Colorado School of Mines – GRADUATE COUNCIL MEETING AGENDA

February 7, 2024, 4:00 – 5:00 pm, via Zoom

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**Attendees:**

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

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| --- | --- | --- | --- | --- | --- | --- | --- |
| P | Soutir Bandyopadhyay (Chair) | P | Danielle Ostendorf (LB) | P | Andy Osborne (NSE) | P | Owen Hildreth (ME) |
| P | Adrienne Marshall (HSE) | P | Bettina Voelker (CH) | P | Jaeheon Lee (MN) |  | Jared Carbone (EB) |
| P | Yaoguo Li (GP) | P | Juan Lucena (EDS) | P | Jim Ranville (GC) | P | Pejman Tahmasebi (PE) |
| P | Suveen Mathaudhu (MME) | P | Nikki Farnsworth (CBE) | P | Ryan Venturelli (GE) |  | Dong Chen (CS) |
| P | Adrianne C. Kroepsch (HASS) | P | Yamuna Phal (EE) | P | Rena Zhu (GSG) | P | Samy Wu Fung (AMS) |
|  |  | P | Lori Tunstall (CEE) |  | 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) |  | D. Scott Heath (RO) | P | Paul Myskiw (RO) |  | Roxane Aungst (OGS) |
|  | 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) |
|  | Colin Schneider (RO) |  |  |  |  |  |  |

**Special Guest(s):** Sabina Schill, Angel Abbud-Madrid, Doug Nychka, Wendy Winter-Searcy, Cadi Gillette, Rob Braun,

**Welcome** Soutir Bandyopadhyay

**Briefings and Information Items**

*Office of Graduate Studies* Tim Barbari

I want to encourage you to complete the survey that was sent out on Tuesday morning about tuition and how it’s charged if we go to a per-credit model. We reached a point where the working group decided that we need to hear from faculty in terms of what the impact could be.

**Question:** Are you planning on doing something different with current students, or would you grandfather the old tuition structure for everyone who has bought into it?

**Answer:** If a student “paid into the system” into the other model, there is going to be a transition plan. We want to figure out what the new model will look like before we figure out what the transition plan is. Obviously, anyone who has reduced registration would still get that tuition rate. The model will only affect everyone who starts in Fall 2024 and then anybody who is on reduced registration currently is already grandfathered in. It is those in the 1-3 years phase where we must figure out what that looks like with the goal that it would not cost extra.

*Registrar’s Office* Paul Myskiw

Registration for the fall semester is just around the corner. It will begin on April 1st. Just a reminder, we will be pushing things through, courses and programs, into the new catalog until the end of the semester.

*Graduate Student Government* Rena Zhu

No updates this week.

**Continued Business**

**1.2 CSED** Sabina Schill

[CIM 12/12; Provost 12/12]

**4 new courses:**

CSED530: COMPUTER SCIENCE PRACTICES AND

TECHNOLOGICAL IMPACTS ON SOCIETY

*Providing Computer Science Teacher Education aligns with Mines@150 goals to produce differentiated and highly desired STEM education leaders and to become a leader in educating STEM students and professionals. Computer Science (CS) professionals are the most needed STEM professional in the workplace. Engineers, scientists, and mathematicians who know CS will be able to provide more effective expertise. Currently, Mines leads in Colorado innovatively providing needed pre-service teacher training for CS teacher educators. CS teachers with Mines degrees will be more likely to encourage students to attend Mines, creating a pipeline of students for the second most popular degree at Mines, CS. The proposed course will assist future CS teachers and engineers applying CS to understand the ethical implications of optimal and poor code. Students will also develop strategies to include ethical discussions in the software or engineering design cycle, as well as teach K-12 students CS professional practices and ethics. This is a residential course, meeting in-person 3 times each week.*

CSED535: COMPUTER SCIENCE TEACHING

TECHNIQUES

*As a new pre-service Teach@Mines course for master’s students, CS Teaching Techniques aligns with Mines@150 plans regarding being an innovative STEM education leader, top of mind university, developing graduates who will have a profound and innovative impact on society. Currently, Mines offers the only CS undergraduate pre-service teacher licensure program in Colorado and one of the only programs nationally. In Colorado and nationally, an estimated 40 – 60% of all K-12 students have access to CS education. Our CS majors who pursue a Teaching minor with a focus on CS will be able to earn CS teaching licensure and also be academically qualified to teach K-12 math, science, and engineering.  
This is a residential course, meeting in-person 1 time each week.*

