

Colorado School of Mines – GRADUATE COUNCIL MEETING AGENDA
 March 6, 2024, 4:00 – 5:00 pm, via Zoom

Attendees:

Voting Members: 24 total (16 - majority needed for quorum). Quorum was present.

P	Soutir Bandyopadhyay (Chair)	P	Patricia Andersen for Danielle Ostendorf (LB)	P	Andy Osborne (NSE)	P	Owen Hildreth (ME)
P	Adrienne Marshall (HSE)	P	Bettina Voelker (CH)		Jaeheon Lee (MN)		Jared Carbone (EB)
P	Yaoguo Li (GP)	P	Juan Lucena (EDS)		Jim Ranville (GC)		Pejman Tahmasebi (PE)
	Suveen Mathaudhu (MME)		Nikki Farnsworth (CBE)	P	Ryan Venturelli (GE)		Dong Chen (CS)
P	Adrienne C. Kroepsch (HASS)	P	Yamuna Phal (EE)	P	Rena Zhu (GSG)		Samy Wu Fung (AMS)
		P	Lori Tunstall (CEE)	P	Gabriel Walton (UCTE)	P	Uwe Greife (PH)

Other Regular Attendees and Guests

P	Tim Barbari (OGS)		Carolyn Freedman (OGS)	P	Jenny Briggs (OGS)		Vibhuti Dave (UG)
	Wendy Adams (HNRS)	P	D. Scott Heath (RO)		Paul Myskiw (RO)		Roxane Aungst (OGS)
P	Sam Spiegel (Mines Online)		Suzanne Beach (Payne)		Jen Gagne (Grad Admissions)		Valerie Holt (AES)
	Jon Johnson (Mines Online)		Atef Elsherbeni (EE)		Richard Krahenbuhl (GP)	P	Kristeen Serracino (AA)
P	Colin Schneider (RO)	P	Cadi Gillette (IGP)				

Special Guest(s): Jill Robertson, Doug Nychka, Peter Aaen

Welcome

Soutir Bandyopadhyay

Briefings and Information Items

Office of Graduate Studies/Registrar's Office/Financial Aid

4+1 Registration Level Guidance

Tim Barbari

No updates from OGS, but Tim gave an overview of the 4+1 agenda item. A few months ago, Lori Kester put together a working group to look at the combined programs since we are moving towards only counting the 500-level graduate courses for graduate credit. That working group included people from OGS, Financial Aid, Registrar's Office, CASA, and Admissions. Through that working group, we tried to find a solution space to optimize things for our combined students while ensuring we were compliant with federal guidelines that affect things like financial aid.

D. Scott Heath

The document provided to the council is the guidance that the working group is issuing for the combined students and undergraduate students who wish to take graduate level courses. Many of the changes that they are implementing are due to some financial aid regulations.

Jill Robertson

For the Federal Department of Education for financial aid, students are only categorized as undergraduate or graduate with a very distinct line. Undergraduate aid only includes the Federal Pell Grant, student loans, work study, institutional aid, and State aid and can only be applied to credit counting towards their undergraduate education. Therefore, the Department of Education is happy to provide funds for courses that apply toward the undergraduate degree because they want students moving along and graduating. However, undergraduate students that take graduate courses that want them to be applied toward their graduate transcript cannot be funded. For graduate students, graduate aid can only be applied to 500-level courses, not 200 or 300-level courses. However, the work group found a way for students to get their full funding and be able to make progress on their degree. They

realize there will be one offs here and there, but student feedback was that they understood it and are on board.

