

Colorado School of Mines – UNDERGRADUATE COUNCIL MEETING MINUTES
September 28, 4:00 – 5:00 pm, via Zoom

Attendees:

Voting Members: 18 total (10 needed for quorum). Quorum was present.

P	Brandon Dugan (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	Nicole Smith (MN)
P	Dylan Domaille (CH)	A	Ge Jin (GP)	P	Rob Thompson (CS)	P	Bruce Trudgill (GE)
P	Linda Battalora (PE)	P	Hongyan Liu (CEE)	P	Oyvind Nilsen (ME)	P	Emmelia Ashton (USG)
P	Chelsea Salinas (EDS)	A	Brianna Buljung (LB)				

Other Regular Attendees and Guests

P	Angela Dunn (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)	P	Paul Myskiw (RO)
P	Katie Ludwin (CASA)	P	Danielle Boileau (CASA)	A	Cheryl Medford (GE)	A	Rachel McDonald (PE)
A	Sam Spiegel (Mines Online)	A	D. Scott Heath (RO)				

Special Guest(s): Brian Gorman (MME)

Welcome

Brandon Dugan

Approval of Minutes – September 14, 2022

Brandon Dugan

MOTION: To approve the Undergraduate Council minutes of September 14, 2022 by Barankin, seconded by Smith. 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

Faculty Senate approved the proposed common exam policy changes on 9/27. Final version that had been approved was distributed to Councilors 9/28.

Fall registration add date change was observed positively at the graduate and undergraduate level. The number of late add requests did not increase with the new add date.

Core Curriculum ([click here for the Core Proposal website](#))

MOTION: To discuss the Core Curriculum Faculty Senate resolution drafted by the Core Curriculum committee by Barankin, seconded by Nilsen. Motion passed unanimously.

Comment on Senate resolution missing the PAGN credit change. Feedback received from departments, Council opened broader discussion on the umbrella idea presented by the Core Curriculum committee. Council understands that if passed, the changes to the core would be brought back to Council through curriculum changes in the Curriculum Inventory Management (CIM) system.

CBE department feedback had been neutral, CBE would like to see more on the CASES course. There was concern over what content would be taught within the new computing course with preference leaning to Python.

EB in favor of several points presented in the resolution but would like clarity on points (g) and (h) in the resolution:

“g. Re-designation of H&SS electives as Pathways electives, to be controlled by the joint leadership of HASS, EB, and EDS. Planning for the creation of thematic groups of Pathways electives to be voluntarily pursued by students, based on shared interests among faculty across campus. Planning for the creation of vertically-integrated learning communities and experiential opportunities for students who pursue Pathways.

Clarity asked regarding redesigned pathways and what this would look like regarding ABET accreditation with the need for a form of economics and business within the course. Unclear if a student could take only HASS and avoid EB altogether. Suggestion to redefine and clearly establish the pathways. General questions regarding funding and staffing presented.

“h. Planning for and piloting of a new 3 credit hour 200-level course called “Contextualized Approaches in Science Engineering and Society” or CASES, which will constitute an interdisciplinary signature experience offered by faculty from HASS, EB, EDS, and others from across campus.

Suggestion to provide the learning outcomes of CASES, if there are prerequisites needed, and if it is 100- or 200-level. Dave noted CASES would be piloted with ten percent of the incoming freshmen in Fall 2023.

Committee to work with assessment professionals while piloting CASES with the expectation of a multi-year roll out with a desire for implementation in five years.

Common core required of all students is currently fifty-seven credits; committee recommendation would bring the common core down to fifty-six credits. Distributed sciences would fall under the control of the departments with the hope that the total credit count would not go up for a program.

CASES would be an opportunity for departments to engage with the class and make it a student signature experience. Committee noted section sizes for CASES had not been established, there is an expectation for a smaller class but other pedagogy models can be assessed if classroom space and resources are an issue.

HASS discussions on bandwidth and time for establishing CASES. Concern regarding moving a credit out

of NHV into CASES, removing content from NHV and disciplinary expertise for the CASES course. Concern regarding flexibility of timeline to allow space to develop and incorporate content.

Committee not asking that HASS200 and EBG201 be removed completely, option would remain for students while CASES is being developed.

PH looking into how to accommodate course material if Physics I and II are shifted from four and a half credits to four credits; mathematical techniques taught within the courses are built upon in other departmental courses. Councilor noted students struggle with the mathematics in physics due to applying mathematical concepts into real-world physics problems and integrating mathematical skills. Reduction in credits may result in inability to reduce students' mathematical deficiencies seen in the physics courses. Note made regarding impact of faculty and staff teaching loads if courses are asked to be a whole number credit rather than half credits.

