January 28, 2022
No. 369

THE UNIVERSITY OF WISCONSIN-MILWAUKEE
College of Engineering and Applied Science

F A C U L T Y M E E T I N G

Friday, January 28, 2022 10:30 A.M. Virtually by Microsoft Teams

M I N U T E S

The meeting was called to order at 10:30 a.m. with Dean Brett Peters presiding.

PRESENT: Professors Abu-Zahra, Amano, Armstrong, Avdeev, Boyland, Chang, Cheng, Church, Cuzner, Dabagh, D'Souza, El-Hajjar, Graettinger, Helwany, Hu, Jang, Kouklin, Law, Li, Liao, Ma, Mali, McRoy, Misra, Munson, Niu, Nosonovsky, Otieno, Peters, Pillai, Premnath, Qin, Qu, M.Rahman, Rammer, Reisel, Rohatgi, Salowitz, Seifoddini, Sung, Tabatabai, Titi, L.Wang, W.Wang, Y.Wang, Zhang, J.Zhao, T.Zhao

EXCUSED: Professor Venugopalan

I. DEAN UPDATE

UWM and CEAS continue to face financial challenges. The current pay plan is not fully funded, so cuts are needed to completely pay for it. While there is an expectation of higher freshmen enrollments next year, it is likely that CEAS will see an overall lower number of students for the next few years; a pattern similar to what has happened university wide. CEAS received the largest (percentage-wise) cuts among academic units at UWM in its FY23 budget. More cuts are likely in the FY24 budget given the university's current financial position.

The CEAS Big Goals were reviewed, and with consideration of the financial challenges facing CEAS there is a need for doing things differently in order to meet these goals, which is our best hope for reversing the financial declines. Two strategies that were emphasized for individuals to consider are "Begin with the End in Mind" and "Put First Things First". These approaches help us define what are we trying to achieve, individually as well as collectively, and what approaches and activities will help us get there. For this second point, it is important to remember that research leads the way for our success, and that research needs to be at the forefront of everyone's minds and when organizing their activities.

The proposal for the new Engineering/Neurosciences building also includes extensive renovation of the 1st and 2nd floors of EMS, and potentially renovations of the 3rd floor.

Associate Dean Munson will be retiring later this year, and there will be an opportunity to thank him for all his service in the future.

II. ANNOUNCEMENTS

Associate Dean Munson provided an update on several items from Academic Affairs. (1) Instructors should think of the course syllabus as binding contract. Students generally don't like the syllabus being changed mid-semester, particularly if the changes involve grade determination. (2) UWM SAAP 1.9 gives the UWM Final Exam Policy. Courses should have a final assessment, which it most often a final exam. These are to be given in the assigned final exam time, unless prior approval has been given. Students do not have to take more than 2 final exams in one day. (3) The possible changes to GER at UWM were reviewed. This is an ongoing process, and it is important to keep informed about the changes to see how programs in CEAS may be able to respond or react to the changes.

III. INFORMAL REPORTS – See Attachment 1

IV. DETERMINATION OF THE PRESENCE OF A QUORUM FOR FACULTY MEETING

As 48 voting faculty members were present, a quorum was present.

V. AUTOMATIC CONSENT BUSINESS

A. Minutes of the December 10, 2021 Meeting

B. Course Changes – See Attachment 2

C. B.S. in Biomedical Engineering Program Changes – See Attachment 3

VI. SPECIAL ORDER OF BUSINESS – **Nominations**

A. Secretary of the CEAS Faculty

To serve the completion of the current Secretary's term, beginning August 22, 2022 and ending August 20, 2023.

Nominations received from the floor:

Professor John Boyland
Professor Ben Church
Professor Nathan Salowitz.

Professor Qu moved to close nominations. The motion was seconded and passed on a voice vote.

VII. NEW BUSINESS

A. Changes to CEAS Undergraduate Admissions – See Attachment 4 ***CEAS FAC DOC. NO. 285***

Professor Misra moved to accept the changes to CEAS Undergraduate Admissions.