CSED564: CAPSTONE CURRICULUM DESIGN I –

PRACTICUM

*Creating an opportunity for Mines students to become highly-qualified science, engineering, math, computer science or STEM teachers lies at the heart of the Mines@150 goals. Bringing students with technical backgrounds into our local classrooms allows these students to share their passion in a way that meets societal needs and at the same time builds their leadership and communication skills. Providing an option for Mines students to pursue teaching as a career will increase retention and recruitment, both by bringing in and retaining those who decide they want to teach as well as by placing informed Mines ambassadors into K-12 classrooms. Additionally, these courses are attractive to career changers who are looking to transition from technical careers into the teaching profession. This course is mixed face-to-face so that students may experience the classroom firsthand but can engage with their Mines’ instructor virtually.*

CSED565: CAPSTONE CURRICULUM DESIGN II –

STUDENT TEACHING

*Creating an opportunity for Mines students to become highly-qualified science, engineering, math, computer science or STEM teachers lies at the heart of the Mines@150 goals. Bringing students with technical backgrounds into our local classrooms allows these students to share their passion in a way that meets societal needs and at the same time builds their leadership and communication skills. Providing an option for Mines students to pursue teaching as a career will increase retention and recruitment, both by bringing in and retaining those who decide they want to teach as well as by placing informed Mines ambassadors into K-12 classrooms. Additionally, these courses are attractive to career changers who are looking to transition from technical careers into the teaching profession. This course is mixed face-to-face so that students may experience the classroom firsthand but engage with their Mines’ instructor virtually.*

**Question:** Is there a prerequisite for CSED530. We have a data science track for CS that I feel would be a great addition for our students but want to be sure there are no prerequisites that these students run into.

**Answer:** The prerequisites for the course are CSCI128 or CSCI101/102 or CSCI200 or CSCI220.

**1.3 MAED** Sabina Schill

[CIM 12/12]

**1 course deactivation:** MAED535: COMPUTER SCIENCE

TEACHING TECHNIQUES

*We are also proposing some new Computer Science Education (CSED) courses that are currently being taught under the Math Science Education (MAED) course prefix. We are simply aiming to separate Computer Science from Math via a new course code prefix.*

With Teach@Mines, we are introducing these courses with new course codes to provide more clarity to students to take courses specific to their licensure that we offer at Mines.

**1.4 CCUS**  Erik Menke

[CIM 11/16; Provost 11/16]

**1 new course:** CCUS598: CLASS VI WELL DESIGN AND

PERMITTING

*This course is an addition to the CCUS graduate certificate program. As the CCUS certificate program has expanded into a potential stacked certificate or ultimately a master’s degree, additional course content is needed. This course focuses on the development of Class VI wells used in CCUS projects. The course is being added as a request of the CCUS team to expand topics in the well construction area.*

This is an addition to the CCUS graduate program. The faculty as well as external people thought it would be a strong and valuable course for students.

[CIM 11/30]

**2 course changes:** CCUS525: BIOLOGICAL CARBON CAPTURE

AND CONVERSION

*Added pre-requisites to course after discussion with Tina Voelker.*

CCUS530: THE KINETICS OF CARBON DIOXIDE

REACTIONS

*Added pre-requisites to course after discussion with Tina Voelker.*

These will need to be changed in CIM as new courses CCUS525 and CCUS530 because that will change as they are presented. We will continue to discuss it at the next Graduate Council meeting.

**1.5 AMS** Doug Nychka[CIM 11/21]

**1 course change:**  DSCI530: STATISTICAL METHODS I

*Changing the prerequisite requirement to the correct level of probability knowledge to succeed in this course. Updating the course description to reflect the course content more fully.*

We would like to require the Mines semester course in Probability (MATH334). We are also willing to take equivalent courses taken elsewhere, however, we wanted to make this explicit because we are getting a lot of students who feel like they have taken a Statistics and Probability class, but it does not cover Probability at the level that we need. We do not require a course in Statistics because we feel that DSCI530 will take care of that. In the course, the first module is called Review of Probability with lots of assignments and quizzes. We have found that a lot of students will drop after this first module because they think that they cannot keep up with the class due to not having the required Probability knowledge. If a student is taking 530 in the last 8 weeks, we allow them to enroll in the 16-233k MATH334 with the idea that by the time the 8-week 530 course starts, they will have enough probability to be up to speed.

