

Course Requirements and Registration Priorities (PhD), Fall 2021

#	Abbr	Title	Cr(US)	Cr(ECTS)	PreRequisite	CoRequisite	AntiRequisite	1st priority registration	2nd priority registration	3rd priority registration	4th priority registration
GSPP											
PhD in Public Policy											
1	DPE 617	Institutions and Development Policies	4	8				2 year GSPP PhD Public Policy			
2	DPE 623	International Political Economy	4	8				2 year GSPP PhD Public Policy			
3	DPE 625	Ethical Challenges in Governance	4	8				2 year GSPP PhD Public Policy			
4	DPE 626	Open Governance	4	8				2 year GSPP PhD Public Policy			
5	DPE 627	Public Policy and Health Issues	4	8				2 year GSPP PhD Public Policy			
6	DPE 628	Good Governance and Corruption	4	8				2 year GSPP PhD Public Policy			
7	DPE 629	Political Economy of State-Building	4	8				2 year GSPP PhD Public Policy			
8	DPE 639	International Financial Policy	4	8				2 year GSPP PhD Public Policy			
9	DPE 643	Marketing Public Policy	4	8				2 year GSPP PhD Public Policy			
10	DPE 650	Science and Technology Policy	4	8				2 year GSPP PhD Public Policy			
11	DPE 671	Game Theory and Public Policy	4	8				2 year GSPP PhD Public Policy			
12	DPP 600	Developing Dissertation Research	0	0				Public Policy			
13	DPP 601	Microeconomics in the Public Sector	4	8				1 year GSPP PhD Public Policy			
14	DPP 603	Public Administration and Management	4	8				1 year GSPP PhD Public Policy			
15	DPP 611	Statistics in Public Policy	4	8				1 year GSPP PhD Public Policy			
16	DPP 614	Advanced Quantitative Methods	4	8				2 year GSPP PhD Public Policy			
17	DPP 616	Advanced Qualitative Methods	4	8				2 year GSPP PhD Public Policy			
18	DPP 621	Public Policy and Analysis	4	8				1 year GSPP PhD Public Policy			

19	DPP 690	Thesis Preparation and Writing	60	120	DPP 689 PhD Qualifying Examinations (4830) (P) AND DPP 699 Thesis Design and Written Proposal (4831) (C- and above)			Special permission required			
20	DPP 690-0	Thesis Preparation and Writing	0	0				3 year GSPP PhD Public Policy, 4 year GSPP PhD Public Policy			
GSE											
MSc Educational Leadership HE											
21	EDUC 590	Academic English Writing for Doctoral Students I	3	6				1 year GSE PhD Education			
22	EDUC 701	Education Research Methods	3	6				1 year GSE PhD Education			
23	EDUC 709	Introduction to Scholarship in Education	3	6				1 year GSE PhD Education			
24	EDUC 712	Educational Policy and Reform	3	6				1 year GSE PhD Education			
25	EDUC 727	Exploring the Research Topic 1	0	0				1 year GSE PhD Education			
26	EDUC 730	Preparation for Proposal Defence	0	0				2 year GSE PhD Education			
27	EDUC 740	Doctoral Seminar	3	6				3 year GSE PhD Education			
28	EDUC 750	Dissertation Research	9	18				3 year GSE PhD Education, 4 year GSE PhD Education			
29	EDUC 800	International Study	12	24				2 year GSE PhD Education			
SoM											
PHD											
30	PHDBS 701-0	Thesis Research	0	0				Biomedical Sciences			
31	PHDBS 702	Molecular Basis of Health and Disease	4	8				Biomedical Sciences	Life Sciences		
32	PHDBS 703	Biomedical Research Analysis and Design of Experimentation	4	8				Biomedical Sciences	Life Sciences		
33	PHDBS 704-0	NUSOM seminar	0	0				Biomedical Sciences			
34	PHDBS 705	Biosafety, Animal Welfare and Ethics	4	8				Biomedical Sciences	Life Sciences		