The motion was seconded and approved on a voice vote.

VII. GENERAL DISCUSSION - None

VIII. ADJOURNMENT

Meeting Adjourned at 11:33 a.m.

John R. Reisel, Secretary
CEAS Faculty

JRR
Attachments

ATTACHMENT 1

INFORMAL REPORTS

Office of Student Services – Todd Johnson

No Report

Career Services – Juli Pickering

Spring Industry Expo
Friday, February 11, 2022
10:00am - 2:00pm
Ballroom, UWM Student Union

Over 80 companies are registered to recruit CEAS students for internship, co-op and full-time opportunities. Faculty, encouraging students to attend is greatly appreciated. Students can learn more by logging in to their Handshake account. Please contact Juli Pickering (jlpicker@uwm.edu) with any questions.

Curriculum Committee – Prof. Church

The Curriculum Committee met and approved various course changes, changes to the admissions to major, and the revised Biomedical Engineering curriculum.

Graduate Program Committee – Prof. Law

No Report

Academic Planning Committee – Prof. Petering

At its December 8 meeting, the APC discussed approving a notice of intent (NOI) for setting up a BSc in Engineering. This program would be a general engineering degree that could attract students transferring to UWM from two-year colleges and current CEAS students who are struggling to meet the requirements necessary to earn a specific engineering degree. The NOI was discussed and its approval was tabled. The APC also considered approving the formation of two new CEAS committees: a Committee on Academics and a QE Assessment Committee. The first committee would take over all responsibilities of the current GPSC and Curriculum Committees except QE assessment; the second committee would do the QE assessment. The formation of the Committee on Academics was approved. The formation of the QE Assessment Committee was tabled.

Faculty Senate – Prof. Reisel

In its December meeting, the Faculty Senate approved the concept plan for the reorganization of many schools and colleges at UWM, the request to authorize the implementation of the M.S. in Data Science program, and the procedures and criteria for approving voting rights for academic staff in school and college faculty meetings.

ATTACHMENT 2

COURSE CHANGES (Additions made in green. Deletions Indicated in Red)

APC 380 PROJECT MANAGEMENT TECHNIQUES, 3 cr., U
An introduction to project management techniques including project selection and life cycle, stakeholder/scopequality/procurement management, budget control, scheduling, risk identification.
Prereq: admis to BS-APC prog; APC 300(P); APC 320(P); APC 330(P) ~~APC 370(P)~~

CIV ENG 335 SOIL MECHANICS, 3 cr., U
Fundamentals of soil mechanics; soil classification; seepage analysis; principle of effective stress; stress distribution; 1-D consolidation theory; shear strength; laboratory experience.
Prereq: junior standing; admis to an Engineering major; CIV ENG 203(P) or ~~and~~ CIV ENG 303(P); or graduate standing.

CIV ENG 413 ENVIRONMENTAL ENGINEERING, 3 cr., U/G
Water pollution and control; hazardous substances and risk assessment; water and wastewater treatment systems; air-pollution and emission control; solid wastes; design of treatment facilities.
Prereq: junior standing and advanced to major in an Engineering major, ~~Civil Engineering major, & MechEng 320(P)~~ or graduate standing

CIV ENG 571 DESIGN OF CONCRETE STRUCTURES, 3 cr, U/G
Topics in reinforced concrete design; indeterminate reinforced concrete beams and frames; length effect in columns; torsion; two way floor systems; yield line theory.
Prereq: jr st; Civ Eng 360(C); Civ Eng 401(C); Civ Eng 372(P)

CIV ENG 572 DESIGN OF STEEL STRUCTURES, 3 cr., U/G
Topics in design of steel structures; tension, compression, and beam members; combined axial and bending; connections; frames; serviceability.
Prereq: jr st; Civ Eng 360(C); Civ Eng 401(C); Civ Eng 372(P)