**Question:** Is this prerequisite intended for undergraduates?

**Answer:** Yes. We would also require it there. 530 does not have a 430 companion so this is a full-on graduate course.

**Question**: Is this course in-person or online only?

**Answer:** This is currently only taught online. If we offer in-person, it will have the same prerequisites.

**1.6 CEE** Lori Tunstall

**3 new courses:**

[CIM 12/8; Provost 12/9] CEEN548: STRUCTURAL LOADS

*Structural Engineers will learn about various loads and how they are applied to buildings. Many graduate students took "CEEN446: Structural Loads" as part of their degree requirements. A graduate level course is proposed that builds off this undergraduate offering.*

This course is to accommodate the switch of not being able to take 400-level courses for graduate level requirements. The course has been adapted with some changes to offer it as cross-listed with 448.

[CIM 1/10; Provost 1/10] CEEN549: INTRODUCTION TO THE

SEISMIC DESIGN OF STRUCTURES

*Mines needs to have a viable MS program in structural engineering. This class will be cross listed with CEEN 441, which has the same name. Originally, graduate students could take CEEN441 to count towards their MS and PhD degree, but now that is not allowed. Thus, this class needs to have a 5XX level cross- listing component.*

[CIM 12/8; Provost 12/13] CEEN532: UNDERGROUND INFRASTRUCTURE

CONSTRUCTION MANAGEMENT

*This course (delivered twice as CEEN598) is the third course in the Underground Construction and Tunnel Engineering Graduate Certificate Program. It is targeted to reach and connect Mines to working professionals through an online environment. The course will be offered Online. The course was initially developed and approved in 2021 as CEEN598; it was previously offered in Fall 2021 and Spring 2023.*

**3 course changes:**

[CIM 11/17]CEEN542: DESIGN OF WOOD STRUCTURES

*Faculty decided to split wood and masonry design in order to cover more advanced wood design topics. There is a new faculty who will teach a new masonry design class.*

There will be no overlap with any other department except CEE, and the faculty has already approved this.

[CIM 12/8] CEEN582: VADOSE ZONE HYDROLOGY

*We are replacing an old, deactivated listing with this new course. Vadose Zone Hydrology provides the fundamental scientific principles governing hydrological processes in the earth’s shallow subsurface environment. These principles will prepare graduate students for the needed life-long knowledge for advancing new knowledge and innovative solutions encountered in managing sustainable natural and built environment.*

This course used to be offered in geology but has not been taught for over a decade, and the faculty has sent left. It was discussed that we should open this course for our CE students as well as environment and hydrology students.

[CIM 12/11] CEEN591: EROSION CONTROL AND LAND

RESTORATION

*Replacing an old, deactivated listing to add grad level cross-listed course with CEEN491.*

**1.7 QBE** Nikki Farnsworth

[CIM 1/10]

**1 program change:** MSPHD-IBIO: MS & PHD IN

QUANTITATIVE BIOSCIENCES AND

ENGINEERING

*The QBE department was unable to find an instructor for BIOL501 the students were told to  
register for physical biochemistry CHGN 598B. After a staff meeting, the department has  
decided to make this a permanent change. A new course number will need to be created once this goes through Grad Council.*

We want to swap Advanced Biochemistry for Physical Biochemistry. The reason behind this is we are having a hard time staffing Advanced Biochemistry because of some loss of faculty in that area. Physical Biochemistry is also more quantitative, so it fits in better with the QBE program. The permanent course number for Physical Biochemistry is CHGN535.