Note made on reduction of credits and less use of half credits. Mines, compared to the state recommendation, has a higher credit requirement for degrees.

ME department feedback was neutral; curious regarding CASES.

MME noted reduction in credits would lead to reduced choices for students due to loss of free electives and courses that were prerequisites to the curriculum. Physics II is required in MME; with the committee proposal the course and its prerequisite would be taken from student free electives or the program credits would increase. Suggestion made for explicit verbiage if programs are unable to increase total program credits. Committee uncomfortable making this a requirement and would prefer a guideline.

CH department feedback was unenthusiastic; brought up resources and management and was a major roadblock for faculty acceptance of the proposal. Note made regarding students transferring credits that count as free electives toward a degree, decrease in free electives would impact the number of transferred credits. Broader feedback on the current core and proposed core and what a signature experience would be.

GE feedback was lukewarm; can see benefits internally. Debates between Python and Matlab in the proposed computing course.

AMS happy with the introduction of a computing course; acknowledged that there is interest in seeing the list of topics for the course and what will be taught along with CASES. Note made that there is a feeling of an artificial deadline around MINES@150.

CS feedback fairly neutral; department aware of probability of computing course for several years, were hoping for additional direction from the committee and found the proposal vague.

EDS major concern around ensuring a prerequisite structure around CASES. Students do not take Cornerstone Design within freshmen year due to it not being a requirement within their coursework; EDS found it offsets the cycle and can change the culture of the class due to students enrolling in what should be a freshmen design course.

MN agreed with MME that students would be able to take less free electives. Dave noted that a fourth math class still falls within the core and would not subtract from students' free electives.

Note made on CSM201 skepticism that this may not be the best use of students' time.

Councilor noted that the name change to H&SS has drastically declined the number of students taking economics classes due to courses being taken through HASS. Suggestion made for a new name for these electives to broaden the base if EB is involved. Suggestion for "Pathways" name.

PE concern for elimination of micro and macro for all departments. PA half credit was noted as problematic due to concerns of student and faculty mental health issues.

Comment on procedural issues and how changes will be pushed through with the implementation of a new core. Comment on voting on the resolution with the caveat of including the reduction in PA credit that had not been listed within the draft. Suggestion made to vote on the individual points within the resolution; Councilor asked that Council vote and view the resolution holistically. Councilor requested care be taken that decisions are not made with the MINES@150 campaign in mind but with students' benefits in mind.

- **Question** on student involvement in the core curriculum process; Dave noted students had not been consulted.

MOTION: To table the Core Curriculum committee discussion and Faculty Senate resolution for the October 12, 2022 Undergraduate Council meeting by Pederson, seconded by Barankin. 9 for, 3 against, 3 abstentions.

New Curriculum Items

1.1 **METALLURGICAL AND MATERIALS ENGINEERING** Corinne Packard
[CIM 9/20; Provost 9/20]
1 new program: BS-CERE: Ceramic Engineering

Program would run parallel with the existing MME degree; two undergraduate degrees within one department.

New courses that were proposed in items 1.1.1 are several one credit labs.

- **Question** on impacts to students in other programs; Packard noted that courses are not being cancelled or removed and are not required by other programs. New labs may be of interest to other departments.

1.1.1 [CIM 9/19; Provost 9/20]
9 new courses: MTGN310: POWDER PROCESSING AND FORMING
With the creation of the proposed new Ceramic Engineering curriculum, this course will replace MTGN314+L. MTGN310+L will cover the powder processing concepts and procedures that are crucial to both ceramics and metallurgy and will be required for both the existing MME degree and the new CerE degree. This course, perhaps better than any

other individual course, represents the intersection of Mines' traditional strengths and programs of distinction for the coming decades. The content builds on the legacy of Particulate Material Processing (a now defunct MME course that offered an introduction to mineral processing and extractive metallurgy) and extends these same concepts to topics such as additive manufacturing and other modern fabrication techniques. As a laboratory-heavy course, MTGN310+L will be fully residential.

MTGN310L: POWDER PROCESSING AND FORMING
LABORATORY

1 credit lab course to go with MTGN310 lecture. As a laboratory-heavy course, MTGN310+L will be fully residential.

MTGN319: INTRODUCTION TO GLASS SCIENCE AND
TECHNOLOGY

With the creation of the proposed new Ceramic Engineering curriculum, this lecture and laboratory course combination will cover essential concepts in glass structure, forming, and properties. This course will be required for the new degree. This course will prepare students to use amorphous solids in the real world. From glass manufacturers to semiconductors to optics, students will understand how to produce and engineer glass for many applications. As a laboratory heavy course, MTGN 319 and 319L will be fully residential.