D. Scott Heath

The outline was created so that students will understand how they should be coding their courses and what they need to be taking to remain compliant for financial aid. It will allow students to change the level of their courses. If it is a 500-level course, they can change it to a graduate level course, or it can be applied toward their undergraduate degree. If a student is an undergraduate student or in a primary program, it will default to enroll them in the course at the undergraduate level so that is the guidance that we want to provide. If they change the course from a UG to a GR, they need to make sure they know that they are responsible for any changes to tuition or financial aid implications as Jill mentioned. As Tim had mentioned initially with the approved graduate credit policy change, the graduate transcripts need to display a minimum of 24 credits that are coded at the graduate level so that they can be awarded a 30-credit master's degree. This allows up to six credits of undergraduate courses that can be double counted. We will make comments on the graduate transcript to identify those credits that are displayed on the undergraduate transcript. And then, of course, all degree requirements that are outlined in their department in the catalog are still the requirements they will need to complete. The working group requested that MSNT programs develop an advising plan for their combined students so that we can identify which courses they should be taking while they are dually enrolled in the combined program. The advising plan should include which courses should be taken while students are undergraduates and which courses can be double counted. This will help students to keep to those advising plans and help the advisors in CASA and other departments tell the students what they should be taking. We are also going to limit undergraduates to complete a maximum of 12 credits of 500-level coursework. These will be coded at the graduate level prior to the BS being awarded so 50% of a graduate degree should be completed after the BS is awarded. Combined students can apply a maximum of six credits of 500-level coursework at the undergraduate level, but they must be enrolled in a graduate program prior to the bachelor's degree being awarded. This will serve as our definition of what a combined student is. They also must complete a minimum of 12 credits of graduate coursework after the BS has been awarded and cannot earn their bachelor's and master's in the same term. To get these courses to show up where they are supposed to, we do require them to fill out an override request. For example, an undergraduate taking a 500-level course would need to register for the class, determine if they want the course to be counted toward the graduate degree, and submit the 500-level form by the add/drop deadline so that we can process it and make sure any changes to financial aid or tuition are applied. We do not want to get in the business of processing these forms retroactively and/or changing them because that changes what financial aid eligibility they might have. The combined students that were admitted prior to this fall will be allowed to use the previously approved courses and catalog provision that was approved earlier in the year thing.

The working requested feedback from the Graduate Council on whether we should limit or restrict the ability to update the 500-level courses that juniors are able to enroll in or if we should prevent them from selecting them to be applied only to their graduate transcript. That is maybe something that you can take back to your departments to provide feedback. Currently, anyone with over 60 credits can take 500-level courses and then apply them to their graduate programs.

- **Question:** Lori asked for clarification on the six and 12 credits and how that overlaps with the financial aid issue.
- **Answer:** Scott clarified that there are semester requirements and career allowances. In a term, undergraduate students should be enrolled in a minimum of 12 undergraduate credits. They can be 500-level courses, but they must be applied to their undergraduate degree. Anything over 12

credits can be graduate level classes and they can still receive their financial aid. They can take a maximum of 12 credits of graduate coursework between those four semesters depending on whether they are admitted to the combined program. They could take three each semester, or they could take six in fall and spring and have those coded as GR towards their graduate degree.

- **Comment:** Tim added that the double counted courses count as undergraduate credit first and then those are double counted toward the graduate degree. Because they are counted towards meeting the undergraduate requirement first, they can receive aid for that course before it is being double counted and that is the six credits of 500-level that are coded as UG as the double counted courses. On top of those six, a combined student can take another 12 that are designated as GR because they are not going to meet any undergraduate requirement. That would be a total of 18, leaving just 12 left over to someone who could pack that all in before the BS is awarded.
- **Comment:** Lori commented that she found Tim's explanation very helpful and requested if that could put that somewhere in the document.
- **Comment:** Tim mentioned that the challenge is that these guidelines are not only for combined students but all students so it is difficult to separate what an undergraduate can do versus what a combined student can do.
- **Question:** Lori asked if it would be prudent to have categories for graduate students, undergraduate students, and combined?
- **Answer:** Tim referenced the three tables on the document which apply specifically to undergraduate students that are not in a combined program, combined students only, and graduate students only. He urged that because the tables were not extensively presented that councilors should review them. The tables will probably be more front and center for students, faculty, and advisors.

- **Question:** Yaoguo concurred with Lori that the way Tim worded the explanation was helpful and requested it be added to the document. He asked for clarification on the start of the combined program. It used to be that if a student was accepted into the master's program by the end of the semester before they graduate with their undergraduate degree, then they are considered to be in the combined program. This document says if they enroll in the last semester then they are in the combined program. Did anything change?
- **Answer:** Tim confirmed that it is the same. Students must be admitted into the combined program to take advantage of the double counting. To be admitted, they must have at least one semester in which they are dually enrolled. So, they must have at least one semester in which they are in both the BS as the primary program and master's degree as the secondary program. Once the BS is awarded, then the master's program becomes the primary program, so it is the overlap that is required to make the combined program meet HLC requirements.