35	PHDBS 706	Advanced Biomedical Research Analysis and Design of Experimentation	4	8				Biomedical Sciences		
36	PHDBS 707	Publication Analysis	4	8				Biomedical Sciences		
37	PHDBS 708	Writing for Biomedical Sciences	3	6				Biomedical Sciences	Life Sciences	
38	PHDBS 709	Molecular Basis of Infection	3	6				Biomedical Sciences	Life Sciences	
39	PHDBS 710	Molecular Pathology of Cancer	3	6				Biomedical Sciences	Life Sciences	
40	PHDBS 711	Molecular Basis of Genetic Disease	3	6				Biomedical Sciences	Life Sciences	
41	PHDBS 715	Molecular Basis of Neurological Disorders	3	6				Biomedical Sciences	Life Sciences	
42	PHDBS 716	Recombinant Drugs	3	6				Biomedical Sciences	Life Sciences	
43	PHDBS 717	Organ System and Common Diseases	3	6				Biomedical Sciences		
44	PHDBS 718	Principles of Pharmacology and Toxicology	3	6				Biomedical Sciences		
45	PHDBS 721	Drug Discovery I	3	6				Biomedical Sciences		
SMG										
Mining Engineering										
46	MINE 701	Advanced Mine Geomechanics	4	8				Mining Engineering	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology	
47	MINE 801	Advanced Mechanized Excavation and Tunneling	4	8				Mining Engineering	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology	
48	MINE 805	Mine Robotics and Automation	4	8				Mining Engineering	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology	

49	MINE 890-0	Thesis Research	0	0				Mining Engineering	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		
Petroleum Engineering											
50	PETE 802	Fluid Flow Through Porous Media	4	8				Petroleum Engineering	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		
51	PETE 805	Special Topics in Petroleum Engineering: Data Analytics	4	8				Petroleum Engineering	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		
52	PETE 890	Thesis Research	0	0				Petroleum Engineering			
School of Mining and Geosciences											
53	SMG 710	Research Methods and Statistics	3	6				Mining Engineering, Petroleum Engineering	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		
SSH											
Area Studies											
54	EAS 700	Introduction to Eurasia	4	8				Eurasian Studies	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
55	EAS 701	Critical Issues in Eurasian Studies	2	4				Eurasian Studies	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
56	EAS 702	Elective in Eurasian Humanities	4	8				Instructor's Permission Required. Registration through Add Course form only!			
57	EAS 703	Elective in Eurasian Social Sciences	4	8				Instructor's Permission Required. Registration through Add Course form only!			
58	EAS 704	Elective 2 in Eurasian Humanities	4	8				Instructor's Permission Required. Registration through Add Course form only!			

