

Co-Terminal Degree Proposal, Form 802 Attachment

Bachelor of Science in Engineering Management

Master of Engineering in Energy Systems

Undergraduate Program

Undergraduate Program Type: Bachelor of Science in Engineering Management

Total Undergraduate Program Credit Hours (including shared credit): 127-128 hours

Program Description: The program's objective is to prepare students to become leaders in the corporate world shaped by innovations in engineering. Students learn fundamentals of science, engineering management and business administration by concentrating on the development of critical thinking skills directed toward practical problem solving and informed decision making. Students select a concentration from the following engineering disciplines: civil, architectural, materials science, mechanical, electrical and biomedical. The program also includes a business curriculum that focuses on developing organization and management, critical thinking and entrepreneurship skills.

Program Purpose: The co-terminal program between the BS in Engineering Management and Master of Engineering in Energy systems (MES) allows students interested in energy system applications to enter the job force very competitively positioned to pursue managerial opportunities within energy-focused industries.

Program Benefits: The Master of Engineering in Energy systems 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 EMGT is a competitive degree offered by many institutions. However, most schools do not offer a co-terminal BS EMGT and engineering management.

Market Analysis: BS EMGT is a competitive degree offered by many institutions. The Master of Engineering in Energy systems is a new degree program (Fall 2017). Please refer to the market analysis for the MES 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 EMGT 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 in Energy systems

Program Overview: With its reputation as having the first microgrid energy-distribution system of its kind in the country, Illinois Tech is well equipped to prepare students to meet the challenges of generating, storing, and converting energy. Microgrid Design and Operation is one of the courses offered in the energy conservation and buildings specialty within the Master of Engineering in Energy Systems program. Two additional specialty tracks—energy generation and sustainability, and energy transmission and markets—are taught by faculty who have set the bar in energy systems and will empower students to become the next energy pioneers. This proposal is specific to the Energy Conservation & Buildings Specialization.

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 MES 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 MES program Fall 2018. The BS co-terminal degree is anticipated to add 2-4 additional students. A detailed justification for the MES program can be found in the 2017 MES degree application.

Program Resources: The co-terminal program does not require additional resources. The MES curriculum includes existing courses and a few new courses that will be developed according to program demand.

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: none

b) Shared elective courses:

UG: (2) Free elective courses as GRAD: (2) Track or Elective Courses

c) Course substitutions or exceptions:

Students are responsible for ensuring that any prerequisite courses are completed prior to enrolling in required courses in the co-terminal program of study.

Bachelor of Science in Engineering Management

Required Courses	Credit Hours		
	<i>UG</i>	<i>grad</i>	<i>total</i>
Master of Engineering in Energy systems Core Requirements (9 cr) MMAE 522, CHE 543, ECE 418	0	9	9
Energy Conservation & Buildings Specialization^a (select 4 courses min) CAE 513, 515, 526, CHE 541, ECE 580, 581, 581, MMAE 525	6	12	12
Master of Engineering in Energy systems Electives^a (9 cr) Additional courses from any specialization	0	9	9
Introduction to the Profession	2	0	2
Physics Requirements PHYS 123, 221	8	0	8
Chemistry Requirements	3-4	0	3-4
Computer Science Requirements CS 104 or 105	2	0	2
Core Engineering Specialization	28	0	28
Core Entrepreneurship Requirements BUS 211, 212, 301, 371, BUS 305, 361, CAE 312, COM 421, 428, ECON 423, EMGT 363, 407, 470, INTM 404, 477, MMAE 232 (minimum of 4)	24	0	24
Core Engineering or Entrepreneurship Technical Elective	9	0	9
Free Elective	6	6	6
Humanities and Social Science Requirements	21	0	21
I PRO	6	0	6
Total	131	30	155
(131 EMGT UG) + 30 (MES) -6 (shared credits) = 155 (total)			

^ashared courses between undergraduate and graduate curricula (6 cr)
(2) MES courses as (2) UG free electives