- **Question:** Tina asked if Scott could elaborate on what he had in mind for the advising plan. Is that submitted somewhere?
- **Answer:** Tim mentioned that the advising plans are a proposed idea because a lot of students can get lost in the transition between their undergraduate and graduate advising. One way to try to clean it up the transition is to map it out and make sure students are clear on the double counting. The working group envisioned something where maybe it starts with CASA, but the CASA advisor and graduate advisor sign off on the plan before the student gets too far along to avoid having to make a lot of exceptions because of misadvising or confusion along the way. At other institutions, they have a plan of study to map out what the 4+1s look like so that there are

no surprises. It also identifies where the graduate courses might be and the students gets a heads up that if they take too much graduate level and do not meet the undergraduate financial aid requirement, then they know at the beginning that they may lose their qualification for a Pell grant or any other kind of undergraduate loan. We have had several cases of students being surprised that they are losing their financial aid because of the course selections they have made, so we want to make sure that students know as early as possible, and the plan of the study can help with that.

- **Comment:** Scott added that the cross-listed courses between 400- and 500-level will also help students know which 500-level courses to take so they do not take the 400-level version.
- **Question:** Tina asked who would be overseeing all of the advising plans to let students know what to take for financial aid reasons?
- **Answer:** Tim commented that this is an idea that is still a work in progress. Our focus is to make sure that students understand the ramifications of entering in the combined program, how their financial aid would be affected, and how the progression toward both degrees could be affected in terms of what they need to do to complete both. When students are admitted there is an advising hole. CASA is made up of undergraduate advisors, combined students are not fully graduate students, but graduate advisors need to know which courses students plan on double counting. The advising plans were mentioned to notate that they may be a better solution to what Mines currently does, which is have students complete a form.

- **Question:** Soutir asked once approved, will this be part of the catalog?

- **Answer:** Tim answered that a lot of this in its current form sits on the OGS website. OGS typically refers students to the website, and advisors know that it exists, so it will live there since it is wordy and contains all the tables.

- **Question:** Yaoguo brought up that Scott mentioned bringing this back to respective faculty for comments/feedback. Is the document ready for review and input?

- **Answer:** Tim clarified that Scott was asking for feedback only on the aspect of students can apply to the combined program once 60 credits are completed. It is preferred that students apply as early as possible from an advising perspective so that means that students with a junior standing are allowed to take a 500-level course. Some universities do not mind the application being early, but they might limit the 500-level courses to senior standing at 90 credits. The working group asked for feedback on the 60-credit vs 90-credit issues in terms of being able to take a 500-level course.

Graduate Student Government

Rena Zhu

Last night, GSG and USG participated in a four-hour long city council meeting about a ditch that Mines is trying to move. GSG attended to support Mines. The city of Golden approved it so Rena shared a few details as they might be relevant to the council.

Rena requested to resume the discussion on vacation/leave policy for graduate students. Since the last discussion, OGS has researched other universities that have similar policies and what they have done. None of them specify a policy on leave. Some have a policy when it comes to sick leave because of health reasons, but none of them have a vacation policy. GSG recommended that faculties have a certain number of hours for their graduate students to have time away from campus in addition to the

13 days that students have due to university holidays that are indicated on the academic calendar. Also, GSG requested that a statement about leave be listed separately from the advisor/advisee agreement which Graduate Council voted on previously. Currently, there is a short sentence in the agreement that says if a graduate student wants time off, the advisor and advisee are expected to communicate with each other about it.

Jenny Briggs

After reviewing the relevant policies found at other universities versus what we have at Mines with Rena and Tim, Jenny mentioned that Mines does not have anything stated regarding sick leave policy for graduate RA/TA employees. Other universities have a clear sick leave policy stated for their graduate student employees, so she suggested that Mines do that same and have a clear definition of what sick leave policies are in place for those types of employees. Jenny agreed with Rena that the only illusion at Mines to graduate employee time off other than sick leave is only found in the advisor/advisee agreement that Graduate Council approved in 2022 (please see below), but is framed more as a suggestion. It is posted on the Professional Development Education webpage and linked from the OGS assistantship policies, but it is not highly accessible or widely known. She requested input from the councilor to find out how many faculty in their departments use the advisor/advisee agreement.

Vacation/Time Off

All Mines students and employees receive time off during official university holidays. Additional time off should also be taken throughout the year, and the advisee should make their requests for time off to their advisor. Prior to joining a lab, the advisee should discuss with their potential advisor the expectations for vacation time per year and the process by which to request time off.

