

Colorado School of Mines – GRADUATE COUNCIL MEETING MINUTES
December 15, 4:00 – 5:00 pm, via Zoom

Attendees:

Voting Members: 22 total (12 - majority needed for quorum). Quorum was present

P	Bettina Voelker (Chair)	P	Christine Baker (LB)	P	Andy Osborne (NSE)	P	Owen Hildreth (ME)
P	Eric Anderson (HSE)	A	Karin Leiderman (AMS)	P	Jamal Rostami (MN)	P	Michael Heeley (EB)
A	Ebru Bozdag (GP)	P	Juan Lucena (EDS)	A	Jim Ranville (GC)	A	Luis Zerpa (PE)
A	Geoff Brennecka (ML)	P	Jeramy Zimmerman (PH)	A	Danica Roth (GE)	P	Qi Han (CS)
A	Elizabeth Davis (HASS)	P	Dave Marr (CBE)	A	Maxwell Silver (GSG)*	P	Lori Tunstall (UCTE / CEE)
A	Christine Morrison (CH)	A	Salman Mohagheghi (EE)	P	*Isabella Mendoza (GSG) proxy for Maxwell Silver (GSG)		

Other Regular Attendees and Guests

P	Tim Barbari (OGS)	P	Carolyn Freedman (OGS)	A	Jane Ko (AA)	P	Mara Green (AA)
A	Jennie Kenney (AA)	A	Denise Winn-Bower (PE)	P	Paul Myskiw (RO)	A	Kendra Stansbury (RO)
P	Deb Jordan (Trefny)						

Special Guest(s): Charles Durfee (PH), Angel Abbud-Madrid (MN)

Welcome

Tina Voelker

Briefings and Information Items

Office of Graduate Studies

Tim Barbari

No updates from the Office of Graduate Studies.

Registrar's Office

Paul Myskiw

Graduate Students and Undergraduate Courses

Myskiw reviewed current practices at Mines for counting 400-level courses, listed as senior level courses in the Catalog, in a graduate student's transcript. Myskiw proposed adding clarifying language to the Catalog for financial aid, admissions, and students as follows:

“Some graduate programs may allow graduate students to enroll in 400-499 level courses as a part of their program.”

Further discussion took place on defining 500-599 level courses as Advanced Undergraduate/Master's level courses (this currently exists as Master's Level in the Mines Catalog). Councilor suggested 500-level courses be defined as graduate-level and 600-level as doctoral. Students outside of master programs are enrolled in 500-level courses.

Note: following the 12/15 Graduate Council meeting, an email was sent with further clarification and replacement of the “500-599: Masters Level” to “500-599: Graduate Level**”. Asterisks were added to both Senior Level and Graduate Level with the following notations:

“Some graduate programs may allow graduate students to enroll in 400-499 level courses as a part of their program.

***Undergraduates may take 500 level courses and may apply these courses toward the undergraduate degree and GPA. Undergraduates in combined undergraduate/graduate*

programs will have a transcript notation on the graduate transcript notating the double counted courses.”

Graduate Student Government

Isabella Mendoza

No updates from the Graduate Student Government.

Graduate Council Operations

Tabled.

Curriculum Item(s) for Council Vote – from 12/1/21

- | | | |
|-----|---|---------------|
| 1.1 | CIVIL & ENVIRONMENTAL ENGINEERING
[CIM 11/30]
1 program change: XCR-ENVMOD: Graduate Certificate in Environmental Modeling
<i>Update to required courses from three to two courses (removal of CEEN566). Electives list added.</i> | Lori Tunstall |
|-----|---|---------------|

MOTION: To approve the program change to XCR-ENVMOD: Graduate Certificate in Environmental Modeling by Hildreth, seconded by Zimmerman. 13 for, 1 abstention. APPROVED.

