Master of Engineering

Annual Program Report

Year: 2022-2023 (updated July 24, 2023)

Program Highlights Since Last Report

Identify and briefly discuss any programmatic curriculum changes made since the last report (e.g. new courses, course changes, SLO changes, course dele

Respond here:

1. In the 2022

4. The departments have improved the recruiting and admission process. For example, the Department of Chemical and Biomolecular Engineering has implemented holistic recruiting and application review criteria for MCHEN applicants. This will likely lead to increased enrollment numbers and a more well-rounded applicant pool, thus improving graduate student population quality and performance.
5. The Department of Chemical and Biomolecular Engineering department developed a survey that has been submitted to industrial partners to evaluate our current offerings in process control and provide feedback on recommended updates.

Table 1. Assessment Results and Analyses for Current Cycle.

STAGE 1: PLAN				STAGE 2: DO		STAGE 3: STUDY
Departmental Student Learning Goal	Program Student Learning Outcome	Assessment	Assessment Method/Location	Benchmark Expectations	Data Results	Actions/Goals Based on Data Results: What do the data tell you? How will you use this data? How were data from the last cycle used to make changes during this cycle, and What were the results of those changes?
The Master of Engineering programis a non-thesis, 30-semester-hour program designed to suit the needs of the practicing engineers in chemical						

Outcome #2: An understanding of professional responsibility, ethics and methods of communication in the practice of engineering.	Outcome #2 is assessed by the following performance indicators (PIs). 2.1 Understand professional responsibility. 2.2 Understand ethical responsibility. 2.3 Clarity and effectiveness of communication The assessment rubrics can be found in Appendix 1.	The outcome is evaluated through the Comprej -0.004 Tc 0.0ir17 Td 1 (e.84 551lW [(CW n W [(CW n9.6 (.6 (u)-0.85.08 Tm ( )Tj ET 9 i)2.8 m aies durig (t)-6 (h)-0.7 (en9.6 (.6 (0 -1.217 TD [(s)-4.3 (t)-6 un)-0.7 (d)-0.7 0.0ir17 Td 86 (t)-5.9 '(s)-4.3 (la)-3 responsib condctnnd m( )]TJ 0 Tc 0 -1.207 TD [aese.CW n.2 (n34.3 (t)29 (.)]TJ 0 0.043 0 rg-4.354 0 Td ( )Tj ET EMC /Artifa

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Outcome #3: An ability to design an engineering system that meets desired needs with appropriate consideration of economic, environmental, sociopolitical, safety and global factors.	Outcome #3 is assessed by the following performance indicators (PIs). 3.1 Apply engineering principles to meet the needs of designed engineering system. 3.2 Apply design skills to achieve high quality engineering work. 3.3 Perform design with consideration of economic, environmental, sociopolitical, and global factors	The outcome is evaluated through the Comprehensive Exam, which takes place during the student's last semester of study. The Comprehensive Exam committee is responsible for conducting and completing the assessment.	We aim to achieve a minimum threshold of 70% (equivalent to 2.8 ove3 13.32 re f* EMC BT /P <</MCID</MCID 49Ac8 Tm [(m [(W)0.T /P)8</M co dua(h)4.2

Table 2. Continuous Improvement Results Since Last Report

Stage 4: ACT		
Actions/Goals Based on Data Results *Copy last cycle's actions/goals and report on progress toward continuous improvement on those here.	Status C=Complete P=Progressing N=No Action Taken	Discussion of Status If C, describe efforts that led to accomplishment of actions/goals. If P, provide update on progress made toward accomplishing actions/goals and what tasks remain If N, discuss why action toward accomplishing actions/goals has been delayed and what work will be initiated toward accomplishment.
Courseaddition and deletion- In response to students' demands for a dynamic curriculum, new graduate courses are developed and added, while outdated courses are reviewed and removed. These efforts ensure an-to-date and relevant curriculum, meeting the evolving demands of the engineering field. Additionally, ongoing work will focus on incorporating engineering math and science courses to further enrich the progam.	P	Numerous courses have been both added and removed from the catalog, with this process being an ongoing effort. Several course addition requests are currently under consideration and in progress. This continuous review and adjustment of the course offerings ensure that our curriculum remains dynamic and responsive to the changing needs of our students and the engineering industry.
Review and modify the existing syllabi and change course prerequisites	P	Some existingsyllabi have been reviewed and revised More course syllabi will be reviewed and revised by the department This is an ongoing project.