- **Comment:** Tina commented that other employees pay into a benefit pool and earn sick leave, but graduate student contracts do not work that way. She agreed that the advisor/advisee agreement is by no means an official thing. When it was discussed in Graduate Council before, it passed more as a recommendation but there was no agreement about it being official.
- **Comment:** Soutir agreed that Graduate Council can always share recommendations, but not be send out any official policy or rule.
- **Comment:** Tim commented that Mines is required by law to give graduate students sick leave.
- **Question:** Rena asked how many hours of sick leave is required to be given to graduate students?
- **Answer:** Tim answered that to his understanding, graduate students can accrue sick leave just like any other employee. It is on the HR website somewhere.
- **Comment:** Jenny mentioned that wording around sick leave hours is buried on the HR website and is also outdated (drafted for COVID protocol). She mentioned that there are only a few places where information can be readily found about these topics. She urged that now is a good time to make sure that the information is collected and made more visible and accessible and clear. Before Jenny and Tim began in OGS, there was not a centralized graduate contract digital system like now so some things are viewed as HR will handle these or MAPS will track sick leave. Since OGS now oversees contracts, they need to provide relevant links on the graduate assistantships policies webpage. Case-by-case decisions around vacation allowance would still be in the realm of the advisor/advisee to determine.
- **Comment:** Rena shared that when I was an employee working part-time at Mines, she completed a time sheet and had a balance of sick leave. Since becoming a graduate student, she

professional Master's degrees under the names of Data Science, Big Data Analytics, and similar names; many other engineers work with data but may not formally have the job title of data scientist.

These areas are of great interest to working professionals electrical engineers in local industry and at the national level. Such offerings will increase the enrollment of non-traditional students and will increase the number of non-thesis MS students.

This certificate is being offered as an online certificate.

: MICROWAVE ENGINEERING

The field of radio frequency (RF) and microwave engineering is extremely rich in technical content and high in demand in industry, national laboratories, and the military. Unfortunately, despite that the market is actively looking for qualified candidates, not many electrical engineers graduate with a good knowledge and understanding in this area.

RF and microwave engineering is a mature field that draws upon multiple disciplines, and as such, generally courses in this area are offered as senior level electives in an undergraduate electrical engineering (EE) curriculum, and typically without laboratory sessions. Continued growth in the mobile telecommunications market (5G), space-based internet, internet-of-things (IoT), quantum engineering, and increased growth in the semiconductor market (due to the CHIPS act) all require more qualified engineers. This combined with the fact that engineering design is now heavily dependent on computer-aided design (CAD) significantly limits the practical ability of the students in this area.

In response to these workforce challenges, microwave engineering has become a major focus for industry and to bridge this gap between workforce needs and EE education we propose a new online certificate in Microwave Engineering.

This certificate will focus on theoretical aspects of microwave devices, networks, and systems, design and optimization of modern microwave devices, CAD, fabrication technologies, and device and system measurement techniques. This certificate offering is designed to leverage our existing strengths in the Electrical Engineering department and to serve the industries, particularly those in the Denver metropolitan area that deal with RF and microwave devices and systems.

This certificate is being offered as an online-certificate.

: POWER AND ENERGY SYSTEMS

The Future Electric Grid will be smart, with user-interaction, bidirectional power flow because a deep penetration of renewable energy resources will allow electrical power flow among users and the grid. Therefore, system-level dynamics and control need an advanced and high-tech understanding. Students in this Certificate Program will learn about the combined power system and power electronics approach, where enabled renewable energy systems, will interact with the utility grid, establishing microgrids, and intelligence and data communication will make the future grid a Smart-Grid.

These areas are of great interest to working professionals in local industry and at the national level. Such offerings will increase the enrollment of non-traditional students and will increase the number of non-thesis MS students.

This certificate is being offered as an online certificate.

- **Question:** Owen mentioned there was a discussion earlier with Peter but prompted Graduate Council so they can go back to their own departments. Are the faculty who are making these courses receiving royalties? He recently found out the Arizona State University, which has a large online program, has started selling courses and its content to other universities without any enumeration to the faculty who created the content. The way Mines is set up and after discussing this with a few department heads, legality was questioned. They are under the impression that they own all the copyright for these online courses which means they can sell it to say, a textbook manufacturer, who can then sell it across the country without any royalties paid to the faculty.
- **Answer:** Peter mentioned the EE department is bound by Mines Online and the boundary conditions that they are putting in place. Academics get a course release to develop the material, or they get paid a bonus structure (for example, if they do a course in the summer). Beyond that, he acknowledged Owen's concern as important, but mentioned that he is not in a position of power where he can change the IP on how the program will be run. He urged the council that if they feel strongly about this matter to arrange a discussion with Mines Online and Legal so that these issues can be resolved for the good of all faculty.
- **Comment:** Soutir mentioned this might be a discussion for Faculty Senate when it is presented to them after the council vote. He requested Owen to write a short paragraph to share with Brandon and the Faculty Senate.

