Colorado School of Mines – GRADUATE COUNCIL MEETING MINUTES
October 16, 2024, 4:00 – 5:00 pm, via Zoom

Attendees:

Voting Members: 22 total (14 - majority needed for quorum). Quorum was present.

P	John Spear (Chair)	P	Danielle Ostendorf (LB)	P	Andy Osborne (NSE)	P	Kip Findley (MME)
	Ian Lange (EB)	P	Bettina Voelker (CH)		Jaeheon Lee (MN)	P	Uwe Greife (PH)
P	Jeff Shragge (GP)	P	Ebru Bozdag (EDS)	P	Adrienne Marshall (HSE)	P	Pejman Tahmasebi (PE)
P	Mehmet Belviranli (CS)	P	Adrianne C. Kroepsch (HASS)	P	Ryan Venturelli (GE)		Jim Ranville (GC)
P	Lori Tunstall (CEE)	P	Nikki Farnsworth (CBE)	P	Kathleen Tomon (GSG)		
P	Rajavasanth Rajasegar	P	Yamuna Phal (EE)		Samy Wu Fung (AMS)		

Other Regular Attendees and Guests

	Carl Frick (OGS)		Carolyn Freedman (OGS)	P	Jenny Briggs (OGS)		Roxane Aungst (OGS)
	Wendy Adams (HNRS)	P	D. Scott Heath (RO)	P	Paul Myskiw (RO)		Colin Schneider (RO)
	Sam Spiegel (Mines Online)		Suzanne Beach (Payne)	P	Kristeen Serracino (AA)		Richard Krahenbuhl (GP)
P	Jon Johnson (Mines Online)		Peter Concepcion (Grad Admissions)		Luke Contreras (Grad Admissions)		Kelsie Diaz (CS)
P	Cadi Gillette (IGP)		Rachel McDonald (IGP)				

Special Guest(s): Wendy Fisher, Iris Bahar,

Welcome John Spear

The vote to switch to in-person Graduate Council meetings was presented during the previous meeting. J. Spear is working with K. Serracino to get a location for next semester. More details to come.

Briefings and Information Items

Office of Graduate Studies Carl Frick

No discussion at this time.

Registrar's Office Paul Myskiw

The announcement from the CIO was sent via email today regarding the SaaS migration scheduled for the last week of October. There will be some downtime of applications which will be minimized as much as possible. Canvas is not included in one of the applications that will have downtime so it will have limited interruptions.

- **Question:** J. Spear asked are there any worries regarding undergraduate or gradate applications during the downtime or any additional concerns?
- **Answer:** P. Myskiw answered that this will be a significant transition from On Prem to the Cloud so there is always a concern. There is never a good time to do this as there is never a downtime at Mines. The main focus will be to respond quickly and remedy any issues that arise.
- **Question:** U. Greife asked if this specific time was selected because it will have the least impact?
- **Answer:** P. Myskiw answered yes. This transition has been planned for the past 14 months and this time frame is the best. Trial runs have been run three times to help prepare.
- **Question:** K. Tomon added that in the communication, it was not super clear as to what Banner features will go away. Will there be additional communication going out with more detail?
- **Answer:** P. Myskiw answered yes, more communication will come out via email and in the Daily Blast to provide additional information about what's coming, what is changing, and what is not changing. Advisors will be communicating this to students as well.

Graduate Student Government Kathleen Tomon

GRADS is scheduled for April 1-2 and will be in the Student Center Ballrooms. If there are colleagues in the area who would like to interact with students or participate as a judge, please reach out to GSG. A sign-up form will be distributed in the Spring. GSG is re-launching the Future Faculty program which serves as a way for grad students interested in academia to receive information on the process. GSG is hoping to get faculty advisement and encourages anyone to participate, provide recommendations, etc.

- **Question:** L. Tunstall asked if the announcement seeking GRADS judges could be re-sent.
- **Answer:** K. Tomon answered that GSG will confirm if any announcements have been sent out. Communication is usually sent out in early Spring.
- **Comment:** J. Spear suggested that all councils, Faculty Senate, and OGS should think more on how to continue to propagate good students going forward especially those interested in academia.

New Business

1.1 **CS** Wendy Fisher/ Mehmet Belviranli

[CIM 10/9]

1 new program: PROFESSIONAL MASTER'S DEGREE IN COMPUTER SCIENCE

In Fall 2023, President Johnson and Provost Holz requested that the Computer Science department expedite the development of an online professional master's degree. This degree, along with its associated certificates and similar offerings from other departments—such as Electrical Engineering, Economics and Business, Mathematics, and Mechanical Engineering—aligns with Mines' core objective to increase the number of non-thesis master's students. Our goal is to enroll between 1,500 and 2,000 students across the online master's programs, with profits from these initiatives being reinvested into graduate programs across the institution.

The areas addressed by our online program are highly relevant to professionals in computing or a related field and various disciplines within the local and national industries. This professional master's degree is fully online, allowing students to earn three certificates as they advance through their coursework.

