

Co-Terminal Degree Proposal, Form 802 Attachment

Bachelor of Science in Chemical Engineering

Master of Engineering Management

Undergraduate Program

Undergraduate Program Type: Bachelor of Science in Chemical Engineering

Total Undergraduate Program Credit Hours (including shared credit): 132-133 hours

Program Description: The objective of the undergraduate program is to educate chemical engineering students and prepare them for careers in professional practice and/or for advanced studies at the graduate level. The program specifically aims to develop a new breed of engineers who are not only well schooled in the basics and fundamentals of chemical and biological engineering, but who also possess the skills necessary for success in today's workplace. In recognition of the recent shift of the chemical engineering profession into a more prominent involvement in biotechnology and biological engineering, the department has redesigned the undergraduate curriculum in order to ensure that its graduates will possess additional knowledge and skills in biology and biological engineering as predicated by the changing needs of industry.

Program Purpose: The co-terminal program between the BS in Chemical Engineering and Master of Engineering Management (MEM) allows students interested in future careers in engineering management to enter the job force very competitively positioned to pursue management opportunities within engineering-based industries.

Program Benefits: The Master of Engineering Management degree was one of six new interdisciplinary engineering degrees approved for Fall 2017. These interdisciplinary degrees reflect contemporary shifts in engineering education and increase the attractiveness of IIT with potential graduate students. By offering these new interdisciplinary graduate degrees as co-terminal programs with our current undergraduate degrees, we are providing our current undergraduate engineering students a path to greater competitiveness while they retain undergraduate financial aid benefits. Furthermore, engineering transfer students often face significant course sequencing challenges within engineering curriculums. Some transfer students solve this problem by pursuing co-terminal programs, and some choose to leave IIT. This co-terminal program will increase the options available to transfer students and potentially improve retention.

Course requirements and sample curriculum: Course requirements and a sample curriculum are included in this document.

Competitive Programs: BS CHE is a competitive degree offered by many institutions. However, most schools do not offer a co-terminal BS CHE and engineering management.

Market Analysis: BS CHE is a competitive degree offered by many institutions. The Master of Engineering Management is a new degree program (Fall 2017). Please refer to the market analysis for the MEM degree provided in the 2017 degree program application for further information.

Marketing and Advertising: Both degrees are currently marketed. The co-terminal degree will be included in current co-terminal degree marketing and additional marketing by the Armour College of Engineering.

Enrollment Estimates: Estimated enrollment in this co-terminal program is 2-4 new students/year.

Retention Estimates: It is anticipated that retention may be improved for transfer students as the co-terminal program allows more flexibility for scheduling each semester.

Economic Analysis: There are no additional costs for the co-terminal program. It is expected that this co-terminal program will draw from a group of students separate from those who pursue the other CHE co-terminal programs. Therefore, it is expected that additional tuition revenue will be generated equivalent to 24 credits/student enrolled in the program.

Graduate Program

Graduate Program: Master of Engineering Management

Program Overview: The Master of Engineering Management degree program provides an accelerated pathway to management positions within engineering-based industries for new engineering graduates and practicing engineers. There are two tracks: Project Management (PM) and Product Design & Development (PDD).

Program Justification: The Armour College of Engineering is committed to be a lifelong educational partner with our community, from pre-college to professional advancement. The MEM degree program contributes to this commitment by enhancing the overall offerings within the Armour College of Engineering. It is anticipated that approximately 20 students will enroll in the MEM program Fall 2018. The co-terminal degree is anticipated to add 2-4 additional students. A detailed justification for the MEM program can be found in the 2017 MEM degree application.

Program Resources: The co-terminal program does not require additional resources. The MEM curriculum includes existing courses and a few new courses that will be developed and delivered by adjunct professors employed as engineering managers industry, with full-time faculty oversight.

Program description: A detailed list of courses required for each track in the co-terminal degree follows. Students should have a 3.0 GPA in order to be accepted into the co-terminal program. Students will be accepted into the program beginning Fall 2018.