**Comment:** I have had conversation with Nanette offline but wanted to bring about two things. One is that I feel that not being able to find an instructor for a core class is not a good reason to change the core class. We need to send the message to the Faculty Senate that appropriate resourcing of interdisciplinary graduate programs still seems to be an issue. They may have other reasons for making this program change, but it does trigger that though because we had a lot of discussion on this on the Senate a few years ago. The other thing is that the replacement course (CHGN535) has Chemical Thermodynamics (CHGN209) as a pre-requisite, but that is not a pre-requisite for QBE students.

**Comment:** One solution I have seen with this is sometimes when faculty resources are thinner is to give students an option of either/or. For this, it would be adding CHGN535 as a choice so students could take one of the two. This may buy some time for these questions about faculty resourcing that IDPs can address.

**Comment:** Part of this proposal is to add the either/or so that if for some reason we cannot staff one of the courses, students have the option to take the other and always have that option, so it is not limiting the students in their choice.

**Comment:** You may want to update the language on this agent item, so it does not sound like a replacement.

**Comment:** Chemistry would like to do some more hiring in Biochemistry so this problem could get solved with that.

**1.8** **CSM** Wendy Winter-Searcy

[CIM 12/20; Provost 12/20]

**1 new course:** CSM550: NAVIGATING THE CAREER

SEARCH FOR GRADUATE STUDENTS

*Professional development for graduate students is an imperative to provide a signature experience for graduate students electing to enroll at Mines. Evidence exists that graduate students would appreciate and benefit from a customized career-oriented course. The content from CSM 250 Engineering Your Career Path will be adapted for a graduate student audience, whether master’s Non-Thesis, Thesis, or PhD, with an emphasis on paths in industry, research, or academia. The undergraduate course has been offered successfully for the past eight years.*

The Career Center has offered an equivalent course at the undergraduate level for about eight years, CSM250. The undergraduate course is offered both in fall and spring with four sections which are typically full. We have a few graduate students that enroll every semester and during their student evaluations, we received feedback that they would appreciate a course like this that is more customized to their job search and career search process, whether they are going into academia, research, or industry. Therefore, we would like to propose this course that is designed specifically for graduate students to develop their professional development and career skills.

**Question**: What is the credit hour of the course?

**Answer:** It is a 1-credit hour course.

**Question:** Who is teaching the course?

**Answer:** This would be taught by the Career Center professional staff. The CSM250 course is taught by the staff in the Career Center as well as some campus partners.

**Comment**: Many grants are paying tuition for courses specifically counted toward the degrees. If the new tuition model goes into effect, that will get rid of the flat rate, and they may be more cognizant of what they are paying for. Some may support it, and some may not if it is not actually counting toward their degree.

**Comment:** We have discussed some options for that and are open to some possible ways to make it feasible for students to be able to take this course.

**Question:** Shouldn’t this be a service that is offered through the Career Center instead of a cost for credit?

**Answer:** Yes, the service is available on an individual basis for graduate students. The advantage of offering it in a course format is packaging all the material so it is a complete offering so that students can gain the skills they might not otherwise pick up along the way. We do the same for undergraduate students where we have a course available and workshop not for credit. By far, the class gets better attendance and better evaluations so we do feel the formalizing of this material into a course is something that would be unique to Mines and would be a signature student experience to enhance their professional development.

**Comment:** There was a question during the last meeting about paying for the course, so I wanted to clarify that. We believe that there is a great interest from students in taking and having a course available. The master’s non-thesis students that are self-paying may be the largest audience for this class and may be willing to pay for this course as an investment in their future as it will potentially increase their earning potential at graduation. Even though we are amid conversation about changing the tuition structure, I do think that students would be interested in investing in their own future if they are self-paying. If students are on a contract, they may be able to work with their advisor and department to see if this is something that would be useful for them. There may be the potential for OGS to substitute a course for research credit which has been done for other professional development courses. Another question that was brought up was related to this being a service offered through the Career Center. We do believe that graduate student career paths are uniquely different from undergraduate career paths. WE think a course that is designed specifically with graduate students in mind would be very helpful in providing a structured environment where students are exposed to not only skill building, but experts in the fields that they are interested in. This course invites guest faculty with expertise in these areas to co-facilitate and provide guest lectures, which would be an added benefit that is not offered through one-on-one services.

