

**Course Requirements and Registration Priorities
(PhD), Fall 2020**

#	Abbr	Title	Cr(US)	Cr(ECTS)	PreRequisite	CoRequisite	AntiRequisite	1st priority registration	2nd priority registration	3rd priority registration	4th priority registration
GSPPP											
PhD in Public Policy											
1	DPE 626	Open Governance	4	8				2 year GSPPP PhD Public Policy	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		
2	DPE 627	Public Policy and Health Issues	4	8				2 year GSPPP PhD Public Policy	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		
3	DPE 628	Good Governance and Corruption	4	8				2 year GSPPP PhD Public Policy	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		
4	DPE 639	International Financial Policy	4	8				2 year GSPPP PhD Public Policy	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		

5	DPE 671	Game Theory and Public Policy	4	8				2 year GSPP PhD Public Policy	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		
6	DPE 680	Urban Mobility Policy in the Age of the Smart City	4	8				2 year GSPP PhD Public Policy	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		
7	DPP 600	Developing Dissertation Research	0	0				Public Policy			
8	DPP 601	Microeconomics in the Public Sector	4	8				1 year GSPP PhD Public Policy			
9	DPP 603	Public Administration and Management	4	8				1 year GSPP PhD Public Policy			
10	DPP 611	Statistics in Public Policy	4	8				1 year GSPP PhD Public Policy			
11	DPP 614	Advanced Quantitative Methods	4	8				2 year GSPP PhD Public Policy			
12	DPP 616	Advanced Qualitative Methods	4	8				2 year GSPP PhD Public Policy			
13	DPP 621	Public Policy and Analysis	4	8				1 year GSPP PhD Public Policy			
14	DPP 690-0	Thesis Preparation and Writing	0	0				3 year GSPP PhD Public Policy, 4 year GSPP			
GSE											
MSc Educational Leadership HE											
15	EDUC 590	Academic English Writing for Doctoral Students I	3	6				1 year GSE PhD Education			
16	EDUC 701	Education Research Methods	3	6				1 year GSE PhD Education			
17	EDUC 709	Introduction to Scholarship in Education	3	6				1 year GSE PhD Education			

18	EDUC 712	Educational Policy and Reform	3	6				1 year GSE PhD Education		
19	EDUC 727	Exploring the Research Topic 1	0	0				1 year GSE PhD Education		
20	EDUC 730	Preparation for Proposal Defence	0	0				2 year GSE PhD Education		
21	EDUC 740	Doctoral Seminar	3	6				3 year GSE PhD Education		
22	EDUC 750	Dissertation Research	9	18				3 year GSE PhD Education, 4 year GSE PhD Education		
23	EDUC 800	International Study	12	24				2 year GSE PhD Education		
SoM										
PHD										
24	PHDBS 701-0	Thesis Research	0	0				1 year PhD SOM BioMed Sciences, 2 year PhD SOM BioMed Sciences		
25	PHDBS 702	Molecular Basis of Health and Disease	4	8				1 year PhD SOM BioMed Sciences, 1 year PhD SSH Life Sciences, 2 year PhD SOM BioMed Sciences, Life Sciences		
26	PHDBS 703	Biomedical Research Analysis and Design of Experimentation	4	8				1 year PhD SOM BioMed Sciences, 1 year PhD SSH Life Sciences, 2 year PhD SOM BioMed Sciences, Life Sciences		
27	PHDBS 704-0	NUSOM seminar	0	0				1 year PhD SOM BioMed Sciences, 1 year PhD SSH Life Sciences, 2 year PhD SOM BioMed Sciences, Life Sciences	GSB, GSE, GSPP, SEDS, SMG, SSH	
28	PHDBS 705	Biosafety, Animal Welfare and Ethics	4	8				1 year PhD SOM BioMed Sciences, 1 year PhD SSH Life Sciences, 2 year PhD SOM BioMed Sciences, Life Sciences	GSB, GSE, GSPP, SEDS, SMG, SSH	
29	PHDBS 706	Advanced Biomedical Research Analysis and Design of Experimentation	4	8				2 year PhD SOM BioMed Sciences		
30	PHDBS 707	Publication Analysis	4	8				2 year PhD SOM BioMed Sciences		
31	PHDBS 708	Writing for Biomedical Sciences	3	6				2 year PhD SOM BioMed Sciences		
SMG										
Mining Engineering										