MTGN319L: INTRODUCTION TO GLASS SCIENCE AND
TECHNOLOGY LABORATORY

1 credit lab to go with MTGN319. As a laboratory heavy course, MTGN 319 and 319L will be fully residential.

MTGN345: SINTERING OF CERAMICS

This is a core course for the proposed ceramic engineering degree program. As described in the proposal, this program will enable Mines to be a producer of differentiated and highly desired STEM-educated leaders; be a go-to-place for use-inspired research and innovation needed for challenges facing industry and society; be accessible and attractive to qualified students from all backgrounds; be a preferred partner for talent, solutions, and life-long learning. It will be a residential course.

MTGN345L: SINTERING OF CERAMICS LABORATORY

It is the 1 credit laboratory course that goes along with MTGN345, the lecture component. It will be a residential course.

MTGN465L: MECHANICAL PROPERTIES OF CERAMICS AND
COMPOSITES LABORATORY

This is the laboratory portion to complement an existing lecture course MT465. Both the lab and lecture course are required in the CerEng BS degree program. It will be a residential course.

MTGN410: THERMAL PROPERTIES OF CERAMICS

With the creation of the proposed new Ceramic Engineering curriculum, this course will cover essential concepts in thermal transport and temperature dependent properties of ceramics. This course will be required for the new degree. Thermal properties of materials, especially ceramics, are essential for modern industries. From aerospace to microelectronics to quantum devices, thermal management is the key to operation and reliability. This course will prepare students to solve thermal management problems with materials engineering solutions. MTGN 411 will be fully residential.

MTGN465L: MECHANICAL PROPERTIES OF CERAMICS AND

COMPOSITES LABORATORY

This is the laboratory portion to complement an existing lecture course MT465. Both the lab and lecture course are required in the CerEng BS degree program. It will be a residential course.

- 1.1.2 **1 course change:** MTGN465: MECHANICAL PROPERTIES OF CERAMICS
A 1-credit laboratory course will be a required co-requisite to support the proposed Ceramics Engineering BS degree program. No other changes will be made. This course has run as lecture-only elective for many years, but will now be a required course for the CerEng degree and can be used as an elective for the MME degree.
- 1.1.3 [CIM 9/19]
1 program change: BS-MME: BS in Metallurgical and Materials Engineering
Pending approval of the newly proposed Ceramic Engineering BS degree, we plan to replace the MME BS degree course requirements: MTGN314/MTGN314L Properties & Processing of Ceramics with MTGN310/MTGN310L Power Processing & Forming. There is no change in the number of credit hours. The new course will address powder processing and forming relevant to ceramics, powder metallurgy, and additive manufacturing, providing students with a cross-cutting education. Both the MME BS and CerEng BS will share MTGN310/310L as a required course. Students interested more specifically in ceramics can take further classes as electives or pursue the CerEng degree.
- 1.2 **APPLIED MATHEMATICS & STATISTICS** Mike Nicholas
[CIM 9/20]
1 program change: BS-AMS: BS in Applied Mathematics and Statistics
With the new CS structure, we would like to require CSCI101, CS200, and an additional CS elective. We would like to remove CSCI403 (databases) as a required course for the statistics degree. We will instead require MATH436 (advanced stats) and will move CSCI403 to the stat elective list. The statistics faculty feel that MATH436 is too essential to not require it of all stats majors.
- 1.2.1 [CIM 9/19]
4 course changes: MATH432: SPATIAL STATISTICS
Fall only semester offering, previously Fall and Spring.
MATH436: ADVANCED STATISTICAL MODELING
Semester offered changed to Fall from Spring and Fall in order to place course before the capstone to create a modeling sequence:
MATH310 → MATH424 → MATH436 → MATH482.
MATH437: MULTIVARIATE ANALYSIS
Spring only semester offering, previously Fall and Spring.
MATH482: STATISTICS PRACTICUM (CAPSTONE)
Added MATH436 prerequisite to form a modeling sequence:
MATH310 → MATH424 → MATH436 → MATH482. *MATH482 is stats capstone course and students will do more meaningful projects if they have MATH436 first.*
- 1.3 **CHEMICAL AND BIOLOGICAL ENGINEERING** Michael Barankin
[CIM 9/13]

1 program change: BS-CHE: BS in Chemical Engineering
Updates made to the electives list.