- 1.2 **MECHANICAL ENGINEERING** Angel Abbud-Madrid
[CIM 11/10; Provost 11/11]

1 new course: SPRS507: ADVANCED PLANETARY GEOLOGY

The Space Resources fully-online graduate program is the first one in the world educating scientists, engineers, economists, entrepreneurs, and policy makers in the field of space resources. This one-of-a-kind, innovative, multidisciplinary program aims to take the 150-year-old, world-renown expertise at Mines in resource exploration, extraction, production, and utilization to its next frontier by identifying, extracting, and utilizing resources beyond Earth.

This online course provides a detailed look at planetary bodies, from atmosphere to surface to interior with a focus on the geological processes that have formed them transformed these bodies over time, with special attention paid to the formation of space resources.

*THE COURSE WAS SUCCESSFULLY RUN AS A SPECIAL TOPICS COURSE IN SPRING 2021
and FALL 2021.*

MOTION: To approve the new course in Mechanical Engineering, SPRS507: Advanced Planetary Geology by Hildreth, seconded by Zimmerman. 13 for, 1 abstention. APPROVED.

Request made for the Spring 2022 SPRS598 course to be changed to the newly approved SPRS507 course number.

- 1.3 CIVIL & ENVIRONMENTAL ENGINEERING**
[CIM 10/26; Provost 10/26-27] Joe Crocker
2 new courses: CEEN547: DESIGN OF PRESTRESSED CONCRETE STRUCTURES
The addition of this graduate course will provide our students the opportunity for

exposure to increasingly important design concepts that have the potential to significantly reduce the amount of concrete required for construction versus the traditional reinforced concrete design methods and in doing so reduce the impact new construction has on the environment. Such a course is required to maintain our ability to produce structural engineering graduates with knowledge of the most current design technologies.

[CIM 10/26; Provost 10/27]

Chris Higgins

CEEN597: PRACTICES AND PRINCIPLES OF ENVIRONMENTAL CONSULTING

The course introduces students to the business concepts, tools and terminology used in the environmental consulting industry. Depending on Mines requirements, this course may be delivered as a person-to-person (preferred), hybrid, or remote class.

A large share of Mines undergraduate and graduate students find employment, either temporarily or permanently in the environmental/engineering consulting arena. Many are not fully prepared for this line of work, as they've not been exposed to the project-driven, business-oriented implementation aspects of this workplace. This course allows students to explore this field of employment before committing to it and prepares them for success if this is their chosen career.

Class is taught by two highly-regarded industry experts with 50 years of environmental consulting experience between them. Additionally, guest lectures are a key part of the course, with a diverse group of experienced people bringing their perspectives on the environmental consulting industry from municipal, state and federal government, small business ownership, and private sector clients.

MOTION: To approve the two new courses in Civil and Environmental Engineering, CEEN547: Design of Prestressed Concrete Structures and CEEN597: Practices and Principles of Environmental Consulting by Hildreth, seconded by Zimmerman. Motion passed unanimously. APPROVED.

New Curriculum Item(s)

1.4

PHYSICS

Charles Durfee

[CIM 12/8; Provost 12/9]

1 new program: CRTG-OPTICS: Optics for Engineering

Optics for Engineering is an interdisciplinary program that seeks to equip students for careers in industries that make use of optics, imaging and lasers. It encompasses a wide range of disciplines that include physics, materials science, computer science, electrical and mechanical engineering, chemistry and mathematics, and is necessarily a collaborative effort among many Mines departments. The "Optics for Engineering" graduate certificate program is aimed at providing students with a range of technical backgrounds the tools they need to succeed in today's optics-related industries. Optics and lasers are key enabling technologies in many industries, including some recent applications like automotive lidar, advanced manufacturing and quantum computing. At the same time, the design of optical systems requires input from many disciplines: electrical and mechanical engineering, computer programming, materials and chemistry. It is therefore critical for students trained in those areas to learn how their background

can be applied to the engineering of optical, imaging or laser systems.

Durfee presented to Councilors on the reasoning behind the program, its background and conception, and industry interest. Physics has taught a number of optics courses and local industry have noted a desire for individuals with a background in optics especially for students with engineering degrees. The graduate certificate would make optics available to variety of students with varying disciplines and off-campus students working in industry. Colorado has several optics-related companies listed on the Colorado Photonics Industry Association webpage. Letters of support were provided by Vescent Photonics and Thorlabs with consideration for internship programs for students. Durfee presented an idea for the certificate in the future to provide students with a one-credit refresher course. One 400-level course can be taken for the graduate certificate.

