

Course Requirements and Registration Priorities (Graduate: Master), Fall 2018

#	Abbr	Title	Cr(US)	Cr(ECTS)	PreRequisite	CoRequisite	AntiRequisite	1st priority registration	2nd priority registration	3rd priority registration	4th priority registration
SEng											
Chemical Engineering											
1	MCHE 600	MSc Thesis in Chemical Engineering	15	30							
Chemical and Materials Engineering											
2	MCHME 603	Advanced Materials Processing	3	6				1 year Gr SENG, 2 year Gr SENG	Science, Engineering and Technology	GSB, GSE, GSPP, SHSS, SMG, SST, SoM	
3	MCHME 604	Advanced Materials Characterization Methods	3	6				1 year Gr SENG, 2 year Gr SENG	Science, Engineering and Technology	GSB, GSE, GSPP, SHSS, SMG, SST, SoM	
4	MCHME 605	Advanced Chemical Reaction Engineering	3	6				1 year Gr SENG, 2 year Gr SENG	Science, Engineering and Technology	GSB, GSE, GSPP, SHSS, SMG, SST, SoM	
Civil Engineering											
5	EMEM 507	Project Management	3	6				1 year Gr SENG, 2 year Gr SENG	Science, Engineering and Technology	GSB, GSE, GSPP, SHSS, SMG, SST, SoM	
6	EMEM 509	Systems Engineering	3	6							
7	EMEM 523	Supply Chain Management	3	6							
8	EMEM 533	Engineering Management and Engineering Economy	3	6				1 year Gr SENG, 2 year Gr SENG	Science, Engineering and Technology	GSB, GSE, GSPP, SHSS, SMG, SST, SoM	
9	EMEM 537	Engineering Decision Tools	3	6							
10	EMEM 539	Big Data and Information Management	3	6							
11	EMEM 542	Production and Service Operations Management	3	6							
12	EMEM 543	Quality and Lean Management	3	6				1 year Gr SENG, 2 year Gr SENG	Science, Engineering and Technology	GSB, GSE, GSPP, SHSS, SMG, SST, SoM	
13	MCE 600	MSc Thesis in Civil Engineering	15	30							
14	MCEE 603	Finite Element Methods	3	6				1 year Gr SENG, 2 year Gr SENG	Science, Engineering and Technology	GSB, GSE, GSPP, SHSS, SMG, SST, SoM	
15	MCEE 604	Advanced Soil Mechanics	3	6				1 year Gr SENG, 2 year Gr SENG	Science, Engineering and Technology	GSB, GSE, GSPP, SHSS, SMG, SST, SoM	

16	MCEE 605	Advanced Environmental Chemistry	3	6				1 year Gr SENG, 2 year Gr SENG	Science, Engineering and Technology	GSB, GSE, GSPP, SHSS, SMG, SST, SoM	
17	MSC 601	Technical Communication	3	6							
18	MSC 602	Advanced Applied Mathematics	3	6				1 year Gr SENG, 2 year Gr SENG	Science, Engineering and Technology	GSB, GSE, GSPP, SHSS, SMG, SST, SoM	
19	MSC 615	Advanced Statistics and Probability	3	6				1 year Gr SENG, 2 year Gr SENG	Science, Engineering and Technology	GSB, GSE, GSPP, SHSS, SMG, SST, SoM	
20	MSC 616	Research Methods	3	6				1 year Gr SENG, 2 year Gr SENG	Science, Engineering and Technology	GSB, GSE, GSPP, SHSS, SMG, SST, SoM	
Electrical and Computer Engineering											
21	MECE 603	Advanced Data Structures and Algorithms	3	6				1 year Gr SENG, 2 year Gr SENG	Science, Engineering and Technology	GSB, GSE, GSPP, SHSS, SMG, SST, SoM	
22	MECE 605	Statistics and Probability for Electrical and Computer Engineers	3	6				1 year Gr SENG, 2 year Gr SENG	Science, Engineering and Technology	GSB, GSE, GSPP, SHSS, SMG, SST, SoM	
23	MECE 606	Embedded Systems and Applications	3	6				1 year Gr SENG, 2 year Gr SENG	Science, Engineering and Technology	GSB, GSE, GSPP, SHSS, SMG, SST, SoM	
Electrical and Electronic Engineering											
24	MEE 600	MSc Thesis in Electrical and Electronics Engineering	15	30							
Mechanical Engineering											
25	MME 600	MSc Thesis in Mechanical Engineering	15	30							
Mechanical and Aerospace Engineering											
26	MMAE 603	Modern Control Engineering	3	6				1 year Gr SENG, 2 year Gr SENG	Science, Engineering and Technology	GSB, GSE, GSPP, SHSS, SMG, SST, SoM	
27	MMAE 605	Advanced Manufacturing Processes & Strategies	3	6				1 year Gr SENG, 2 year Gr SENG	Science, Engineering and Technology	GSB, GSE, GSPP, SHSS, SMG, SST, SoM	
SST											
Biological Science											
28	BIOL 520	Statistical Methods in Life Sciences	3	6							
29	BIOL 550	Structural and Molecular Biology in Health and Disease	3	6							
30	BIOL 560	Molecular Biology of Prokaryotic Cells	3	6							
31	BIOL 600	Graduate Seminar Series	3	6							

