

**Course Requirements and Registration Priorities  
School of Engineering and Digital Sciences (Master), Fall 2020**

#	Abbr	Title	Cr(US)	Cr(ECTS)	PreRequisite	CoRequisite	AntiRequisite	1st priority registration	2nd priority registration	3rd priority registration	4th priority registration
<b>SEDS</b>											
<b>Chemical and Materials Engineering</b>											
1	MBME 601	Master Thesis I	12	24				2 year Gr SEDS Biomedical Engineering			
2	MBME 603	Biomaterials Science & Engineering	3	6				1 year Gr SEDS Biomedical Engineering, 2 year Gr SEDS Biomedical Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science, Electrical Engineering, Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Robotics Engineering, Science, Engineering and Technology	
3	MBME 604	Biosensors	3	6				1 year Gr SEDS Biomedical Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science, Electrical Engineering, Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Robotics Engineering, Science, Engineering and Technology	

4	MBME 610	Anatomy and Physiology for Biomedical Engineers	3	6				1 year Gr SEDS Biomedical Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Robotics Engineering, Science, Engineering and Technology
5	MCHME 601	Master Thesis I	12	24				2 year Gr SEDS Chemical and Materials Engineering		
6	MCHME 603	Advanced Materials Processing	3	6				1 year Gr SEDS Chemical and Materials Engineering	1 year Gr SEDS, 1 year Gr SMG, 2 year Gr SEDS, 2 year Gr SMG	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Robotics Engineering, Science, Engineering and Technology
7	MCHME 604	Advanced Materials Characterization Methods	3	6				1 year Gr SEDS Chemical and Materials Engineering	1 year Gr SEDS, 1 year Gr SMG, 2 year Gr SEDS, 2 year Gr SMG	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Robotics Engineering, Science, Engineering and Technology

8	MCHME 605	Advanced Chemical Reaction Engineering	3	6				1 year Gr SEDS Chemical and Materials Engineering	1 year Gr SEDS, 1 year Gr SMG, 2 year Gr SEDS, 2 year Gr SMG	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Robotics Engineering, Science, Engineering and Technology	
9	MCHME 702	Biofilms Science and Engineering	3	6				2 year Gr SEDS Chemical and Materials Engineering	1 year Gr SEDS, 1 year Gr SMG, 2 year Gr SEDS, 2 year Gr SMG	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Robotics Engineering, Science, Engineering and Technology	
10	MCHME 714	Computational Materials Engineering	3	6				2 year Gr SEDS Chemical and Materials Engineering	1 year Gr SEDS, 1 year Gr SMG, 2 year Gr SEDS, 2 year Gr SMG	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Robotics Engineering, Science, Engineering and Technology	

**Civil Engineering**

11	MSC 600	Research Methods and Ethics	3	6				1 year Gr SEDS Engineering Management	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics		
12	MSC 601	Technical Communication	3	6				1 year Gr SEDS Biomedical Engineering, 1 year Gr SEDS Chemical and Materials Engineering, 1 year Gr SEDS Civil and Environmental Engineering, 1 year Gr SEDS Computer Science, 1 year Gr SEDS Electrical and Computer Engineering, 1 year Gr SEDS Mechanical and Aerospace Engineering, 1 year Gr SEDS Robotics and Mechatronics	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Electrical and Computer Engineering, Mechanical and Aerospace Engineering, Robotics		
13	MSC 602	Advanced Applied Mathematics	3	6				1 year Gr SEDS Biomedical Engineering, 1 year Gr SEDS Chemical and Materials Engineering, 1 year Gr SEDS Civil and Environmental Engineering, 1 year Gr SEDS Electrical and Computer Engineering, 1 year Gr SEDS Mechanical and Aerospace Engineering	Mining Engineering, Petroleum Engineering	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science, Electrical Engineering, Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Robotics Engineering, Science, Engineering and Technology	
14	MSC 615	Advanced Statistics and Probability	3	6				1 year Gr SEDS Engineering Management			

**Civil and Environmental Engineering**

15	EMEM 507	Project Management	3	6				1 year Gr SEDS Engineering Management	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics		
16	EMEM 509	Systems Engineering	3	6				2 year Gr SEDS Engineering Management	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics		
17	EMEM 523	Supply Chain Management	3	6				2 year Gr SEDS Engineering Management	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics		
18	EMEM 533	Engineering Management and Engineering Economy	3	6				1 year Gr SEDS Engineering Management	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics		
19	EMEM 537	Engineering Decision Tools	3	6				2 year Gr SEDS Engineering Management	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics		

20	EMEM 538	Knowledge and Innovation Management	3	6				1 year Gr SEDS Engineering Management	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics		
21	EMEM 539	Big Data and Information Management	3	6				2 year Gr SEDS Engineering Management	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics		
22	EMEM 542	Production and Service Operations Management	3	6				2 year Gr SEDS Engineering Management	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics		
23	MCEE 601	Master Thesis I	12	24	MCEE 600 Research Seminar (4692) (P)			2 year Gr SEDS Civil and Environmental Engineering	1 year Gr SEDS, 1 year Gr SMG, 2 year Gr SEDS, 2 year Gr SMG		
24	MCEE 603	Finite Element Methods	3	6				1 year Gr SEDS Civil and Environmental Engineering, 1 year Gr SEDS Mechanical and Aerospace Engineering	Biomedical Engineering, Chemical Engineering, Chemical and Materials Engineering, Civil Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Electrical and Electronic Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics		
25	MCEE 604	Advanced Soil Mechanics	3	6				1 year Gr SEDS Civil and Environmental Engineering	1 year Gr SEDS, 1 year Gr SMG, 2 year Gr SEDS, 2 year Gr SMG		

