the existing 1 credit CSCI 274 Introduction to the Linux Operating System course and absorb topics from CSCI 101/102 that are not covered in replacement CSCI 128.

MOTION: To approve the two (2) new courses presented in item 1.2.2 in an omnibus Council vote by Barankin, seconded by Pederson. Motion passed unanimously.

1.2.3

[CIM 1/4]

17 course changes: CSCI200: FOUNDATIONAL PROGRAMMING CONCEPTS & DESIGN
Updating prereq for new Mines core computing course CSCI128.

CSCI220: DATA STRUCTURES AND ALGORITHMS

Adding countability content as prereq.

CSCI250: PYTHON-BASED COMPUTING: BUILDING A SENSOR SYSTEM

Updating responsible faculty and adding new Mines programming course as prereq.

CSCI303: INTRODUCTION TO DATA SCIENCE

Adding new Mines core programming course as prereq.

CSCI306: SOFTWARE ENGINEERING

Updating responsible faculty and adding CSCI210 as additional prereq to fit into new major flowchart following new Mines core curriculum.

CSCI341: COMPUTER ORGANIZATION

Changing prereq from "CSCI200 or CSCI261, CSCI262" to "CSCI210".

CSCI358: DISCRETE MATHEMATICS

Changing prereq from Calc III to Calc II.

CSCI370: ADVANCED SOFTWARE ENGINEERING

Changing credit hours from 4.5 to 5.0 in response to no longer allowing half credit hours.

CSCI400: PRINCIPLES OF PROGRAMMING LANGUAGES

Updating responsible faculty and modifying prereq to be CSCI358 or MATH300 to add flexibility for CS Minors.

CSCI423: COMPUTER SIMULATION

CSCI425: COMPILER DESIGN

CSCI442: OPERATING SYSTEMS

Updating prereq to include new CSCI210 Systems Programming course in place of CSCI274 Intro to Linux OS.

CSCI470: INTRODUCTION TO MACHINE LEARNING

Adding new Mines core programming course as prereq.

CSCI471: COMPUTER NETWORKS I

Updating prereq to include new CSCI210 Systems Programming course in place of CSCI274 Intro to Linux OS.

CSCI473: ROBOT PROGRAMMING AND PERCEPTION

Updating responsible faculty member, title, and description to accurately reflect course content.

CSCI475: INFORMATION SECURITY AND PRIVACY

Changing prereq from "CSCI220 or CSCI262, CSCI341, CSCI274" to "(CSCI220 or CSCI262) and CSCI341 and (CSCI210 or CSCI274)".

CSCI478: INTRODUCTION TO BIOINFORMATICS

Adding new Mines core programming course as prereq.

MOTION: To approve the seventeen (17) course changes presented in item 1.2.3 in an omnibus Council vote by Barankin, seconded by Pederson. Motion passed unanimously.

- 1.3 **QUANTITATIVE BIOSCIENCES AND ENGINEERING** Lauren Salinas
[CIM 12/15]
1 program change: BS-QBE: BS in Quantitative Biosciences and Engineering
Update to technical electives list and removal of field session placeholder that was used in Summer of Junior year.

MOTION: To approve the program change to BS-QBE: BS in Quantitative Biosciences and Engineering by Barankin, seconded by Pederson. Motion passed unanimously.

- 1.4 **CHEMICAL AND BIOLOGICAL ENGINEERING** Michael Barankin
[CIM 1/3]
1 course change: CBEN420: MATHEMATICAL METHODS IN CHEMICAL
ENGINEERING
Updating/aligning course description (with CBEN505) to match how the course is currently taught.

- **Question** on what is in the CBEN420 course; Barankin reported the course is mostly numerical methods using Mathcad and other programs, the course would now add Python.
- **Question** on including differential equation methods; Barankin noted there is mostly differential equation methods with some coupled partial differentials such as simultaneous mass transfer and heat transfer. The course description for the graduate-level course had been revised as well.

MOTION: To approve the course change to CBEN420: Mathematical Methods in Chemical Engineering by Barankin, seconded by Pederson. Motion passed unanimously.

- 1.5 **CHEMISTRY** Dylan Domaille
[CIM 1/6]
13 course changes: CHGN209: INTRODUCTION TO CHEMICAL THERMODYNAMICS
Updating pre-reqs. Removed CHGN121 because that pre-req will be met if students have taken CHGN122/CHGN125.
CHGN224: ORGANIC CHEMISTRY II LABORATORY
Removing CHGN221 as a pre-req because this will already be met if CHGN222 (another pre/co-req) is being taken/has been taken.
CHGN335: INSTRUMENTAL ANALYSIS

Updated to include CHGN125 as a suitable substitute for CHGN122.

CHGN336: ANALYTICAL CHEMISTRY

Updating pre-reqs to include CHGN125 as a suitable substitution for CHGN122.

CHGN351: PHYSICAL CHEMISTRY: A MOLECULAR PERSPECTIVE I

Updating pre-reqs to remove CHGN121 and CHGN122 because these are pre-reqs for the existing pre-reqs of CHGN209/CBEN210.