*4:35-4:45 pm* **Curriculum Item(s) for Council Vote**

**2.1 Elimination of 4xx Courses for Graduate Credit** Tim Barbari

It is in the perspective of the provost, other deans, and Registrar’s Office that this is a compliance issue, and the proposal, in terms of policy language in the catalog, is more about how we bring ourselves more into compliance through using cross-listed courses and how we address the combined programs. I sent out an email on Monday to bring everyone back to the primary issue at hand. The discussion we have had the past few weeks were to give a sense of what the impact currently is in terms of the numbers of registrations that are at the 400-level and to show that with a few changes to some of the courses that are heavily enrolled by graduate students, we can bring that percentage down to less than 5%. There will always be a handful of students who need to take 400-level courses, but we can ensure that we are in compliance with HLC. There were a few revisions to the actual language in the catalog that were also included in the materials that were sent out. The language for the combined program grandfathering was updated and moved further down.

I will reach out to all departments individually because I have prepared a mockup of what your program and department pages for the catalog look like. Because of the time constraint between now and the catalog publication date, I want to work individually with everyone to update program catalog pages. We will not have to cross-list immediately. This could evolve over time as you identify which courses make the most sense for cross-listing and which course make the most sense for elevating to the 500-level.

**Question:** Could we add a description of how double counting works?

**Answer:** In the paragraph above the grandfathering statement, there is a definition of double counting which is why it was moved below.

**Question:** Can you clarify -- beyond the combined program, does this mean that we are not allowing 300- or 400-level courses to be applied for master’s or PhD students?

**Answer:** Yes, that is correct. We are taking out the language of “nine credits of 400-level courses” to in compliance with HLC that only graduate credit counts towards a graduate degree.

**MOTION:** Motion to approve elimination of 4xx courses for graduate credits was made by Owen, seconded by Tina. The motion was approved with 13 approved, 2 opposed, and 1 abstained.

*4:45-4:55 pm* **New Business**

**3.1 CCUS** Erik Menke

[CIM 1/12; Provost 1/12]

**1 new course:** CCUS522: NON-GEOLOGIC CARBON

CAPTURE AND UTILIZATION

*This is an existing course that is an elective for the CCUS certificate program. The reason for this request is that it has been taught as a special topics course (SYGN598C) and now needs its own course number and listing.*

**3.2 CEE** Lori Tunstall

[CIM 1/24; Provost 1/24]

**1 new course:** CEEN586: HYDROMETEOROLOGY

*This course supports the Mines@150 initiative to “re-align our programs portfolio with the future and expand offerings”. Mines does not currently have an atmospheric science department (or equivalent), and yet Earth exploration and engineering fields have important interaction with the atmosphere. This course provides graduate students (and advanced undergraduates) with training in key atmospheric processes relevant to society and the environment. Course materials cover many physical processes relevant to extreme conditions and the projected changes facing society.*

**1 course deactivation:** CEEN540: ADVANCED DESIGN OF STEEL

STRUCTURES

*This course has been moved to a new course number by the CEE department. It was requested that this course be deactivated.*

**3.3 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*

**3.4 AMS** Mike Nicholas

**1 course change:**

[CIM 1/30] MATH540: PARALLEL SCIENTIFIC

COMPUTING

*Two small changes: (1) switching from spring to fall course, and (2) adding MATH307 and CSCI200 prerequisites.*

**3.5 SPACE RESOURCES** Angel Abbud-Madrid

[CIM 1/30; Provost 1/30]

**1 new course:**SPRS508: REGOLITH PROPERTIES AND

PROCESSING

*The Space Resources 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-renowned expertise at Mines in resource exploration, extraction, production, and utilization to its next frontier by identifying, extracting, and using resources beyond Earth. This online course provides a deep look at regolith, the layer of unconsolidated rock debris that covers nearly every planetary body in the solar system. Students will gain detailed knowledge of how regolith forms and what its properties are on the Moon, Mars, and asteroids. In addition, practical aspects will be also covered of how regolith will be used in space resources, and how its properties influence the engineering systems that will interact with this material.*

This course was approved by Mines Online and was taught last spring on the second 8-week part of the course SPRS598. It became a very popular course and is already packed for this spring, so we want to formalize this course with SPRS508.

Question: How much of this course may overlap with the existing geology course??