32	MINE 701	Advanced Mine Geomechanics	4	8				Mining Engineering	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
33	MINE 801	Advanced Mechanized Excavation and Tunneling	4	8				Mining Engineering	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
34	MINE 890-0	Thesis Research	0	0				Mining Engineering			
Petroleum Engineering											
35	PETE 701	Advanced Well Engineering	4	8				Petroleum Engineering	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		
36	PETE 806	Advanced Special Core Analysis	4	8				Petroleum Engineering	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		
37	PETE 890	Thesis Research	0	0				Petroleum Engineering		SEDS	
School of Mining and Geosciences											
38	SMG 710	Research Methods and Statistics	3	6				GSB, GSE, GSPP, SEDS, SMG, SSH, SoM			
SSH											
Area Studies											
39	EAS 700	Introduction to Eurasia	4	8				GSB, GSE, GSPP, SEDS, SMG, SSH, SoM			
40	EAS 701	Critical Issues in Eurasian Studies	2	4				Eurasian Studies	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
41	EAS 702	Elective in Eurasian Humanities	4	8				Instructor's Permission Required. Registration through Add Course form only!			
42	EAS 703	Elective in Eurasian Social Sciences	4	8				Instructor's Permission Required. Registration through Add Course form only!			
43	EAS 708	Proseminar in Eurasian Humanities	4	8				Instructor's Permission Required. Registration through Add Course form only!			
44	EAS 710	Independent Study in Eurasian Studies	4	8				Instructor's Permission Required. Registration through Add Course form only!			
45	EAS 711	Doctoral Seminar in Eurasian Studies I	4	8				Eurasian Studies	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		

Biological Science										
46	BIOL 800-0	Thesis Research	0	0				Life Sciences		
47	BIOL 820	Statistical Methods in Life Sciences	3	6				Biomedical Sciences, Life Sciences	GSB, GSE, GSPP, SEDS, SMG, SoM	
48	BIOL 831	Synthetic Biology	4	8				Biomedical Sciences, Life Sciences	GSB, GSE, GSPP, SEDS, SMG, SoM	
49	BIOL 834	Advanced Cancer Biology	4	8				Biomedical Sciences, Life Sciences	GSB, GSE, GSPP, SEDS, SMG, SoM	
50	BIOL 835	Hot Topics in Life Sciences	3	6				Biomedical Sciences, Life Sciences	GSB, GSE, GSPP, SEDS, SMG, SoM	
51	BIOL 850	Structural and Molecular Biology in Health and Disease	4	8				Biomedical Sciences, Life Sciences	GSB, GSE, GSPP, SEDS, SMG, SoM	
52	BIOL 875	Gene Therapy	4	8				Biomedical Sciences, Life Sciences	GSB, GSE, GSPP, SEDS, SMG, SoM	
Communication and Composition										
53	WCS 730	From Genre to Style and Back: Writing for PhD Students	4	8				Instructor's Permission Required. Registration through Add Course form only!		
Mathematics										
54	MATH 700-0	Thesis Research	0	0				Mathematics	SEDS, SSH	GSB, GSE, GSPP, SMG, SoM
55	MATH 701	Real Analysis	4	8				Mathematics	SEDS, SSH	GSB, GSE, GSPP, SMG, SoM
56	MATH 721	Nonlinear Differential Equations with Applications	4	8				Mathematics	SEDS, SSH	GSB, GSE, GSPP, SMG, SoM
57	MATH 776	Advanced numerical methods for partial differential equations	4	8				GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
Physics										
58	PHYS 700-0	Thesis Research	0	0				Physics		
59	PHYS 705	Classical Mechanics	4	8				SEDS, SSH		
60	PHYS 711	Computational Modeling and Simulation	4	8				SEDS, SSH		
61	PHYS 750	Advanced Mathematical Physics	4	8				SEDS, SSH		
Sociology and Anthropology										
62	SOC 710	Social Inequality	4	8				Eurasian Studies	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM	

SEDS

Chemical and Materials Engineering

63	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		
64	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		
65	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		
66	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		
67	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		

Civil and Environmental Engineering

68	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		
69	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		
70	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		
71	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		
72	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		
Computer Science											
73	CSCI 700-0	Thesis Research	0	0				1 year PhD SEDS Computer Science, Computer Science			
74	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	
75	CSCI 711	Advanced Theory of Computation	4	8				Computer Science	SEDS	SSH	
76	CSCI 785	Advanced Computer Vision	4	8				Computer Science	SEDS	SSH	
77	CSCI 794	Advanced Deep Learning	4	8				Computer Science	SEDS	SSH	
Electrical and Computer Engineering											
78	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		

79	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		
80	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		
81	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		
Mechanical and Aerospace Engineering											
82	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		
83	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		

84	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		
85	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		
86	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		
87	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		
88	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

89	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		
90	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		
91	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		
92	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

93	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		
94	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			
95	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			

96	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			
97	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			
98	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			
99	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			

100	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			
101	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			
102	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			