CHGN406: INTRODUCTION TO GEOCHEMISTRY

Updating pre-reqs to remove CHGN121 (which will be met if the existing CHGN122 pre-req is met) and to add CHGN125 as a suitable substitution for CHGN122.

CHGN410: SURFACE CHEMISTRY

Updated to include CBEN210 (chem. eng. thermo) as a suitable substitution for CHGN209 (chemistry thermo).

CHGN411: APPLIED RADIOCHEMISTRY

1) Removed the CHGN121 requirement because this will be met if the existing CHGN122 pre-req is met. 2) Added CHGN125 as a suitable substitution for CHGN122.

CHGN428: BIOCHEMISTRY

Adjusted pre-req to include concurrent enrollment of CHGN222 (Organic Chemistry II). This change is supported by the chemistry faculty, including those who teach CHGN428 (Posewitz, Morrison, Trewyn, Domaille).

CHGN431: INTRODUCTORY BIOCHEMISTRY LABORATORY

Clarified pre-reqs to CHGN428 or concurrent enrollment.

CHGN441: THE CHEMISTRY AND BIOCHEMISTRY OF PHARMACEUTICALS

CHGN445: CHEMICAL BIOLOGY

Removed CHGN221 pre-req because it will have been met if CHGN222 (current pre-req) is met.

CHGN490: CHEMISTRY FIELD SESSION

Updating pre-reqs to require Physical Chemistry I (CHGN351) but not Phys. Chem. II (CHGN353). This change was made because biochemistry majors do not have to take Phys. Chem. II, but do have to take field session. Not having had CHGN353 does not negatively impact students' ability to complete CHGN490 but does require a lot of course overrides. This change was voted on and supported by the chemistry faculty.

MOTION: To approve the thirteen (13) course changes presented in item 1.5 in an omnibus Council vote by Barankin, seconded by Pederson. Motion passed unanimously.

1.6

ECONOMICS AND BUSINESS

Andrew Pederson

[CIM TBD]

1 program change: BS-BEMS: Business Engineering and Management Science
The data science and business analytics core for the BEMS degree was originally constructed with classes that already existed in the Department of Economics and Business or elsewhere on campus. Now that the department has additional faculty depth in business analytics, the department wants to make sure that it is providing our students with the sequence of courses that will best serve their needs. Course proposals for the classes below have been submitted to CIM, and once those are approved, the program changes will be submitted to CIM.

- **Question** on removing EBG425 when it appears in the Minor in Petroleum Analytics and BS in

Computer Science and the concern with moving toward a 200-level course from an initial 400-level course number; Pederson noted the intent to stagger content by beginning at a 200-level and working toward the 400-level Capstone course. Pederson reported what may be appropriate for another degree would need review.

MOTION: To approve the program change to BS-BEMS: Business Engineering and Management Science by Barankin, seconded by Nilsen. 18 for, 1 abstention.

1.6.1 [CIM 12/14; Provost 12/15]

5 new courses: EBG280: INTRODUCTION TO BUSINESS ANALYTICS

Business analytics implements a data-driven approach to the business world, leveraging statistics and data modeling to generate new business insights. Currently, many of the world's largest companies use business analytics. Due to the increasing demand for business analytics in different industries, an increasing number of schools now offer business analytics courses. This course contributes to Mines@150's mission by strengthening the students' business education.

EBGN351: INTRODUCTION TO DECISION SCIENCE

One of the key goals for Mines@150 is to have all students graduate with a good understanding of the business applications of their degrees. Running a business or working in a business primarily comes down to making decisions – strategic decisions, capital investment decisions, and operational decisions. Decision Science provides the framework needed to think one's way through complex problems and make good decisions.

EBGN381: PREDICTIVE BUSINESS ANALYTICS

Predictive analytics may be helpful and profitable in almost any industry, from the banking to the aerospace industry. Predictive models enable businesses to make data-driven decisions that minimize potential risks and maximize profitability. Predictive models are used to forecast inventory, manage resources, set ticket pricing, manage equipment maintenance, develop credit risk models, and much more. This course contributes to Mines@150's mission by strengthening the students' business education.

EBGN382: PRESCRIPTIVE BUSINESS ANALYTICS

The Prescriptive Analytics course provides skills on modeling business problems to obtain optimal decisions and insights, specifically in the business context. It contributes to Mines@150 Mission by contributing to the education in business, by providing skills to solve "the world's most pressing challenges".

EBGN490: BUSINESS ANALYTICS CAPSTONE

This course will serve as the culmination of the Business Analytics (data science) core within the Business Engineering and Management Science degree program. As part of the program proposal, we included a capstone experience for our students. This new course will serve as that capstone.

MOTION: To approve the five (5) new courses proposed in item 1.6.1 in an omnibus Council vote by Barankin, seconded by Jin. Motion passed unanimously.

1.7 **ENGINEERING, DESIGN, AND SOCIETY**

Chelsea Salinas

[CIM 12/21]

1 program change: MIN-LSR: Minor in Leadership in Social Responsibility

Update to course elective list for LSR minor. The Engineering for Community

- **Question** if educational objectives are measured at the beginning and if this would lead to a grade; Nilsen noted there is a proposal, like a one-page contract, presented to the department head but there is not a grading process within the course.