The primary target audience for this online program includes post-graduate professionals, particularly those pursuing a certificate or professional master's degree in computer science, such as recent graduates or mid-career professionals with academic backgrounds in computer science, data science, applied sciences, or related fields. While some students may choose to pursue a single certificate, we propose a flexible pathway for those interested in completing a full master's degree through a stacking model of certificates, complemented by an additional extra elective course. Our curriculum includes several courses focused on key areas such as machine learning, cybersecurity, business and product management, web applications, and software technologies. This program offers working professionals a valuable opportunity to deepen their knowledge in computer science while exploring a diverse range of sub-disciplines.

The landscape of computer science (CS) in both industry and academia is rapidly evolving, with a growing demand for professionals who possess advanced technical skills and a deep understanding of computational methodologies. As technology continues to permeate every sector, from healthcare to finance, the need for highly qualified computer scientists has never been greater. However, for many working professionals, the pursuit of a traditional, on-campus master's degree is often impractical due to time constraints, geographical limitations, and financial considerations.

To address these challenges and make post-graduate education more accessible to a broader range of working professionals, we propose the launch of an online professional master's non-thesis program in computer science. This program is designed with flexibility and accessibility at its core, enabling students to balance their education with professional and personal commitments. By offering coursework entirely online, students from across the country—and even globally—can engage with the same high-quality education that the Colorado School of Mines is renowned for, without the need to relocate or put their careers on hold.

Students must have a base-level programming knowledge and the following prerequisite courses or equivalent knowledge (like getting a minor in CS):

CSCI 200: Foundational Programming Concepts & Design
CSCI 210: Systems Programming
CSCI 220: Data Structures & Algorithms
CSCI 306: Software Engineering
CSCI 341: Computer Organization
CSCI 358: Discrete Mathematics

If the applicant lacks this preparation, we recommend the student enroll in our CS@Mines Bridge program. Years of professional experience may be substituted for prerequisite courses.

- **Question:** J. Spear asked how do the courses stack and fit into what the students will get?
- **Answer:** W. Fisher answered students will get a skill set in computing. Each certificate is nine credit hours. The program consists of three stackable certificates plus one additional course to be the 30-credit hour professional master's degree.
- **Comment:** D. Ostendorf added this proposal has N/A for the Library section. When proposing a new program, this is a great opportunity for the department to add any journals, databases, or books that may be needed and can be provided by the Library.
- **Question:** K. Tomon asked about the bridge program which is six additional courses. How do you see this program still being successful if the additional courses add additional time to the degree?
- **Answer:** W. Fisher answered that the bridge program is in place because of the goal of the CS department to make computer science accessible to everyone. There has been three previous bridge cohorts that have been successful. Some of these courses are offered in the summer, 100% online with the goal of having all bridge courses available online and at an accelerated rate. The courses are necessary to ensure that students possess the skills, competencies, and knowledge to be successful in the program. There is individual advising for all bridge students.

However, the courses do lengthen the students' stay, which could have an impact. I. Bahar added that once the professional master's degree is launched, there may be some flexibility implemented to appeal more to the students who do not have a programming background.

- **Question:** U. Greife asked about Discrete Math, which is listed as a pre-requisite, but it has all three Calculus courses as pre-requisites. Could a non-CS major handle this course?
- **Answer:** I. Bahar answered that Discrete Math no longer requires Calc III. However, it is not unreasonable to expect non-CS majors to have some Calculus knowledge before starting the program. W. Fisher added that bridge students are typically advised to have a level of mathematical maturity in order to achieve a higher level of success in the program.
- **Question:** A. Kroepsch asked what happened with the per credit graduate tuition? Is that still happening?
- **Answer:** J. Briggs answered that the per-credit tuition model was paused last year and will be paused indefinitely. C. Frick may have more information that he can share in a future meeting.
- **Question:** K. Findley asked is there a marketing plan to go along with the program proposal? Will this be available for current graduate students at Mines?
- **Answer:** W. Fisher answered Marketing & Communication has identified some priority programs to market. CS is included in these programs that will utilize various social media outlets, landing pages, and flyers and will be listed under Mines Online. In addition, the department has talked with a panel of industry experts to discuss what the industry is looking for and how this program fits into the market. I. Bahar added that CS has emphasized the need to get a marketing and advertisement plan out soon, ideally in January. CS is also working with industrial affiliates to assist in getting the word out about the new program. Currently, every developed online course is available to resident students. CS will try different approaches to manage the faculty teaching load and online vs residential students.
- **Question:** U. Greife asked what credit does the instructor get teaching both the online and residential version of these courses? Has this mode of instruction been reviewed by the Faculty Senate? Do online students listen to residential lectures?
- **Answer:** I. Bahar answered it is considered one teaching assignment. Lectures are all recorded which are available to online students. The online and residential courses are asynchronous. From a workload perspective, Faculty Senate has not reviewed this yet.
- **Question:** K. Tomon asked how are the courses structured if taught by different instructors?
- **Answer:** W. Fisher answered there will be a responsible faculty that manages the learning outcomes and materials. The online courses are heavy monitored by the Online Learning Center so if there are major updates, it must go through a new quality review process. The goal is to have the courses set up so that anyone can step in and teach them.
    - **Question:** J. Spear asked will whoever is stepping in to teach the course have to re-record the course materials for online delivery?
    - **Answer:** W. Fisher answered that anyone stepping in would record their own introduction video. The responsible faculty will also record their own introduction video as the instructor of record. For CS, the responsible faculty voices all lectures.