Several new course modules were developed an seamlessly into the existing courses, with the primary aim of enhancing students' capacity to

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Table B - Assessment Map: Outcomes vs. Assessment Methods in Current and Upcoming Cycles

Outcomes	2022-2023 Assessment Method	2023-2024 Assessment Method	2026-2027 Assessment Method	2027-2028 Assessment Method
Outcome 1 SLO 1 An ability to apply the knowledge of mathematics, sciences, and engineering to solve scientific and engineering problems of complex natures.	• Comprehensive Exam	• Comprehensive Exam • Five courses (one course in each of five different disciplines)	•	

Outcome #1 An ability to apply mathematics, science, and engineering principles to solve engineering problems.

PI	4-Exemplary	3-Acceptable	2-Marginal	1-Unacceptable
Math, Science and Engineering Concepts	Explanation shows good understanding of the math and engineering concepts used to solve the problem(s).	Explanation shows some understanding of the math and engineering concepts used to solve the problem(s).	Explanation shows little understanding of the math and engineering concepts needed to solve the problem(s).	Explanation shows very limited understanding of the underlying concepts needed to solve the problem(s)
Math and Engineering Reasoning	Clear evidence of effective math and engineering reasoning.	Some evidence of math and engineering reasoning.	Little evidence of math and engineering reasoning.	No evidence of math and engineering reasoning.
Strategy/ Procedures	Clear evidence of using effective strategies to solve the problem(s).	Some evidence of using strategies to solve the problem(s), but not doing it consistently.	Rarely uses an effective strategy to solve problems.	Never uses an effective strategy to solve problems.

Outcome #2: An understanding of professional responsibility, ethics and methods of communication in the practice of engineering

Dimension	4-Exemplary	3-Acceptable	2-Marginal	1-Unacceptable
Understand professional responsibility	Describe the professional impact of a solution in details with pertinent facts. Ascertain exactly what decision must be decided upon.	Identify the professional impact, including pertinent facts, and ascertain possible decisions for consideration.	Have a vague idea of the professional impact and is uncertain what must be decided upon.	Do not recognize the professional impact and does not identify what must be done.
Understand ethical				

Clarity and effectiveness of communication	Communication is clear, organized, effective and accurate.	Communication is somewhat lacking in one of the following:clarity,

DEPARTMENT OF ELECTRICAL ENGINEERING

Summary of the Proposed Changes and New Graduate Courses

Current From University Catalog	Suggested Modification	Modifications			
		Title	Description	Pre-Req	New

Current From University Catalog	Suggested Modification	Modifications			
		Title	Description	Pre-Req	New
	authenticated and confidential communications, and IPSec. Prerequisite: ELEN 3431 or equivalent with a minimum grade of C.				
ELEN 5312 - Power Electronics The course starts with switched-mode DC-DC converters. First, basic circuit operation, including steady-state converter modeling and analysis, switch realization, discontinuous conduction mode, and transformer-isolated converters will be covered. Next, converter control systems are covered, including AC modeling of converters using averaged methods, small-signal transfer functions, and classical feedback loop design. Prerequisite: ELEN 3322.	ELEN 5312 - Power Electronics The course introduces the switched-mode converters. Includes steady-state converter modeling and analysis, sw				

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n v e r t

Current From University Catalog	Suggested Modification	Modifications			
		Title	Description	Pre-Req	New
	4351 or equivalent with a minimum grade of C.				
ELEN 5316 Digital Comm I I					

Current From University Catalog	

Current From University Catalog	Suggested Modification	Modifications

INEN 5320 Statistical Decision Making (summer 23)

Identification: INEN 5320 Statistical Decision Making is usually offered during long semester, but it had to be offered during the summer to meet the needs of some of our graduate students. In order to adapt the course to an accelerated summer term the content had to be reduced.

Improvement: The instructor reviewed the content that he had previously.5 (,)-1 (b)2.3 (u4.9 (m)-9.3 8o)-6.7 (an72u2t)5 (e)-6 (nT /H1 (e)-6 (nT /Hu)

code is functioning and it does not look like anything on the internet. However, I still lost over 28 points on minor details that is not even mentioned in the assignment. even though the codes accomplish the main objective of the assignment.

Improvement Plan:

- Check the grading system.

ELEN 5314-PLC Prog (Summer 2022)

Identification:Main Students' Comments

- As I have 3+ years field work experience as a control system engineer, therefore I will suggest that this course can be improved by providing the industrial software and hardware like Rs Logix 5000 and the course content should be industry/field oriented. This PLC is installed in every second industry, so it would be good for student to work on its software and test his/her logic in lab with hardware in such a way the/she can get