CIV ENG 573 DESIGN OF MASONRY AND WOOD STRUCTURES, 3 cr., U/G
Properties ~~Topics in design~~ of masonry ~~structures;~~ materials, loads, design codes, reinforced & unreinforced ~~axial & flexural~~ members, composite & cavity walls, shear walls. ~~walls, seismic requirements.~~ Properties of wood, design of wood structural members by LRFD including beams, columns and connections.
Prereq: jr st; Civ Eng 360(C), Civ Eng 372(P)

COMPSCI 759 DATA SECURITY, 3 cr., G
Protection of data in computer and communication systems, cryptography, classical one key and public key cryptosystems, database protection, operating system security.
Prereq: grad st; CompSci 317(P). ~~217(P) & 536(P)~~

ELECENG 411 MACHINE LEARNING AND APPLICATIONS, 3 cr., U/G
Important topics and application in machine learning, including deep learning. Provides hands-on experience with machine learning software and libraries. CompSci 411 and ElecEng 411 are jointly offered and count as repeats of one another.
Prereq: CompSci 202(P), CompSci 241(P), or CompSci 250(P); or consent of instructor.

ATTACHMENT 3

B.S. in Biomedical Engineering Program Change

The revised B.S. in Biomedical Engineering curriculum can be found on the following pages.

Biomedical Engineering, BSE

Biomedical Engineering Curriculum

The minimum number of credits required to complete the Bachelor of Science in Biomedical Engineering is 120.

Course List

Code	Title	Credits
Engineering ~~Core~~ General - ~~24~~ credits 26 credits		
BME 101	Fundamentals of Biomedical Engineering	3
EAS 200	Professional Seminar	1
~~CIV ENG 203~~	~~Introduction to Solid Mechanics~~	~~4~~
~~ELECENG 301~~	~~Electrical Circuits I~~	~~3~~
~~ELECENG 305~~	~~Electrical Circuits II~~	~~4~~
~~MATLENG 201~~	~~Engineering Materials~~	~~4~~
~~MECHENG 101~~	~~Computational Tools for Engineers~~	~~2~~
~~MECHENG 301~~	~~Basic Engineering Thermodynamics~~	~~3~~
EAS 110	Fundamentals of Smart Systems Engineering I	2
EAS 210	Fundamentals of Smart Systems Engineering II	2
CompSci 202 or 250	Introductory Programming Using Python or Introductory Computer Programming	3
	Any combination of 200 or higher-level courses from BME, CIV ENG, ELEC ENG, EAS, IND ENG, MATLENG, MECHENG; at least 9 of these credits must be from 300 or higher-level courses.	15
Major Requirements - ~~38~~ 40 credits		
BIO SCI 202	Anatomy and Physiology I	4
BIO SCI 203	Anatomy and Physiology II	4
KIN 270	Statistics in the Health Professions: Theory and Practice	3
BME ~~301~~ 296	Fundamentals of Biomaterials	~~3~~ 4
BME 302	Analysis and Modeling of Dynamic Systems	4
BME ~~305~~ 306	Introduction to Engineering Biomechanics	~~3~~ 4
BME 310	Biomedical Signals and Systems	3
BME 320	Engineering of Biomedical Devices I	4
BME 325	Engineering of Biomedical Devices II	3
BME 495	Biomedical Instrumentation Laboratory	3
BME 595	Capstone Design Project	4