Continued Business

2.1 **UCTE** Lori Tunstall
[CIM 9/18]
2 program changes: MSPHD-UEEG: MS & PHD IN UNDERGROUND CONSTRUCTION AND TUNNELING

ENGINEERING

Replace MNGN509 with CEEN532 in the required course list.

XCRTG-UCTE: GRADUATE CERTIFICATE IN UNDERGROUND CONSTRUCTION AND TUNNEL ENGINEERING

Replace MNGN509 with CEEN532 in the required course list.

The proposed changes are addressing the following issue – the MNGN course was required for UCTE but was not regularly offered. As a result, MN developed their own course to control the frequency of offering and tailor the course to be more specific to their application.

MOTION: The motion to approve the UCTE program changes was moved by R. Venturelli and seconded by K. Findley. The motion to approve the UCTE program changes was unanimously approved with zero opposition and zero abstentions.

2.2 **CEE** Lori Tunstall

[CIM 9/20; Provost 9/20]

1 new course: CEEN585L: INTRODUCTION TO COMPUTATIONAL METHODS IN HYDROLOGY

All undergraduates now take a computer course to advance the Mines@150 goals. In a similar way, this class introduces new graduate students in the HSE program to concepts of computational hydrology, using Matlab and Python platforms, and parallel environments MPI and OpenMP. All projects enhance the students' ability to code basic problems germane to hydrology.

Over the last two years, several graduate students outside of HSE (including GP, CEEN and GEGN) have taken the class for computer skills. I anticipate that this will continue and grow as the course becomes more well-known.

2.3 **GE**

[CIM 9/20; Provost 9/20]

1 new course: GEGN585L: INTRODUCTION TO COMPUTATION METHODS IN HYDROLOGY

All undergraduates now take a computer course to advance the Mines@150 goals. In a similar way, this class introduces new graduate students in the HSE program to concepts of computational hydrology, using Matlab and Python platforms, and parallel environments MPI and OpenMP. All projects enhance the students' ability to code basic problems germane to hydrology.

Over the last two years, several graduate students outside of HSE (including GP, CEEN and GEGN) have taken the class for computer skills. I anticipate that this will continue and grow as the course becomes more well-known.

The lab course proposals will supplement the existing cross-listed course between Geology and Civil Engineering. The lab portion will provide incoming students with new concepts in computational hydrology using Matlab and Python to bring students up to speed with their coding skills so that they can succeed in this course and help students who did not attend Mines as an undergraduate student and come from a less computational background.

- **Question:** J. Spear asked do we need to think about expanding our computational tools? Will there be more faculty coverage for this course?
- **Answer:** A. Marshall answered that this is an ongoing discussion in hydrology as students are getting a combination of R, Python, and Matlab. There has been discussion about whether to use a singular tool or continue to expose students to various languages. R. Venturelli answered the current professor was on Sabbatical last semester and this course was covered by an adjunct. There is intention to bring in non-adjunct coverage for this course as there are new rules around when departments can hire adjuncts.
- **Question:** L. Tunstall asked can more detail be provided on the new rules on adjunct hiring?
- **Answer:** R. Venturelli answered that hiring adjuncts is being disincentivized so that course coverage can be spread among existing tenure track faculty or teaching faculty. J. Spear added that cost is a factor in this as well as the question if Mines has in-house capability with graduate students being instructors of record. J. Briggs added this is part of the Graduate Teaching Fellowship. The salary for this role is higher than that of a graduate TA and entails being the instructor of record for a course with a higher level of responsibility. It is still mentored/overseen by a full-time faculty member or department head and there is a thorough approval process through OGS to ensure that the most advanced and experienced graduate students are teaching courses.

MOTION: The motion to approve the CEEN585L and GEGN585L courses was moved by U. Greife and seconded by A. Marshall. The motion to approve the CEEN585L and GEGN585L course was unanimously approved with zero opposition and zero abstentions.

4:45-4:50 pm **Adjourn** John Spear

Next meeting:

November 6, 4:00-5:00 pm via Zoom. Please send all agenda items to John Spear (jspear@mines.edu) or Kristeen Serracino (kristeen.serracino@mines.edu) 1 week in advance.

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 **Approval of Previous Minutes** – October 2, 2024 John Spear