

Co-Terminal Degree Proposal, Form 802 Attachment

Bachelor of Science in Architectural Engineering

Master of Engineering in Urban Systems

Undergraduate Program

Undergraduate Program Type: Bachelor of Science in Architectural Engineering

Total Undergraduate Program Credit Hours (including shared credit): 131 hours

Program Description: The objective of the architectural engineering program is to prepare graduates to enter and be successful in the architectural engineering profession. Graduates are expected to become licensed professional engineers, and to reach responsible positions in a wide range of professional settings, including consulting firms, industry, or government. This program will prepare students to begin and successfully complete graduate studies in engineering and/or post-baccalaureate education in a professional degree program. The architectural engineering program provides breadth in core sub-disciplines and depth in at least one area of specialization.

Program Purpose: The co-terminal program between the BS in Architectural Engineering and Master of Engineering in Urban Systems (MUS) allows students interested in urban system applications to enter the job force very competitively positioned to pursue these opportunities.

Program Benefits: The Master of Engineering in Urban 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 ARCE is a competitive degree offered by many institutions. However, most schools do not offer a co-terminal BS ARCE and MEng Urban Systems.

Market Analysis: BS ARCE is a competitive degree offered by many institutions. The Master of Engineering in Urban Systems is a new degree program (Fall 2017). Please refer to the market analysis for the MUS 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 ARCE 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 Urban Systems

Program Overview: With greater emphasis today placed on urban living, the Master of Engineering in Urban Systems Engineering program prepares students to rise to the challenges of designing and maintaining tomorrow's smart, sustainable cities. Core courses provide a solid knowledge base upon which to launch specializations in urban transportation systems, urban building systems, or the monitoring and control of urban systems. Students can also add on a variety of electives ranging from legal considerations to construction issues to real estate fundamentals. There are three tracks: (a) Urban Transport Systems (b) Urban Building Systems, or (c) Monitoring & Control of Urban Systems.

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 MUS degree program contributes to this commitment by enhancing the overall offerings within the Armour College of Engineering. It is anticipated that approximately 8 students will enroll in the MUS program Fall 2018. The BS co-terminal degree is anticipated to add 2-4 additional students. A detailed justification for the MUS program can be found in the 2017 MUS degree application.

Program Resources: The co-terminal program does not require additional resources. The MUS 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) CAE elective courses as GRAD: (2) Core CAE 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 Architectural Engineering

Required Courses

	Credit Hours		
	<i>UG</i>	<i>grad</i>	<i>total</i>
Architectural Engineering Core Requirements CAE 100, 101, 105, 110, 111, 209, 303, 304, 307, 315, 323, 331, 383, 461, 464, 468, 470, 471	42	0	42
Master of Engineering in Urban systems Core Requirements (18 cr) CAE 523, 574, 575, CHE 543, ENGR 531/CAE 558, ENGR 532/CAE 559	6	18	18
Urban Transportation Systems Specialization^a (4 courses) CAE 534, 544, 546, 548, 549, 555, 568, ECE 512, 544	0	12	12
Urban Building Systems Specialization^a (4 courses) CAE 513, 515, 521, 526, 527, 528, 550, 556, 557, MMAE 515	0	12	12
Monitoring & Control of Urban Building Systems Specialization^a (4 courses) CAE 527, 528, 580, ECE 504, MMAE 543	0	12	12
Master of Engineering in Urban systems Electives^a (9 cr) Additional courses from any specialization	0	9	9
Engineering Course Requirement CAE 286, 287	6	0	6
Physics Requirements PHYS 123, 221	8	0	8
Chemistry Requirements CHEM 124	4	0	4
Computer Science Requirements CS 104 or 105	2	0	2
CAE Technical Elective (9 cr)	3	0	3
CAE Additional Science Requirements CAE 208	3	0	3
Capstone Design Requirements CAE 495	3	0	3
Mathematics Requirements CAE 312, MATH 151, 152, 251, 252	21	0	21
Humanities Requirements AAH 119 or 120	3	0	3
Humanities and Social Science Requirements	18	0	18

I PRO	6	0	6
Total	131	30	155
(131 ARCE UG) + 30 (MUS) -6 (shared credits) = 155 (total)			
^a shared courses between undergraduate and graduate curricula (6 cr)			
(2) CAE MUS courses as (2) UG electives			

Sample Schedule

Semester 1	Credits	Semester 2	Credits
CAE 100	2	CAE 101	2
CAE 110	1	CAE 111	1
CAE 105	3	MATH 152	5
MATH 151	5	CS 104 or 105	2
CHEM 124	4	PHYS 123	4
Humanities 200- level Course	3	Social Science Elective	3
Total	18	Total	17
Semester 3	Credits	Semester 4	Credits
CAE 208	3	CAE 209	3
CAE 286	3	CAE 287	3
PHYS 221	4	CAE 312	3
MATH 251	4	MATH 252	4
AAH 119	3	Social Science Elective (300+)	3
Total	17	Total	16
Semester 5	Credits	Semester 6	Credits
CAE 303	3	CAE 307	3
CAE 304	3	CAE 323	3
CAE 315	3	CAE 464	3
CAE 331	3	IPRO Elective II	3
CAE 383	3	Humanities Elective (300+)	3
IPRO Elective I	3		
Total	18	Total	15
Semester 7		Semester 8	
CAE 461	3	CAE 471	3
CAE 468	3	CAE 495	3
CAE 470	3	MUS Core	3
MUS Core	3	MUS Core	3
MUS Core	3	MUS Track	3
Total	15	Total	15
Semester 9		Semester 10	
MUS Core	3	CAE Technical Elective	3
MUS Track	3	MUS Core	3
MUS Track	3	MUS Track	3
Humanities Elective (300+)	3	Social Science Elective (300+)	3
Total	15	Total	12