Course List

Code	Title	Credits
Mathematics Requirement - 16 credits [1]		
MATH 231	Calculus and Analytic Geometry I	4
MATH 232	Calculus and Analytic Geometry II	4
MATH 233	Calculus and Analytic Geometry III	4
ELECENG 234	Analytical Methods in Engineering	4
Physics Requirement - ~~10~~ 8 credits		
PHYSICS 209	Physics I (Calculus Treatment)	
~~& PHYSICS 214~~	~~and Lab Physics I (Calculus Treatment)~~	~~5~~ 4
PHYSICS 210	Physics II (Calculus Treatment)	
~~& PHYSICS 215~~	~~and Lab Physics II (Calculus Treatment)~~	~~5~~ 4
Technical Electives – ~~11~~ 9 credits		
Select ~~11~~ 9 credits from the approved technical electives list below: [2]		~~11~~ 9
BIO SCI 150	Foundations of Biological Sciences I	
BIO SCI 152	Foundations of Biological Sciences II	
BME 585	Advanced Biomaterials	
BME 599	Senior Thesis	
BME 690	Topics in Biomedical Engineering:	
BME 699	Independent Study	
BUS ADM 447	Entrepreneurship	
CHEM 102	General Chemistry	
CHEM 104	General Chemistry and Qualitative Analysis	
CHEM 343	Organic Chemistry	
CHEM 344	Organic Chemistry Laboratory	
CHEM 345	Organic Chemistry	
CIV ENG 311	Introduction to Energy, Environment and Sustainability	
COMPSCI 250	Introductory Computer Programming	
COMPSCI 411	Machine Learning and Applications	
EAS 1	Engineering Co-op Work Period	
EAS 497	Study Abroad:	
ELECENG 361	Electromagnetic Fields	
ELECENG 410	Digital Signal Processing	
ELECENG 436	Introduction to Medical Instrumentation	
ELECENG 437	Introduction to Biomedical Imaging	
IND ENG 360	Engineering Economic Analysis	
MECHENG 320	Introduction to Fluid Mechanics	

Course List

Code	Title	Credits
MECHENG 474	Introduction to Control Systems	
GER Distribution Requirement - 15 credits		
Arts		3
Humanities		3
Social Science		6
ENGLISH 310	Writing, Speaking, and Technoscience in the 21st Century	3
Cultural Diversity - Arts, Humanities, or Social Science course must also satisfy UWM Cultural Diversity Requirement		
Free Electives		6
Students must also satisfy Oral and Written Communication (OWA) Part A [3]		0-6
Students must also Satisfy the UWM Foreign Language requirements (0-8) [3]		0-8
Total Credits		120

[1] MATH 221 and MATH 222 may substitute for MATH 231, MATH 232, and MATH 233.

[2] The following courses are approved technical electives, but are currently inactive: ELECENG 437, ELECENG 438, ELECENG 539.

[3] See General Education Requirements.

ATTACHMENT 4

Changes to the CEAS Undergraduate Admissions

The proposed revisions to the CEAS Undergraduate Admissions Policy are as on the following pages.

College of Engineering and Applied Science Undergraduate Admission

Program Level:
Undergraduate Only

Program Type:
Major

College, School, or Functional Equivalent

Units:
College of Engineering and Applied Science

Proposed Effective Catalog:
2022-2023

Proposed Effective Term:
Fall 2022

Summary of proposed changes or request:
In order to serve a larger and more diverse student body (UWM 2030 Plan), a partnership with the College of General Studies (CGS) is being created to offer a one-year Pre-Engineering Program on the UWM main campus. This proposal is to update CEAS undergraduate admission requirements in the UWM Academic Catalog to reflect this new partnership.

- Applicants to the engineering program who do not meet CEAS standard admission requirements will automatically be considered for the Pre-Engineering Program in CGS.
- Students who successfully complete the Pre-Engineering program will be admitted directly to their selected engineering major for the second year.
- CEAS will no longer admit students to “Intended” or Pre-Engineering status. Qualified CEAS applicants will be admitted directly to major status.
- Pre-Engineering students will be admitted to the Associate degree level and pay Associate level tuition.
- The Pre-Engineering Program will offer a specialized accelerated math curriculum, small class sizes, and coordinated academic support.
- The Pre-Engineering curriculum (attachment 1) will include the current advancement to major courses in Math, English, and Chemistry.
- CGS will provide the instructors selected specifically for this program. CEAS will provide academic advising and student support services.