Anecdote provided by Councilor where students provided a report and presentation at the last day of the internship; the presentation was not graded stringently but there was a grading rubric and standard from learning outcomes of the course.

The course is an elective and counts three credits toward the degree, the course is not required.

- **Question** on how the failure policy is determined and if this is provided by the company working with the student or if there is an instructor; Nilsen reported the failure policy is determined mostly from the company working with the student

Heath reported pass/fail courses are not offered as an option, were provided during the COVID-19 pandemic. Pass/fail is not an approved grade mode. Satisfactory/unsatisfactory grade options are in reference to midterm grades but not a final grade option. A change or implementation of an institutional grading policy would go through Faculty Senate for discussion and vote; Heath noted grading mode changes can have a significant impact on financial aid and additional research would need to be done on pass/fail courses falling within financial aid policies.

- **Question** if students are being paid while also receiving credit; Dave provided background and reported co-op courses have existed in several departments as free electives where students are paid and receive credit. Students do not receive credit for internships, Dave asked there be a distinction between the co-op courses and an internship.
- **Question** if there are other courses providing credit for internships; Nilsen reported this has been done for several years but students had been provided a grade.

Councilor noted the use of pass/fail for specific courses or more broadly could be beneficial, Councilor noted the push for experiential credit nationwide could benefit from pass/fail grading options.

Councilor suggested reviewing with faculty that have served on ABET review teams on the discussion of pass/fail courses in degrees. Councilor noted there may be concern for a potential conflict of interest if a student is pursuing a course with money involved.

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| 3.2 | <p>COMPUTER SCIENCE
[CIM 1/17]</p> <p>3 course changes: CSCI404: ARTIFICIAL INTELLIGENCE
 CSCI436: HUMAN-ROBOT INTERACTION
 CSCI437: INTRODUCTION TO COMPUTER VISION</p> <p><i>Updating prob/stat prereq to align with new CS degree plan. Updated responsible faculty.</i></p> | Rob Thompson |
| 3.3 | <p>GEOLOGY & GEOLOGICAL ENGINEERING
[CIM 1/9]</p> <p>7 course changes: GEGN203: ENGINEERING TERRAIN ANALYSIS</p> <p><i>This course has long had a separate but related lab class (GEGN205 - Advanced Physical</i></p> | Dave Benson |

Geology Laboratory) and we wish to combine the two to simplify the structure for students and remove the possibility of students not taking both the lecture and laboratory components

GEGN204: GEOLOGIC PRINCIPLES AND PROCESSES

We wish to add a laboratory to this class increasing from 2 to 3 credit hours to better strengthen student learning.

GEGN212: THE ROCK CYCLE

Remove prerequisites as they are no longer needed. GEGN217 is being removed as a co-requisite so that course can be offered every semester. Change offering to both fall and spring to better serve students. Change name to be more descriptive and attractive to students who are not geological engineers, also reduced confusion with the similarly named GEGN306; Petrology. Name change “Petrology for Geological Engineering” → “The Rock Cycle”.

GEGN217: GEOLOGIC FIELD METHODS

We are changing the prerequisite to GEGN101 to make it easier for students to progress through our program if they take a pathway that doesn't perfectly match the flowchart. Also adjusting contact hours to match the actual hours.

GEGN316: FIELD GEOLOGY

The department has increased the field component of program in other courses and wants to reallocate one credit hour to the sophomore year course GEGN204. Reducing to five weeks also allows students to complete field camp earlier reduces the risk of burnout. GEGN205 is being removed as a prerequisite as it is being deactivated.

GEGN466: GROUNDWATER ENGINEERING

The fluid mechanics prerequisite (GEGN351 or MEGN351) is no longer required and frequently overridden, so we want to remove it.

GEOL309: STRUCTURAL GEOLOGY AND TECTONICS

Change prerequisites due to changes to 200-level courses in GE. Fixed syntax in contact and credit hours.

- 3.3.1 **1 course deactivation:** GEGN205: ADVANCED PHYSICAL GEOLOGY LABORATORY
We have submitted proposals to move this credit hour into GEGN203 as an associated lab, so the standalone GEGN205 is no longer needed.

- 3.4 **UNIVERSITY HONORS PROGRAMS** Cj McClelland
[CIM 1/9; Provost 1/9]

2 new courses: HNRS150: ENTERING RESEARCH
This class was successfully piloted as 198 courses in 2018, 2019, 2021 and 2022 fall semesters. Special permission was obtained from the faculty senate to teach it during the fall 22 semester. It will continue to be an offering for the University Honors and Scholars Programs.

HNRS496: PAYNE SCHOLARS PROGRAM

The class has developed into a more traditional course with clearer objectives, research areas, and interactions between Payne fellows and students. Considering this, the Registrar has requested we no longer complete the Independent Study form and submit, but that the students register through the traditional processes.

- 3.4.1 [CIM 1/24]
2 course changes: HNRS105: INNOVATION AND DISCOVERY IN ENGINEERING,