32	BIOL 623	Advanced Immunology	3	6				Biological Sciences	SST, Science, Engineering and Technology	SEng, SHSS	
33	BIOL 635	Hot Topics in Life Sciences	3	6							
34	BIOL 670	Gene Therapy	3	6				Biological Sciences	SST, Science, Engineering and Technology	SEng, SHSS	
35	BIOL 690	Research Thesis I	6	12							
Computer Science											
36	CSCI 501	Software Principles and Practice	3	6							
37	CSCI 511	CS Track Core-Theory	3	6							
38	CSCI 512	Information Theory	3	6							
39	CSCI 525	Quantum Computing	3	6				Computer Science, Physics	SST, Science, Engineering and Technology	SEng, SHSS	
40	CSCI 545	Big Data Analytics	3	6							
41	CSCI 575	Formal Methods and Applications	3	6							
Mathematics											
42	MATH 517	Scientific Modeling and Simulation with Mathematics	3	6	MATH 273 Linear Algebra with Applications (C- and above) OR MATH 351 Numerical Methods with Applications (C- and above)						
43	MATH 518	Applied Finite Element Analysis	3	6	MATH 517 Scientific Modeling and Simulation with Mathematics (B- and above) AND MATH 351 Numerical Methods with Applications (C and above)						
44	MATH 540	Statistical Learning I	3	6	MATH 322 Mathematical Statistics (C- and above) OR (MATH 310 Applied Statistical Methods (C- and above) AND MATH 273 Linear Algebra with Applications (C- and above))						

45	MATH 576	Numerical Methods for Partial Differential Equations	3	6	MATH 551 Advanced Numerical Methods (B- and above)						
46	MATH 676	Advanced Partial Differential Equations with Applications	3	6	MATH 481 Partial Differential Equations (C and above) OR MATH 482 Fourier Analysis (C and above)						
Physics											
47	PHYS 505	Classical Mechanics	3	6							
48	PHYS 511	Computational Modeling and Simulation	3	6			Physics		SST, Science, Engineering and Technology	SEng, SHSS	
49	PHYS 515	Classical Electrodynamics	3	6							
50	PHYS 550	Advanced Mathematical Physics	3	6			Physics		SST, Science, Engineering and Technology	SEng, SHSS	
51	PHYS 574	Lasers and Photonics	3	6			Physics		SST, Science, Engineering and Technology	SEng, SHSS	
52	SST 501	Teaching and Learning	3	6							
53	SST 503	Laboratory Practicum	3	6	SST 501 Teaching and Learning (C- and above) AND SST 502 Teaching Practicum (C- and above)						
54	SST 591	Research Methods	3	6							
55	SST 693	Thesis Proposal	3	6	SST 591 Research Methods (C- and above)						
Robotics and Mechatronics											
56	ROBT 501	Robot Manipulation and Mobility	3	6							
57	ROBT 503	Dynamic Systems and Control	3	6							
58	ROBT 611	Industrial Robotics	3	6	ROBT 501 Robot Manipulation and Mobility (C- and above) AND CSCI 501 Software Principles and Practice (C- and above)			Robotics	SST, Science, Engineering and Technology	SEng, SHSS	
59	ROBT 613	Brain-Machine Interfaces	3	6				Robotics	SST, Science, Engineering and Technology	SEng, SHSS	