59	EAS 705	Elective 2 in Social Sciences	4	8				Instructor's Permission Required. Registration through Add Course form only!			
60	EAS 710	Independent Study in Eurasian Studies	4	8							
61	EAS 711	Doctoral Seminar in Eurasian Studies I	4	8				Eurasian Studies			
62	EAS 800-0	Dissertation Research in Eurasian Studies	0	0				Eurasian Studies			
Biological Science											
63	BIOL 800-0	Thesis Research	0	0				Life Sciences			
64	BIOL 820	Statistical Methods in Life Sciences	3	6				Biomedical Sciences, Life Sciences	GSB, GSE, GSPP, SEDS, SMG, SoM		
65	BIOL 831	Synthetic Biology	4	8				Biomedical Sciences, Life Sciences	GSB, GSE, GSPP, SEDS, SMG, SoM		
66	BIOL 832	Drug Discovery and Design	4	8				Biomedical Sciences, Life Sciences	GSB, GSE, GSPP, SEDS, SMG, SoM		
67	BIOL 834	Advanced Cancer Biology	4	8				Biomedical Sciences, Life Sciences	GSB, GSE, GSPP, SEDS, SMG, SoM		
68	BIOL 850	Structural and Molecular Biology in Health and Disease	4	8				Biomedical Sciences, Life Sciences	GSB, GSE, GSPP, SEDS, SMG, SoM		
69	BIOL 860	Molecular Biology of Prokaryotic Cells	4	8				Biomedical Sciences, Life Sciences	GSB, GSE, GSPP, SEDS, SMG, SoM		
70	BIOL 875	Gene Therapy	4	8				Biomedical Sciences, Life Sciences	GSB, GSE, GSPP, SEDS, SMG, SoM		
Communication and Composition											
71	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											
72	MATH 700-0	Thesis Research	0	0				Mathematics	SEDS, SSH	GSB, GSE, GSPP, SMG, SoM	
73	MATH 701	Real Analysis	4	8				Mathematics	SEDS, SSH	GSB, GSE, GSPP, SMG, SoM	
74	MATH 721	Nonlinear Differential Equations with Applications	4	8				Mathematics	SEDS, SSH	GSB, GSE, GSPP, SMG, SoM	
75	MATH 751	Probability Theory	4	8				Mathematics	SEDS, SSH	GSB, GSE, GSPP, SMG, SoM	
Physics											

76	PHYS 700-0	Thesis Research	0	0				Physics			
77	PHYS 705	Classical Mechanics	4	8				SEDS, SSH			
78	PHYS 711	Computational Modeling and Simulation	4	8				SEDS, SSH			
79	PHYS 730	Solid State Physics	4	8				SEDS, SSH			
80	PHYS 750	Advanced Mathematical Physics	4	8				SEDS, SSH			
SEDS											
Chemical and Materials Engineering											
81	DCHME 700-0	Thesis Research	0	0				1 year PhD SEDS Chemical Engineering	Chemical Engineering, Science, Engineering and Technology		
82	DCHME 755	Integrated Computational Materials Engineering	4	8				1 year PhD SEDS Chemical Engineering	Science, Engineering and Technology		
83	DCHME 761	Advanced Chemical Reaction Engineering	4	8				1 year PhD SEDS Chemical Engineering	Science, Engineering and Technology		
84	DCHME 762	Advanced Materials Processing	4	8				1 year PhD SEDS Chemical Engineering	Science, Engineering and Technology		
85	DCHME 765	Biofilms Science and Engineering	4	8				1 year PhD SEDS Chemical Engineering	Science, Engineering and Technology		
Civil and Environmental Engineering											
86	DCEE 700-0	Thesis Research	0	0				1 year PhD SEDS Civil Engineering	Civil Engineering, Science, Engineering and Technology		
87	DCEE 750	Finite Element Methods	4	8				Civil Engineering	Biomedical Sciences, Chemical 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		
88	DCEE 757	Advanced Environmental Chemistry	4	8				1 year PhD SEDS Civil Engineering	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		

89	DCEE 760	Advanced Foundation Engineering	4	8				1 year PhD SEDS Civil Engineering	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		
90	DCEE 761	Advanced Soil Mechanics	4	8				1 year PhD SEDS Civil Engineering	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		
91	DCEE 772	Engineering Management and Engineering Economy	4	8				1 year PhD SEDS Civil Engineering	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		
Computer Science											
92	CSCI 700-0	Thesis Research	0	0				1 year PhD SEDS Computer Science	Computer Science , Science, Engineering and Technology		
93	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	
94	CSCI 711	Advanced Theory of Computation	4	8				Computer Science , Robotics Engineering	Chemical Engineering, Civil Engineering, Electrical Engineering, Mechanical Engineering, Science, Engineering and Technology	SSH	
95	CSCI 785	Advanced Computer Vision	4	8				Computer Science , Robotics Engineering	Chemical Engineering, Civil Engineering, Electrical Engineering, Mechanical Engineering, Science, Engineering and Technology	SSH	
96	CSCI 794	Advanced Deep Learning	4	8				Computer Science , Robotics Engineering	Chemical Engineering, Civil Engineering, Electrical Engineering, Mechanical Engineering, Science, Engineering and Technology	SSH	
Electrical and Computer Engineering											
97	DELCE 700-0	Thesis Research	0	0				1 year PhD SEDS Electrical Engineering	Electrical Engineering, Science, Engineering and Technology		