Answer: None whatsoever. This course specifically covers the physical properties of regolith and how it is collected and how to construct metals and water and oxygen. There is no other course that covers this.

**2 course changes:**  SPRS503: SPACE RESOURCES SEMINAR

*Change the course delivery from an 8 week to full term (16 week) course. To better serve the students in the program and increase accessibility.*

We have been teaching this course for about 7 years as a 1-credit, 8-week online course in which there are pre-recorded lectures from speakers. The following week, students get to interact with that person online. It has been working well, but the field is moving so rapidly that it’s hard to keep up. The topics become obsolete by the next semester. We decided to offer this as a regular seminar, extending the course to 16 weeks. Anyone in the program can take the course. We have grown to up to 150 students so it will be good for all of them to know what experts from around the world can discuss in the seminar. We changed this course to biweekly lectures from speakers and introduce PhD students that can present their work. It will also provide an opportunity for students to network. Online Master’s and online PhD students still have to take the course for credit but have the option to take it every semester, so they are always up-to-date on what is happening.

SPRS591: SPACE RESOURCES PROJECT I

*We are changing the course credits for SPRS594 Space Resources Project I from 2.0 credits to 3.0 credits. The reason why we would like to increase the number of hours is because the amount of material covered, and its deliverables, correspond to a 3-credit-hour course load. The prerequisites of SPRS501 and SPRS502 are being added so that students are fully prepared before taking this course. The content and course description assumes having taken these courses, but they were not formally included as prerequisites. This change will decrease confusion and increase student success in the course.*

Originally, we had Project I as 2-credit hours and Project II as 3-credit hours, but the load is pretty much the same. We are requesting to change Project I to 3 credits to match.

**1 program change:** XCRTGMSPHD-SPRSO: GRAD CERT, MS, &

PHD IN SPACE RESOURCES

*Clarifies the program requirements, especially for students doing a thesis, and updates the course offerings.*

*4:55-5:00 pm* **Adjourn**

Next meeting: February 14, 2024, 4:00-5:00 via Zoom. Please send all agenda items to Soutir Bandyopadhyay ([sbandyopadhyay@mines.edu](mailto:sbandyopadhyay@mines.edu)) and Kristeen Serracino ([kristeen.serracino@mines.edu](mailto: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.

**AMS** Mike Nicholas

**4 course change:**

[CIM 1/30] MATH506: COMPLEX ANALYSIS II

*Change the semester in which the course will be offered.*

MATH515: APPLIED MATHEMATICS II

*Updating the semester offering.*

MATH532: SPATIAL STATISTICS

*Updating the prerequisite - MATH324 or equivalent.*

MATH582: STATISTICS PRACTICUM

*Updating the prerequisite – MATH 324.*

**CEE** Lori Tunstall

**2 course changes:**

[CIM 1/24] CEEN543: ADVANCED DESIGN OF STEEL

STRUCTURES

*New course numbering, but not new course; replacing existing course number for a course that has not been taught for many years.*

[CIM 1/23] CEEN593: SUSTAINABLE ENGINEERING

DESIGN

*This is the graduate version of an existing undergraduate course. The course provides a comprehensive introduction into sustainability concepts from an engineering point of view, incorporating the quantitative consideration of environmental and health impacts as well as social considerations throughout the design analysis. These concepts and approaches are embedded in our disciplinary educational expectations and advance Mines’ mission, vision, and strategic plan.*

**1 new course:** CEEN578: WATER TREATMENT DESIGN

AND ANALYSIS

*This is not a new course; I am attempting to change the course number of CEEN571 to CEEN578 which necessitates this form. The course educates students on advanced aspects of water treatment engineering with a focus on system design. Students will learn core aspects of water system design enabling success in industry.*

**CBEN** Michael Barankin

[CIM 1/17]

**1 course change:** CBEN524: COMPUTER-AIDED PROCESS

SIMULATION

*This course has not been offered in several years. I am working with Mines Online to develop this course for online delivery in support of developing certificate program(s), and to expand elective options for our graduate students.*

**CSCI**

[CIM 1/17]

**1 course change:** CSCI507: INTRODUCTION TO

COMPUTER VISION

*Updating modality.*

**EE** Hisham Sager

[CIM 1/17]