60	ROBT 615	Optimal Control and Planning	3	6	ROBT 501 Robot Manipulation and Mobility (C- and above) AND ROBT 503 Dynamic Systems and Control (C- and above)			Robotics	SST, Science, Engineering and Technology	SEng, SHSS	
SHSS											
Area Studies											
61	EAS 500	Introduction to Eurasia	4	8				Eurasian Studies	GSB, GSE, GSPP, SEng, SHSS, SMG, SST		
62	EAS 501	General Methodology	4	8				Eurasian Studies	GSB, GSE, GSPP, SEng, SHSS, SMG, SST		
63	EAS 503	Thesis I	7.5	15	EAS 500 Introduction to Eurasia (C- and above) AND EAS 501 General Methodology (C- and above) AND EAS 502 Disciplinary Methodology (C- and above)			2 year Gr SHSS Eurasian Studies			
64	EAS 511	Independent Study in Eurasian Studies	4	8							
Area Studies, Political Science and International Relations, Sociology and Anthropology											
65	SOC 514/PLS 514/EAS 506	Qualitative Research Methods	4	8				Eurasian Studies	GSB, GSE, GSPP, SEng, SHSS, SMG, SST		
Economics											
66	ECON 501	Microeconomics I	4	8				1 year Gr SHSS Economics	GSB, GSE, GSPP, SEng, SHSS, SMG, SST		
67	ECON 502	Macroeconomics I	4	8				1 year Gr SHSS Economics	GSB, GSE, GSPP, SEng, SHSS, SMG, SST		
68	ECON 505	Behavioral and Experimental Economics	4	8				2 year Gr SHSS Economics	GSB, GSE, GSPP, SEng, SHSS, SMG, SST		
69	ECON 511	Statistics	4	8				1 year Gr SHSS Economics	GSB, GSE, GSPP, SEng, SHSS, SMG, SST		
70	ECON 512	Mathematical Economics	4	8				1 year Gr SHSS Economics	GSB, GSE, GSPP, SEng, SHSS, SMG, SST		

71	ECON 516	Empirical Industrial Organization	4	8	ECON 501 Microeconomics I (C- and above) AND ECON 531 Econometrics (C- and above)			2 year Gr SHSS Economics	GSB, GSE, GSPP, SEng, SHSS, SMG, SST		
72	ECON 532	Applied Econometrics	4	8				2 year Gr SHSS Economics	GSB, GSE, GSPP, SEng, SHSS, SMG, SST		
73	ECON 589	Thesis I	4	8				2 year Gr SHSS Economics			
Languages, Literature and Linguistics											
74	WLL 540	Oral Epic in Central Asia	4	8				Eurasian Studies	GSB, GSE, GSPP, SEng, SHSS, SMG, SST		
Political Science and International Relations											
75	PLS 511	Advanced Research I	4	8				Political Science and International Relations	GSB, GSE, GSPP, SEng, SHSS, SMG, SST		
76	PLS 513	Research and Writing in Political Science	4	8				Political Science and International Relations	GSB, GSE, GSPP, SEng, SHSS, SMG, SST		
77	PLS 516	Experimental Political Science	4	8	PLS 511 Advanced Research I (C- and above)			Political Science and International Relations	GSB, GSE, GSPP, SEng, SHSS, SMG, SST		
78	PLS 532	Comparative Democratization	4	8	PLS 540 Core Seminar in Comparative Politics (C- and above)			Political Science and International Relations	GSB, GSE, GSPP, SEng, SHSS, SMG, SST		
79	PLS 540	Core Seminar in Comparative Politics	4	8				Political Science and International Relations	GSB, GSE, GSPP, SEng, SHSS, SMG, SST		
80	PLS 541	Advanced Topics in Comparative Politics	4	8				Political Science and International Relations	GSB, GSE, GSPP, SEng, SHSS, SMG, SST		
81	PLS 550	Core Seminar in IR	4	8				Political Science and International Relations	GSB, GSE, GSPP, SEng, SHSS, SMG, SST		
82	PLS 565	Politics of International Finance	4	8				Political Science and International Relations	GSB, GSE, GSPP, SEng, SHSS, SMG, SST		
83	PLS 581	Independent Study in Political Science	4	8				Political Science and International Relations	GSB, GSE, GSPP, SEng, SHSS, SMG, SST		
GSB											
GSB											
84	GSBF 501	Team Building and Business Communications	1	2							

