

Course Requirements and Registration Priorities
School of Engineering and Digital Sciences (Master), Fall 2021

#	Abbr	Title	Cr(US)	Cr(ECTS)	PreRequisite	CoRequisite	AntiRequisite	1st priority registration	2nd priority registration	3rd priority registration	4th priority registration
SEDS											
Chemical and Materials Engineering											
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	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		
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		
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		
5	MBME 703	Medical Device Technology	3	6				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		

6	MBME 709	Mechanics of Living Tissue	3	6				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		
7	MCHME 601	Master Thesis I	12	24				2 year Gr SEDS Chemical and Materials 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		
8	MCHME 603	Advanced Materials Processing	3	6				1 year Gr SEDS Chemical and Materials 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		
9	MCHME 604	Advanced Materials Characterization Methods	3	6				1 year Gr SEDS Chemical and Materials 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		
10	MCHME 605	Advanced Chemical Reaction Engineering	3	6				1 year Gr SEDS Chemical and Materials 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		

11	MCHME 702	Biofilms Science and Engineering	3	6				2 year Gr SEDS Chemical and Materials 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		
12	MCHME 714	Computational Materials Engineering	3	6				2 year Gr SEDS Chemical and Materials 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		
Civil Engineering											
13	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, Robotics		
14	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 Mechanical and Aerospace Engineering, 1 year Gr SEDS Robotics and Mechatronics	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Mechanical and Aerospace Engineering, Robotics	Electrical and Computer Engineering	

15	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	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Mechanical and Aerospace Engineering		
16	MSC 615	Advanced Statistics and Probability	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, Robotics		
Civil and Environmental Engineering											
17	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, Robotics		
18	EMEM 509	Systems Engineering	3	6				2 year Gr SEDS Engineering Management, 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, Robotics		
19	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, Robotics		

20	E MEM 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, Robotics		
21	E MEM 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, Robotics		
22	E MEM 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, Robotics		
23	E MEM 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, Robotics		
24	E MEM 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, Robotics		
25	MCEE 601	Master Thesis I	12	24	MCEE 600 Research Seminar (4692) (P)			2 year Gr SEDS Civil and Environmental Engineering			
26	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 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, Robotics		

27	MCEE 604	Advanced Soil Mechanics	3	6				1 year Gr SEDS Civil and Environmental 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		
28	MCEE 605	Advanced Environmental Chemistry	3	6				1 year Gr SEDS Civil and Environmental 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		
29	MCEE 708	Advanced Foundation Engineering	3	6				2 year Gr SEDS Civil and Environmental 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		
Computer Science											
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, 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	

32	CSCI 515	Modeling and Simulation for Computer Science	3	6				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, Robotics	Applied Mathematics, Biological Sciences, Chemistry, Economics, Eurasian Studies, Physics, Political Science and International Relations	SSH	
33	CSCI 585	Computer Vision	3	6				Computer Science, Data Science, Robotics	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, SEDS	SSH	
34	CSCI 594	Deep Learning	3	6				Computer Science, Data Science, Robotics	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, 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	Computer Science	SEDS, SSH	
38	DS 507	Database Management Systems	3	6				Data Science	Computer Science	SEDS, SSH	
39	DS 551	Process and Project Management	3	6				Data Science	Computer Science	SEDS, SSH	
40	DS 552	Data-Driven Innovation	3	6				Data Science	Computer Science	SEDS, SSH	

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 Data Science, 2 year Gr SEDS Robotics and Mechatronics			
43	SEDS 504	Innovation and Entrepreneurship	3	6							
44	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		
Electrical and Computer Engineering											
45	MECE 600	Research Seminar	3	6				2 year Gr SEDS Electrical and Computer Engineering			
46	MECE 601	Master Thesis I	12	24				2 year Gr SEDS Electrical and Computer Engineering			
47	MECE 603	Advanced Data Structures and Algorithms	3	6				1 year Gr SEDS Electrical and Computer Engineering	Applied Mathematics, Biological Sciences, Biomedical Engineering, Chemical and Materials Engineering, Chemistry, Civil and Environmental Engineering, Computer Science, Data Science, Economics, Electrical and Computer Engineering, Engineering Management, Eurasian Studies, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Physics, Political Science and International Relations, Robotics		
48	MECE 605	Statistics and Probability for Electrical and Computer Engineers	3	6				1 year Gr SEDS Electrical and Computer Engineering	Applied Mathematics, Biological Sciences, Biomedical Engineering, Chemical and Materials Engineering, Chemistry, Civil and Environmental Engineering, Computer Science, Data Science, Economics, Electrical and Computer Engineering, Engineering Management, Eurasian Studies, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Physics, Political Science and International Relations, Robotics		

49	MECE 606	Embedded Systems and Applications	3	6				1 year Gr SEDS Electrical and Computer Engineering	Applied Mathematics, Biological Sciences, Biomedical Engineering, Chemical and Materials Engineering, Chemistry, Civil and Environmental Engineering, Computer Science, Data Science, Economics, Electrical and Computer Engineering, Engineering Management, Eurasian Studies, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Physics, Political Science and International Relations, Robotics			
50	MECE 724	System Modelling and Control	3	6				1 year Gr SEDS Electrical and Computer Engineering	Applied Mathematics, Biological Sciences, Biomedical Engineering, Chemical and Materials Engineering, Chemistry, Civil and Environmental Engineering, Computer Science, Data Science, Economics, Electrical and Computer Engineering, Engineering Management, Eurasian Studies, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum Engineering, Physics, Political Science and International Relations, Robotics			
Mechanical and Aerospace Engineering												
51	MMAE 601	Master Thesis I	12	24	MMAE 600 Research Seminar (4703) (P)			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			
52	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			
53	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			

54	MMAE 702	Sustainable Vehicle Transportation Systems	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		
Robotics and Mechatronics											
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				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		