Electives had been approved on a case-by-case bases and are now being presented formally within the program listing.

- 1.4 **HUMANITIES, ARTS, AND SOCIAL SCIENCES** Cortney Holles
[CIM 9/20; Provost 9/20]
1 new course: HASS111: NATURE AND HUMAN VALUES SHORT FORM
Students enter Mines with a variety of backgrounds and experiences with high school curriculum and previous college experience. This course allows for an easier and more equitable transition into the HASS curriculum for transfer students and freshmen who have previous college-level writing experience by acknowledging their writing skills while still providing the core curriculum content of Nature and Human Values, an introduction to professional and environmental ethics.

Shortform NHV was offered in the past. Brought back in 2021 as a pilot to help students transferring in community college composition classes and/or AP English credits. Course had been cut in half to focus on ethics content. Some research and writing included but writing process is not taught.

Becomes substitute for HASS100 credit for students with prequalification.

- 1.5 **QUANTITATIVE BIOSCIENCES AND ENGINEERING** Justin Shaffer
[CIM 9/22; Provost 9/22]
1 new course: BIOL415: QUANTITATIVE BIOSCIENCES AND ENGINEERING FIELD SESSION
Field session is a critical and unique aspect of the Mines Signature Experience for all majors on campus. In the QBE Field Session, a residential course, we will advance the goals of Mines@150 by 1) exposing our QBE students to unique projects including genomic exploration of microbes in the field and production of recombinant proteins for basic and applied research, both of which will differentiate our students from other undergraduate biology programs (addresses “a producer of differentiated and highly desired STEM-educated leaders), 2) tackling challenges and problems that affect societies and the environment worldwide, such as engineered biological solutions to plastic pollution via collaborations with industry partners and NREL (addresses “a go-to place for use-inspired research and innovation needed to challenges facing industry and society”), 3) giving all of our QBE students opportunities to conduct novel research and present their findings (addresses “accessible and attractive to qualified students from all backgrounds”), and 4) continuing to foster and inclusive and welcoming environment for our QBE students to have experiences which will allow them to achieve their career goals (addresses “a great community to learn, explore, live, and work in”).

Field session course had been missing from the program Catalog listing.

Continuing Curriculum Item(s) – from 8/24/22

- 2.1 **ENGINEERING, DESIGN, AND SOCIETY** Chelsea Salinas

[CIM 8/24]

1 program change: BS-EGN: BS in Design Engineering

Our undergrad committee reviewed our focus area listings and requirements. We propose the updated changes to streamline curriculum for our students that aligns with consistent course delivery. The proposed focus area course changes also provide a more curated group of courses meeting the needs of our students within their chosen focus area themed pathway. We continue to offer breadth in focus area course offerings with a strong focus on our design core and pedagogy critical to our success as a department and in line with the goals of team-work, innovation and growth through Mines@150. Our Dept. Head, Dean Nieusma, has been in conversations with the Provost regarding a program name change from BS in Engineering to BS in Design Engineering. We have been given the green light from upper administration to pursue this name change.

2.1.1 **5 course changes:** EDNS151: CORNERSTONE DESIGN
EDNS155: CORNERSTONE DESIGN I: GRAPHICS
EDNS251: CORNERSTONE DESIGN II
EDNS491: CAPSTONE DESIGN I
EDNS491: CAPSTONE DESIGN II

We are wanting to update course name to better align with course association around campus. Furthermore, upper administration has requested this course name change for alignment with Mines@150 initiatives in innovation, entrepreneurship, and design.

2.1.2 **1 new course:** EDNS325: CULTURAL ANTHROPOLOGY

Transfer of class from HASS to EDNS to provide continuous offering of Anthropology to Mines students. Provides an alternative to H&SS offerings required of all students.

2.2 **HUMANITIES, ARTS, AND SOCIAL SCIENCES** Chelsea Salinas
[CIM 9/7]

1 course deactivation: HASS325: CULTURAL ANTHROPOLOGY

Transfer of class from HASS to EDNS to provide continuous offering of Anthropology to Mines students. Provides an alternative to H&SS offerings required of all students.

2.3 **CSM GENERAL** Corinne Packard
[CIM 9/7]

1 program change: MIN-QUE: Minor in Quantum Engineering

Catalog had displayed incorrect course names in description, a deadlink, and duplicate courses. Request made through ITS Help Center, redirected to UGC.

Adjourn

Brandon Dugan

Meeting adjourned: 5:10 pm.

Next meeting: October 12, 4:00-5:00 pm via Zoom. Please send agenda items to Mara Green (mgreen1@mines.edu) one week prior.