

**College of Engineering and Applied Science
Minutes of CEAS Curriculum Committee Meeting**

Date: 07 Jan 2022
Place: Virtual – Microsoft Teams
Members Present: Hamid Seifoddini, Priyatha Premnath, Chiu Law (substituting for Robert Cuzner), Ben Church (Chair), Habib Tabatabai, Ethan Munson (Ex Officio), Todd Johnson (Ex Officio)
Members Absent: Roshan D’Souza, Rohit Kate
Guest: Dev Misra, Jacob Rammer, Nathan Salowitz

The meeting was called to order at 2:01 PM.

Announcements

None

Approval of the Agenda

Agenda approved without changes.

Approval of Minutes: Minutes from the Nov 19, 2021 meeting were approved by automatic consent.

New Business

1. CivEng 466, Mechanics of Composite Materials (UG), **Course Name, Description**
Proposed title change to: Design of Composite Structures
Description: ~~Basic concepts, materials, and characteristics of composites. Micromechanics and Macromechanics of Elastic Response. Hands-on design, analysis, Failure, design and manufacturing optimization~~ of composite fiber reinforced plastic beams, columns, and plates; failure analysis and damage tolerance design of composite structures; bolted and bonded joints. ~~structures.~~
Prerequisites: junior standing and CIV ENG 203(P) or CIV ENG 303(P).
Motion to approve (Tabatabai, Premnath). Motion approved.
2. CivEng 335, Soil Mechanics (U), **Prerequisite**
Description: Fundamentals of soil mechanics; soil classification; seepage analysis; principle of effective stress; stress distribution; 1-D consolidation theory; shear strength; laboratory experience.
Prerequisites: junior standing; admis to an Engineering Major; CIV ENG 203(P) ~~and~~ or CIV ENG 303(P) or graduate standing.
Motion to approve (Tabatabai, Seifoddini). Motion approved.
3. IndEng 572, Reliability Engineering (UG), **Cross-Listing, Prerequisite**
Concepts and methods for the design, testing, and estimation of component and system reliabilities. Failures and failure rates; life tests; series-parallel, and standby systems; stress levels; redundancy

and reliability apportionment; maintainability, availability, and safety; reliability design and implementation.

Prerequisite: Prerequisite: jr st; Ind Eng ~~467~~ 367(P), or IndEng 369(P) or equiv.

MechEng 572 will be created as a cross-listing for this existing class.

Note: CIM form shows change in description.

Motion to approve (Seifoddini, Tabatabai). Motion approved.

4. CivEng 490, Transportation Engineering (UG), **Prerequisite**
Technological and common elements of all modes of transportation; their effect on performance, demand, and outputs of a transportation system. Development of new transportation systems.
Prerequisites: jr st & admis to an Eng major; Civ Eng 250(P); ~~280(P)~~; or grad st.
Note: CIM shows a title change to: (DISC)Transportation Engineering
Motion to approve (Tabatabai, Seifoddini). Motion approved.
5. Matleng 443, Transport Phenomena in Materials Processing (UG) **Prerequisite**
A study of phenomena related to transport of mass, energy, and momentum with applications to materials processing.
Prereq: jr st, MatlEng 316(P); ~~442(P)~~; & ElecEng 234(P) or Math 234(P); or grad st.
Motion to approve (Church, Seifoddini). Motion approved.
6. APC 380 Project Management Techniques (U) **Prerequisite**
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); 320(P); 330(P). ~~370(P)~~.
Motion to approve (Church, Seifoddini). Motion approved.
7. CompSci 422, Introduction to Artificial Intelligence (UG), **Prerequisite**
Introduction to core techniques and broad survey of AI. Topics include: Lisp, heuristic search, knowledge representation, planning, vision, learning.
Prerequisite: jr st; CompSci351(252)(P) & C or better in either CompSci 317(217)(P) or both of Math 341 and MthStat 361 ~~317(217)(P)~~; & ~~CompSci351(252)(P)~~.
Motion to approve (Premnath, Seifoddini). Motion approved.
8. Matleng 481 and ElecEng 481 (Cross-listed), Electronic Materials (UG), **Prerequisite**
Electronic conduction in materials. Electronic phenomena in metals, semiconductors, and insulators. Materials production, characterization, and application to micro-electronic devices, with particular emphasis on thin film technology.
Prerequisite: jr st; PHYSICS 210(P) ~~MatlEng 201(P)~~ or PHYSICS 220(P) or cons instr.
Motion to approve (Church, Seifoddini). Motion approved.
9. Admission to Major. Creation of Pre-Engineering program in collaboration with CGS (see attachment)

Motion to approve (Seifoddini, Premnath). Motion approved.

Old Business

10. Program Change – Biomedical Engineering

See attachment.

Motion to change “core” to “general” in proposed curriculum describing engineering courses (Premnath, Seifoddini). Motion approved.

Motion to approve amended program change (Premnath, Seifoddini). Motion approved with three in favor, two opposed, zero abstain.

Meeting adjourned at 3:36 PM

Submitted by,

Ben Church, 11 January 2022

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

Biomedical Engineering, BSE

Biomedical Engineering Curriculum

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

Code	Course List Title	Credits
Engineering Core General - 24 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

Code	Course List 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)	5 4
& PHYSICS 214	and Lab Physics I (Calculus Treatment)	
PHYSICS 210	Physics II (Calculus Treatment)	5 4
& PHYSICS 215	and Lab Physics II (Calculus Treatment)	
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
<u>ENGLISH 310</u>	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.