Potential lab space issues were addressed.

Comment raised on the status of the electrical spectroscopy course offered through the chemistry department listed within the certificate electives; the course status will be looked into.

Note: Request made to vote on the approval of the graduate certificate in Optics for Engineering at the 1/19/22 meeting.

New Business

Online Modality Additions to Existing Programs

Councilors discussed the addition of online modality to existing programs and how the process should progress in coming semesters. The Trefny Center provides quality assurance between residential and online courses. For addition of an online modality to an existing program, online courses would be created to match residential courses. Councilor made note that an online course may become a substitute for residential courses and students may be adversely affected. Councilor noted that online modality requires expertise in integration and assuming equivalency with the residential program without evidence could be detrimental.

Adjourn

Tina Voelker

Meeting adjourned: 4:56 pm.

Next meeting: January 19, 4:00-5:00 pm via Zoom.

Consent Agenda The following proposals will not be discussed unless specifically requested by Council. Please review the following items. With no objections, approval is implied and items will be processed accordingly.

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| 3.1 | Approval of Minutes – December 1, 2021 | Tina Voelker |
| 3.2 | PHYSICS
[CIM 12/8; Provost 12/9]
1 new course: PHGN581: LASER PHYSICS
<i>This is a co-listing with PHGN 480 (note 580 is not available as it was assigned to a deactivated course) and is designed for in-person delivery. The scope of 480 is currently between that of an undergraduate and graduate course. The graduate version of the course will have more advanced homework, experimental analysis/modeling, and final project.</i> | Jeramy Zimmerman |

Continuing Curriculum Items – From 12/1/21

- 4.1 **CHEMICAL & BIOLOGICAL ENGINEERING** David Marr
[CIM 11/19]
1 program change: MSPHD-CBE: MS & PhD – Chemical and Biological Engineering
In the current catalog, both Ph.D. and master students are required to register every semester for CBEN605 Colloquium; however, it is not currently specified how many colloquium credits can be counted towards each degree. Here, we are applying a three-credit maximum for counting towards the degree requirements.
- 4.2 **GEOLOGY & GEOLOGICAL ENGINEERING** Cheryl Medford
[CIM 11/18]
1 program change: MPMEMSPHD-GE: MP, ME, MS & PhD – Geology & Geological Engineering
Updating GE Ph.D. catalog language - the current language is unnecessarily vague about the number of course credits required as part of the program. I suggest we change "At least 24 of the hours must be research credit hours" to "At least 24 of the hours must be research credit hours, and at least 24 of the hours must be earned through completion of coursework".
- 4.3 **HUMANITIES, ARTS, AND SOCIAL SCIENCES** Elizabeth Davis
[CIM 11/29; Provost 11/29]
2 new courses: HASS526: INTERCULTURAL COMMUNICATION
By providing a forum for students to study current and emerging intercultural communication issues, this course will make Mines more attractive to qualified students from all backgrounds (including groups that are currently underrepresented in the Mines student body), particularly students interested in researching how intercultural communication is contoured by issues of globalization, history, and power.

This course has been well received among undergraduates and would add value to the graduate offerings since no other single course covers the same content. It was cross listed as HASS 425 and 598 in Fall 2021.
HASS527: RISK COMMUNICATION
By providing a forum for students to study current and emerging risk communication issues, this course will make Mines more attractive to qualified students from all backgrounds (including groups that are currently underrepresented in the Mines student body), particularly students interested in researching how fairly a given risk is distributed systemically.

This course was initially piloted as an undergraduate course in the McBride Honors Program in Spring 2018, then taught as a regular HASS course (427), most recently in Spring 2021. The course is scheduled for Spring 2022, cross listed as HASS 427 and 598.
- 4.3.1 **1 program change:** MS-NREP: Natural Resources & Energy Policy
Addition of thesis option to the existing MS program.