**7 course change:** EENG507: INTRODUCTION TO COMPUTER

VISION

*Updating modality to both in-person and online.*

EENG515: MATHEMATICAL METHODS

FOR SIGNALS AND SYSTEMS

*Updating modality to both in-person and online.*

EENG519: ESTIMATION THEORY AND

KALMAN FILTERING

*Updating modality to both in-person and online.*

EENG528: COMPUTATIONAL

ELECTROMAGNETICS

*Updating modality to both in-person and online.*

EENG530: PASSIVE RF & MICROWAVE

DEVICES

*Updating modality to both in-person and online.*

EENG532: LOW TEMPERATURE

MICROWAVE MEASUREMENTS FOR QUANTUM ENGINEERING

*Updating modality to both in-person and online.*

EENG570: ADVANCED HIGH POWER

ELECTRONICS

*Updating modality to both in-person and online.*

[CIM 1/3]

**1 program change:** MSPHD-EE18: MS & PHD IN ELECTRICAL

ENGINEERING

*Updating course prefix to EENG. Removed language about 400-level course allowance in graduate programs. Updated Energy and Power Systems to correct name: Power and Energy Systems.*

**MAED** Sabina Schill

[CIM 12/12]

**2 course change:** MAED564: CAPSTONE CURRICULUM

DESIGN I

*Updating pre- and co-requisite so that they match across T@M capstone courses in SCED, MAED, and CSED. Additionally, the original pre- and co-requisites anticipated students progressing through courses in a linear fashion; however, many students organize their schedules to take multiple T@M courses. These new pre- and co-requisites provide more flexibility to students to complete the courses in a way that fits their schedules and remain accurate as to the expected prior knowledge students need for these courses.*

[CIM 1/8] MAED565: CAPSTONE CURRICULUM

DESIGN II

*Updating pre- and co-requisite so that they match across T@M capstone courses in SCED, MAED, and CSED. Additionally, the original pre- and co-requisites anticipated students progressing through courses in a linear fashion; however, many students organize their schedules to take multiple T@M courses. These new pre- and co-requisites provide more flexibility to students to complete the courses in a way that fits their schedules and remain accurate as to the expected prior knowledge students need for these courses.*

**SCED** Sabina Schill

[CIM 12/13]

**2 course change:** SCED564: CAPSTONE CURRICULUM

DESIGN I

*Updating pre- and co-requisite so that they match across T@M capstone courses in SCED, MAED, and CSED. Additionally, the original pre- and co-requisites anticipated students progressing through courses in a linear fashion; however, many students organize their schedules to take multiple T@M courses. These new pre- and co-requisites provide more flexibility to students to complete the courses in a way that fits their schedules and remain accurate as to the expected prior knowledge students need for these courses.*

[CIM 1/8] SCED565: CAPSTONE CURRICULUM

DESIGN II

*Updating pre- and co-requisite so that they match across T@M capstone courses in SCED, MAED, and CSED. Additionally, the original pre- and co-requisites anticipated students progressing through courses in a linear fashion; however, many students organize their schedules to take multiple T@M courses. These new pre- and co-requisites provide more flexibility to students to complete the courses in a way that fits their schedules and remain accurate as to the expected prior knowledge students need for these courses.*

**ENERGY** Valerie Holt[CIM 1/9]

**1 new course:** ENGY693: AES GRADUATE STUDENT

SEMINAR

*Adding PhD Seminar course to engage PhDs in research presentations.*

**1 program change:** MSPHD-AES: MS & PHD IN ADVANCED

ENERGY SYSTEMS

*Minor program changes to clean up language. Adding PhD Seminar to engage PhDs in*

*research presentation.*

This is a half-credit graduate seminar for the AES PhD students. We have been offering it as a special topics and are attempting to formalize the course number as presented.

**SPACE RESOURCES** Angel Abbud-Madrid

**1 course change:**

SPRS505: SPACE OPERATIONS

*Since SPRS502 is no longer required for the certificate program, we want to remove this as a prerequisite so certificate students can take this course as one of their electives. Course instructors say students can succeed in the course without SPRS502.*

**4.1** **Approval of Minutes** – January 31, 2024 Soutir Bandyopadhyay