98	DELCE 753	Stochastic Processes	4	8				1 year PhD SEDS Electrical Engineering	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		
99	DELCE 760	Advanced System Modelling and Control	4	8				1 year PhD SEDS Electrical Engineering	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		
100	DELCE 761	Advanced Data Structures and Algorithms	4	8				1 year PhD SEDS Electrical Engineering	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		
Mechanical and Aerospace Engineering											
101	DMAE 700-0	Thesis Research	0	0				1 year PhD SEDS Mechanical Engineering	Mechanical Engineering, Science, Engineering and Technology		
102	DMAE 701	Advanced Applied Mathematics	4	8				1 year PhD SEDS Mechanical Engineering	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		
103	DMAE 750	Advanced Statistics and Probability	4	8			MSC 615 Advanced Statistics and Probability (2394) (B- and above)	1 year PhD SEDS Mechanical Engineering	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		
104	DMAE 751	Modern Control Engineering	4	8				1 year PhD SEDS Mechanical Engineering	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		

105	DMAE 765	Advanced Manufacturing Processes and Strategies	4	8				1 year PhD SEDS Mechanical Engineering	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology		
Robotics and Mechatronics											
106	ROBT 700-0	Thesis Research	0	0				1 year PhD SEDS Robotics Engineering	Robotics Engineering, Science, Engineering and Technology		
107	ROBT 701	Advanced Robot Manipulation and Mobility	4	8				1 year PhD SEDS Robotics Engineering	Science, Engineering and Technology		
108	ROBT 703	Advanced Optimal Control and Planning	4	8				1 year PhD SEDS Robotics Engineering	Science, Engineering and Technology		
109	ROBT 709	Advanced Robot Dynamics and Control	4	8				1 year PhD SEDS Robotics Engineering	Science, Engineering and Technology		
School of Engineering											
110	DENG 700-0	Thesis Research	0	0				Science, Engineering and Technology			
111	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 SSH Eurasian Studies, 1 year PhD SSH Life Sciences, 1 year PhD SSH Mathematics, 1 year PhD SSH Physics	Chemical Engineering, Civil Engineering, Computer Science , Electrical Engineering, Mechanical Engineering, Robotics Engineering, Science, Engineering and Technology	1 year PhD SMG Mining Engineering, 1 year PhD SMG Petroleum Engineering, 2 year PhD SSH Physics	
112	DENG 790	Doctoral Seminar II	3	6	DENG 789 Doctoral Seminar I (4598) (P)			Science, Engineering and Technology			
113	DENG 792	Doctoral Seminar IV	3	6	DENG 791 Doctoral Seminar III (4600) (P)			Science, Engineering and Technology			
114	DENG 793	Doctoral Seminar V	3	6	DENG 792 Doctoral Seminar IV (4601) (P)			Science, Engineering and Technology			

115	DENG 794	Dissertation Research	12	24	DENG 785 PhD Proposal Oral Defence (2604) (P)			Science, Engineering and Technology			
116	DENG 796	Thesis Completion	0	0				Science, Engineering and Technology			
117	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)			Science, Engineering and Technology			
118	DENG 798	Doctoral Seminar VI	3	6	DENG 793 Doctoral Seminar V (4602) (P)			Science, Engineering and Technology			
119	DENG 799	Doctoral Seminar VII	3	6	DENG 798 Doctoral Seminar VI (4607) (P)			Science, Engineering and Technology			