MOTION: The motion to approve the professional online master's in electrical engineering and certificate was moved by Yamuna and seconded by Lori. The motion to approve the professional online master's in electrical engineering program was approved with 15 approved, 0 opposed, and 1 abstention.

1 new course:

[CIM 2/12; PROVOST 2/12]

EENG510: ADVANCED DIGITAL SIGNAL PROCESSING

New Advanced DSP class for new online graduate certificate in Information and System Sciences.

MOTION: The motion to approve the EENG510 new course was moved by Tina and seconded by Lori. The motion to approve the EENG510 new course was approved with 15 approved, 0 opposed, and 1 abstention.

1.3

COMPUTER SCIENCE

Dong Chen

1 program change:

[CIM 1/18]

MSPHD-CS: MS & PHD IN COMPUTER SCIENCE

CSCI406 and CSCI442 are being taken out of the core course requirements for the MS and PhD so we are abiding by the HLC guidelines. Changing combined program minimum GPA to 3.0

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

- 3.1 CEE**
10 course change:
[CIM 2/22]
Minor change.
- CEEN501: LIFE CYCLE ASSESSMENT
- Minor change.*
- CEEN505: NUMERICAL METHODS FOR ENGINEERS
- Minor change.*
- CEEN506: FINITE ELEMENT METHODS FOR ENGINEERS
- Minor change.*
- CEEN510: ADVANCED SOIL MECHANICS
- Minor change.*
- CEEN511: UNSATURATED SOIL MECHANICS
- Minor change.*
- CEEN550: PRINCIPLES OF ENVIRONMENTAL CHEMISTRY
- Minor change.*
- CEEN556: MINING AND THE ENVIRONMENT
- Minor change.*
- CEEN570: WATER AND WASTEWATER TREATMENT
- Minor change.*
- CEEN575: HAZARDOUS WASTE SITE REMEDIATION
- Minor change.*
- CEEN580: CHEMICAL FATE AND TRANSPORT IN THE ENVIRONMENT

- 3.2 AMS**
9 course deactivations:
[CIM 2/22]
- This course is not offered and will not be offered again.*
- We do not teach this anymore, and we don't anticipate teaching it again.*
- We do not teach this anymore, and we don't anticipate teaching it again.*
- Samy Wu Fung
- MATH502: REAL AND ABSTRACT ANALYSIS
- MATH542: SIMULATION
- MATH544: ADVANCED COMPUTER GRAPHICS

MATH556: MODELING WITH SYMBOLIC SOFTWARE

This course is not offered and will not be offered again.

MATH574: THEORY OF CRYPTOGRAPHY

We do not teach this anymore, and we don't anticipate teaching it again.

MATH610: ADVANCED TOPICS IN DIFFERENTIAL EQUATIONS

This course is not offered and will not be offered again.

MATH614: ADVANCED TOPICS IN APPLIED MATHEMATICS

This course is not offered and will not be offered again.

MATH616: INTRODUCTION TO MULTI-DIMENSIONAL SEISMIC INVERSION

This course is not offered and will not be offered again.

MATH650: ADVANCED TOPICS IN NUMERICAL ANALYSIS

We do not teach this anymore, and we don't anticipate teaching it again.

3.3

CHEMISTRY

Tina Voelker

[CIM 2/28]

2 new courses:

CHGN529: BIOCHEMISTRY II

Creating a 500-level version of an existing 400-level course (CHGN429 Biochemistry II) with additional requirements to satisfy HLC best practices. All details of the course are available in the CHGN429 course proposal.

CHGN545: CHEMICAL BIOLOGY

Creating a 500-level version of an existing 400-level course (CHGN445 Chemical Biology) with additional requirements to satisfy HLC best practices. All details of the course are available in the CHGN445 course proposal.

2 course changes:

CHGN560: GRADUATE SEMINAR, M.S.

Clarification of seminar registration requirements and addition of prerequisites that student must be MS/PhD student in chemistry to register.

CHGN660: GRADUATE SEMINAR, PH.D.

Clarification of registration requirements.

1 program change:

MSPHD-ACS: MS & PHD IN CHEMISTRY AND APPLIED CHEMISTRY

Minor changes to clarify seminar registration requirements, to clarify that students cannot count more than one credit of CHGN 560 and CHGN 660 towards their coursework requirements, to clarify that coursework for the research-intensive MS degree must be chemistry-focused, and to highlight our new dual degree option with University of Bordeaux.

4.1

Approval of Minutes – February 21, 2024

Soutir Bandyopadhyay