26	MCEE 605	Advanced Environmental Chemistry	3	6				1 year Gr SEDS Civil and Environmental Engineering	1 year Gr SEDS, 1 year Gr SMG, 2 year Gr SEDS, 2 year Gr SMG		
27	MCEE 705	Environmental Modeling Development	3	6				2 year Gr SEDS Civil and Environmental Engineering	1 year Gr SEDS, 1 year Gr SMG, 2 year Gr SEDS, 2 year Gr SMG		
28	MCEE 708	Advanced Foundation Engineering	3	6				2 year Gr SEDS Civil and Environmental Engineering	1 year Gr SEDS, 1 year Gr SMG, 2 year Gr SEDS, 2 year Gr SMG		
29	MCEE 709	Building Information Modeling in Construction	3	6				2 year Gr SEDS Civil and Environmental Engineering	1 year Gr SEDS, 1 year Gr SMG, 2 year Gr SEDS, 2 year Gr SMG		
<b>Computer Science</b>											
30	CSCI 501	Software Principles and Practice	3	6				Computer Science, Robotics	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering	SSH	
31	CSCI 511	Theory of Computation	3	6				Computer Science	SEDS	SSH	
32	CSCI 515	Modeling and Simulation for Computer Science	3	6				Computer Science, Data Science	SEDS	SSH	
33	CSCI 585	Computer Vision	3	6				Computer Science, Data Science	SEDS	SSH	
34	CSCI 594	Deep Learning	3	6				Computer Science, Data Science	SEDS	SSH	
35	CSCI 693	Thesis Proposal	3	6	SEDS 591 Research Methods (3184) (C- and above)			2 year Gr SEDS Computer Science			
36	DS 501	Fundamentals of Data Science	3	6				Data Science			
37	DS 502	Probability and Statistics for Data Science	3	6				Data Science			
38	DS 507	Database Management Systems	3	6				Data Science	Computer Science		
39	DS 551	Process and Project Management	3	6				Data Science	SEDS	SSH	

40	DS 552	Data-Driven Innovation	3	6				Data Science	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Robotics	Applied Mathematics, Biological Sciences, Chemistry, Economics, Eurasian Studies, Physics, Political Science and International Relations	
41	DS 693	Thesis Proposal	3	6	SEDS 591 Research Methods (3184) (C- and above)			2 year Gr SEDS Data Science			
42	SEDS 503	Laboratory Practicum	3	6	SEDS 502 Teaching Practicum (2824) (P)			2 year Gr SEDS Computer Science, 2 year Gr SEDS Robotics and Mechatronics			
43	SEDS 591	Research Methods	3	6				1 year Gr SEDS Computer Science, 1 year Gr SEDS Data Science, 1 year Gr SEDS Robotics and Mechatronics	Computer Science, Data Science, Robotics		
<b>Electrical and Computer Engineering</b>											
44	MECE 601	Master Thesis I	12	24				2 year Gr SEDS Electrical and Computer Engineering			
45	MECE 603	Advanced Data Structures and Algorithms	3	6				1 year Gr SEDS Electrical and Computer Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science, Electrical Engineering, Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Robotics Engineering, Science, Engineering and Technology	



46	MECE 605	Statistics and Probability for Electrical and Computer Engineers	3	6				1 year Gr SEDS Electrical and Computer Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science, Electrical Engineering, Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Robotics Engineering, Science, Engineering and Technology
47	MECE 724	System Modelling and Control	3	6				1 year Gr SEDS Electrical and Computer Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science, Electrical Engineering, Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Robotics Engineering, Science, Engineering and Technology
48	MECE 725	Smart Grids and Energy Systems	3	6	MECE 700 Industrial and Commercial Power System (4810) (D and above)			2 year Gr SEDS Electrical and Computer Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science, Electrical Engineering, Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Robotics Engineering, Science, Engineering and Technology

49	MECE 726	Modern Semiconductor Devices and Systems	3	6				2 year Gr SEDS Electrical and Computer Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Robotics Engineering, Science, Engineering and Technology
<b>Mechanical and Aerospace Engineering</b>										
50	MMAE 601	Master Thesis I	12	24	MMAE 600 Research Seminar (4703) (P)			2 year Gr SEDS Mechanical and Aerospace Engineering		
51	MMAE 603	Modern Control Engineering	3	6				1 year Gr SEDS Mechanical and Aerospace Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics	
52	MMAE 605	Advanced Manufacturing Processes and Strategies	3	6				1 year Gr SEDS Mechanical and Aerospace Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics	
53	MMAE 710	Space Structures Design	3	6				2 year Gr SEDS Mechanical and Aerospace Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics	

54	MMAE 713	Computational Fluid Structure Interaction	3	6				2 year Gr SEDS Mechanical and Aerospace Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Robotics		
<b>Robotics and Mechatronics</b>											
55	ROBT 501	Robot Manipulation and Mobility	3	6				Robotics	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering		
56	ROBT 503	Dynamic Systems and Control	3	6				Robotics	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering		
57	ROBT 613	Brain-Machine Interfaces	3	6				Robotics	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering		
58	ROBT 615	Optimal Control and Planning	3	6	ROBT 501 Robot Manipulation and Mobility (2263) (C- and above) AND ROBT 503 Dynamic Systems and Control (2264) (C- and above)			Robotics	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering		
59	ROBT 691	Thesis Proposal	6	12				2 year Gr SEDS Robotics and Mechatronics			