For the Academic Catalog

New Freshmen

Admission to the College of Engineering and Applied Science is based on an overall assessment of both academic and non-academic qualifications. The primary review factors for admission are the strength and quality of the high school curriculum, high school class percentile, grade point average, and the result of the ACT or SAT. Well-prepared freshman applicants will have four years of mathematics (including one-and-a-half years of algebra, one year of geometry, and one-half year of trigonometry) and four years of natural science (including biology, chemistry, and physics). The College also will consider non-academic qualifications such as leadership skills, diversity in personal background, work experience, motivation, and maturity.

~~Freshmen applicants will be considered for admission directly to the major or to intended status (Engineering-Intended or Computer Science-Intended).~~

Transfer Students

Transfer student admission is based on an overall assessment of both academic and non-academic qualifications. For transfer applicants, the primary factors considered for admission are the grade point average on transferable courses and the level of curriculum completion. The College also will consider non-academic qualifications such as leadership skills, diversity in personal background, work experience, motivation, and maturity.

~~Transfer applicants will be considered for admission directly to the major or to intended status (Engineering-Intended or Computer Science-Intended).~~

Applicants who do not meet the requirements for admission to the College of Engineering & Applied Science will automatically be considered for admission to the Pre-Engineering program in the UWM College of General Studies.

The Pre-Engineering program is an Associate degree level program offered jointly by the College of General Studies and the College of Engineering & Applied Science. The curriculum is designed to prepare students for the engineering program with emphasis on mathematics.

~~Admission to Major~~

~~Students admitted to Engineering-Intended or Computer Science-Intended may apply for major status with their academic advisor at the time they believe they meet the requirements. The program may impose major status as a prerequisite for courses numbered 200 or above.~~

1. ~~Complete first semester calculus with a C or better grade.~~
2. ~~Complete GER Oral and Written Communication Part A.~~
3. ~~Engineering majors must complete Chem 100 with a C or better grade (or satisfactory score on the placement test). Computer Science majors must complete CompSci 251 with a C or better grade.~~
4. ~~Obtain a minimum grade point as set by the major department. A 3.00 GPA guarantees admission to any CEAS major.~~
5. ~~Courses required by the major may be repeated only once. No more than two courses may be repeated.~~

Questions on admission to CEAS or choosing a major should be directed to the Office of Student Services, (414) 229-4667.

Attachment 1
College of General Studies
Pre-Engineering Curriculum
Main Campus

Fall Semester			**Spring Semester**		
Course	Title	Credits	Course	Title	Credits
CGS MAT 115	Pre-Calculus	4	CGS MAT 221	Calculus and Analytic Geometry I	5
CGS MAT 100	Supplemental Math Preparation	1	CGS ENG 102	Critical Writing, Reading, and Research	3
CGS ENG 101	College Writing and Critical Reading	3	CGS CHE 165	Chemistry for Engineers	5
CGS CHE 112	Foundations of Chemistry	2	Engr or GER	Freshman Engineering or GER Options	3-4
CGS LEC 105	Finding Your Pathway (STEM Focus)	3			
GER	GER Options	3			
	Total	16		Total	16-17

GER Options (Subject to Change)			
Course	Title	Credits	General Education Requirement
CGS SOC 101	Introduction to Sociology	3	Social Science
CGS CTA 101	Intro to Interpersonal Communication	3	Social Science
CGS ANT 150	Food, Culture, and Identity	3	Social Science

Freshman Engineering Options			
Course	Title	Credits	Major Requirement
BME 101	Fundamentals of Biomedical Engineering	3	Biomedical Engineering
COMPSCI 250	Introductory Computer Programming	3	Computer Engineering
ELECENG 101	Fundamentals of Electrical Engineering	3	Electrical Engineering
IND ENG 111	Introduction to Engineering	3	Civil, Environmental, Industrial Engineering
MECHENG 110	Engineering Fundamentals I	4	Mechanical Engineering