Description of courses shared between Undergraduate and Graduate programs:

a) Shared required courses:

UG: CHE 406 as GRAD: Engineering Elective

b) Shared elective courses:

UG: Technical Elective as GRAD: Engineering Elective

The technical elective must be 400- or 500-level engineering elective with advisor approval

c) Course substitutions or exceptions: None

Bachelor of Science in Chemical Engineering

Required Courses	Credit Hours		
	<i>UG</i>	<i>grad</i>	<i>total</i>
Chemical Engineering Core Requirements^b CHE 100, 101, 202, 239, 301, 302, 311, 317, 351, 406 , 418, 423, 433, 435, 451, 494, 496	47	3	47
Master of Engineering Management Core Requirements EMGT 470, CAE 574/ENGR 574, CAE 575/ENGR 575, ENGR 510, ENGR 597, Engineering electives^b (6 cr)	0	15	15
Project Management Specialization^a (<i>select 9 cr</i>) ENGR 520, ENGR 521, CAE 473/ENGR 573, CAE 421/ENGR 521, CAE 572/ENGR 572, MBA 523, INTM 511	0	9	9
Product Design & Development Specialization^a (<i>select 9 cr</i>) ENGR 595, BUS 472, MMAE 589, CHE 506, IDN 597, ENGR/BME 502, MMAE 560, CAE 523	0	9	9
Electrical and Computer Engineering Requirement ECE 211 or 218	3-4	0	3-4
Physics Requirements PHYS 123, 221	8	0	8
Chemistry Requirements CHEM 125, 237, 239, 343, 344 or BIO 403	18	0	18
Computer Science Requirements CS 104 or 105	2	0	2
Technical Elective	9	3	9
Mathematics Requirements MATH 151, MATH 152, MATH 251, MATH 252	18	0	18
Humanities and Social Science Requirements	21	0	21
I PRO	6	0	6
Total	132-133	0	132-133
(132-133 CHE UG) + 30 (MEM) -6 (shared credits) = 154-155 (total)			

^aOnly one track is required for the MEM program

^bshared courses between undergraduate and graduate curricula (6 cr)
CHE 406 and a

Sample Schedule

Semester 1	Credits	Semester 2	Credits
CHE 100	2	CHE 101	2
MATH 151	5	MATH 152	5
CHEM 125	4	PHYS 123	4
CS 104 or 105	2	Social Science Elective	3
Humanities 200- level Course	3	Hum/ SS Elective	3
Total	16	Total	17
Semester 3	Credits	Semester 4	Credits
CHE 202	3	CHE 239	3
MATH 252	4	CHE 301	3
CHEM 237	4	MATH 251	4
PHYS 221	4	CHEM 239	3
Humanities Elective (300+)	3	CHEM 343	3
Total	18	Total	16
Semester 5	Credits	Semester 6	Credits
CHE 302	3	CHE 317	2
CHE 311	3	CHE 433	3
CHE 351	3	CHE 451	3
ECEE 211 or 218	3-4	CHEM 433 or BIOL 403	4
Humanities Elective (300+)	3	IPRO Elective I	3
		Technical Elective	3
Total	15-16	Total	18
Semester 7		Semester 8	
CHE 418	2	CHE 406	3
CHE 423	3	CHE 496	3
CHE 435	3	IPRO Elective II	3
CHE 494	3	PM or PDD Elective	3
EMGT 470 Project Management	3	PM or PDD Elective	3
ENGR 574 Economic Decision Analysis	3		
Total	17	Total	15
Semester 9		Semester 10	
Technical Elective	3	IPRO Elective II	3
Social Science Elective (300+)	3	Technical Elective	3
ENGR 575 Systems Analysis in Engineering	3	Social Science Elective (300+)	3
PM or PDD Elective	3	ENGR 510 Strategic Engineering Management	3
		ENGR 597 Engineering Management Capstone	3
Total	12	Total	15