

**Course Requirements and Registration Priorities**  
**School of Engineering and Digital Sciences (PhD), 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	DCHME 700-0	Thesis Research	0	0				1 year PhD SEDS Chemical 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		
2	DCHME 755	Integrated Computational Materials Engineering	4	8				1 year PhD SEDS Chemical 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		
3	DCHME 761	Advanced Chemical Reaction Engineering	4	8				1 year PhD SEDS Chemical 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		
4	DCHME 762	Advanced Materials Processing	4	8				1 year PhD SEDS Chemical 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		

5	DCHME 765	Biofilms Science and Engineering	4	8				1 year PhD SEDS Chemical 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		
<b>Civil and Environmental Engineering</b>											
6	DCEE 700-0	Thesis Research	0	0				1 year PhD SEDS Civil Engineering, Civil Engineering	Chemical Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		
7	DCEE 756	Environmental Modeling Development	4	8				1 year PhD SEDS Civil Engineering	Chemical Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		
8	DCEE 760	Advanced Foundation Engineering	4	8				1 year PhD SEDS Civil Engineering	Chemical Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		
9	DCEE 761	Advanced Soil Mechanics	4	8				1 year PhD SEDS Civil Engineering	Chemical Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		
10	DCEE 763	Building Information Modeling in Construction	4	8				1 year PhD SEDS Civil Engineering	Chemical Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		
<b>Computer Science</b>											
11	CSCI 700-0	Thesis Research	0	0				1 year PhD SEDS Computer Science, Computer Science			
12	CSCI 701	Advanced Software Principles and Practice	4	8				Computer Science , Robotics Engineering	Chemical Engineering, Civil Engineering, Electrical Engineering, Mechanical Engineering, Science, Engineering and Technology	SSH	
13	CSCI 711	Advanced Theory of Computation	4	8				Computer Science	SEDS	SSH	
14	CSCI 785	Advanced Computer Vision	4	8				Computer Science	SEDS	SSH	
15	CSCI 794	Advanced Deep Learning	4	8				Computer Science	SEDS	SSH	
<b>Electrical and Computer Engineering</b>											

16	DELCE 700-0	Thesis Research	0	0				Electrical Engineering	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science , Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Robotics Engineering, Science, Engineering and Technology		
17	DELCE 753	Stochastic Processes	4	8				Electrical Engineering	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science , Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Robotics Engineering, Science, Engineering and Technology		
18	DELCE 760	Advanced System Modelling and Control	4	8				Electrical Engineering	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science , Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Robotics Engineering, Science, Engineering and Technology		
19	DELCE 761	Advanced Data Structures and Algorithms	4	8				Electrical Engineering	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science , Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Robotics Engineering, Science, Engineering and Technology		
<b>Mechanical and Aerospace Engineering</b>											
20	DMAE 700-0	Thesis Research	0	0				1 year PhD SEDS Mechanical 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		
21	DMAE 701	Advanced Applied Mathematics	4	8				1 year PhD SEDS Mechanical 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		

22	DMAE 750	Advanced Statistics and Probability	4	8			MSC 615 Advanced Statistics and Probability (2394) (B- and above)	1 year PhD SEDS Mechanical Engineering	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science , Education, Electrical Engineering, Eurasian Studies, Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Public Policy, Robotics Engineering, Science, Engineering and Technology		
23	DMAE 751	Modern Control Engineering	4	8				1 year PhD SEDS Mechanical Engineering	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science , Education, Electrical Engineering, Eurasian Studies, Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Public Policy, Robotics Engineering, Science, Engineering and Technology		
24	DMAE 759	Space Structure Design	4	8				2 year PhD SEDS Mechanical Engineering	Biomedical Sciences, Chemical Engineering, Civil Engineering, Computer Science , Education, Electrical Engineering, Eurasian Studies, Life Sciences, Mathematics, Mechanical Engineering, Mining Engineering, Petroleum Engineering, Physics, Public Policy, Robotics Engineering, Science, Engineering and Technology		
25	DMAE 763	Computational Fluid Structure Interaction	4	8				1 year PhD SEDS Mechanical 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		
26	DMAE 765	Advanced Manufacturing Processes and Strategies	4	8				1 year PhD SEDS Mechanical 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		

**Robotics and Mechatronics**

27	ROBT 700-0	Thesis Research	0	0				1 year PhD SEDS Robotics 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		
28	ROBT 701	Advanced Robot Manipulation and Mobility	4	8				1 year PhD SEDS Robotics 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		
29	ROBT 703	Advanced Optimal Control and Planning	4	8				1 year PhD SEDS Robotics 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		
30	ROBT 709	Advanced Robot Dynamics and Control	4	8				1 year PhD SEDS Robotics 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		

**School of Engineering**

31	DENG 782	Research Methods and Ethics	3	6				1 year PhD SEDS Chemical Engineering, 1 year PhD SEDS Civil Engineering, 1 year PhD SEDS Computer Science, 1 year PhD SEDS Electrical Engineering, 1 year PhD SEDS Mechanical Engineering, 1 year PhD SEDS Robotics Engineering, 1 year PhD SEDS Science, Engineering and Technology, 1 year PhD SMG Mining Engineering, 1 year PhD SMG Petroleum Engineering, 1 year PhD SOM BioMed Sciences, 1 year PhD SSH Life Sciences, 1 year PhD SSH Mathematics, 1 year PhD SSH Physics	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		
32	DENG 784	Doctoral Proposal I	0	6				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			
33	DENG 785	PhD Proposal Oral Defence	0	0				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			

34	DENG 790	Doctoral Seminar II	3	6	DENG 789 Doctoral Seminar I (4598) (P)			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			
35	DENG 791	Doctoral Seminar III	3	6	DENG 790 Doctoral Seminar II (4599) (P)			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			
36	DENG 792	Doctoral Seminar IV	3	6	DENG 791 Doctoral Seminar III (4600) (P)			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			
37	DENG 793	Doctoral Seminar V	3	6	DENG 792 Doctoral Seminar IV (4601) (P)			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			

38	DENG 794	Dissertation Research	12	24	DENG 785 PhD Proposal Oral Defence (2604) (P)			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			
39	DENG 796	Thesis Completion	0	0				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			
40	DENG 797	Oral Defence of PhD Dissertation	0	0	DENG 785 PhD Proposal Oral Defence (2604) (P) AND DENG 789 Doctoral Seminar I (4598) (P) AND DENG 790 Doctoral Seminar II (4599) (P)			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			