85	GSBF 511	Statistical Methods	2	4						
86	GSBF 512	Principles of Finance	2	4						
87	GSBF 516	Financial Markets and Institutions	2	4						
88	GSBF 535	Insurance & Actuarial Science	2	4						
89	GSBF 550	Master's Thesis	9	18						
90	MBA 01	Consequential Leadership	1	2						
91	MBA 02	Business Mathematics and Business Computer Application	1	2						
92	MBA 03	Financial Accounting	2	4						
93	MBA 04	Probability and Statistics	2	4						
94	MBA 05	Business Communication	2	4						
95	MBA 07	Managerial Effectiveness	2	4						
96	MBA 09	Marketing Management	2	4						
97	MBA 16	Entrepreneurship	2	4						
98	MBA 19	Distinguished Speaker Series	0	1						
99	MBA 20	Practicum Project	2.5	5						
100	MBAE 5	Competitive Analysis	2	4						
101	MBAE 6	International Finance	2	4						
102	MBAE 7	Supply Chain Management	2	4						
103	MBAE 9	Marketing Strategy	2	4						
104	MSF 01	Financial Modeling	2	4						
105	MSF 03	Advanced Econometrics	2	4						
106	MSF 04	Venture Capital	2	4						
GSPP										
GSPP										
107	MPA 602	Public Administration in Theory and Practice	4	8						
108	MPA 603	Economic Applications for Public Managers	4	8						
109	MPA 605	Research Methods for Decision Making	4	8						
110	MPA 617	Institutions and development policies	4	8			2 year GSPP Public Policy	GSPP	GSB, GSE, SEng, SHSS, SMG, SST, SoM	
111	MPA 622	Public Policy and Economics of Health Systems	4	8			2 year GSPP Public Administration	GSPP	GSB, GSE, SEng, SHSS, SMG, SST, SoM	
112	MPA 623	Comparative Constitutional Law	4	8			2 year GSPP Public Administration	GSPP	GSB, GSE, SEng, SHSS, SMG, SST, SoM	

113	MPA 625	Ethics and Public Policy	4	8				2 year GSPP Public Administration	GSPP	GSB, GSE, SEng, SHSS, SMG, SST, SoM	
114	MPA 637	Comparative Policy-Making and Public Policy	4	8				2 year GSPP Public Administration	GSPP	GSB, GSE, SEng, SHSS, SMG, SST, SoM	
115	MPA 639	International Financial Policy	4	8				2 year GSPP Public Administration	GSPP	GSB, GSE, SEng, SHSS, SMG, SST, SoM	
116	MPA 685	Water Resources Policy and Management	4	8				2 year GSPP Public Administration	GSPP	GSB, GSE, SEng, SHSS, SMG, SST, SoM	
117	MPA 699	Master's Project with Overseas Component	0	0							
118	MPP 601	Microeconomics and Public Policy	4	8							
119	MPP 611	Statistical Techniques for Public Policy	4	8							
120	MPP 612	Public Policy Research and Evaluation	4	8							
121	MPP 621	Introduction to Public Policy and Analysis	4	8							
122	MPP 625	Central Asian politics: Comparative Analysis	4	8				2 year GSPP Public Policy	GSPP	GSB, GSE, SEng, SHSS, SMG, SST, SoM	
123	MPP 631	Politics and Public Policy	4	8							
124	MPP 670	Behavioral Economics and Public Policy	4	8	MPP 601 Microeconomics and Public Policy (C- and above) OR MPA 603 Economic Applications for Public Managers (C- and above)			2 year GSPP Public Policy	GSPP	GSB, GSE, SEng, SHSS, SMG, SST, SoM	
125	MPP 687	Science, Technology, and Public Policy	4	8				2 year GSPP Public Policy	GSPP	GSB, GSE, SEng, SHSS, SMG, SST, SoM	
GSE											
GSE											
126	EDHE 609	Introduction to Educational Leadership: Higher Education	3	6				1 year GSE Educ.Leadership (2-year program)			
127	EDHE 610	Applying Educational Leadership in Kazakhstan	3	6				1 year GSE Educ.Leadership (2-year program)			
128	EDHE 691	Thesis Seminar II	3	6				2 year GSE Educ.Leadership (2-year program)			

129	EDIE 609	Introduction to Educational Leadership: Inclusive Education	3	6				1 year GSE Educ.Leadership (2-year program)			
130	EDIE 651	Inclusive Education: Policy Perspectives	3	6				1 year GSE Educ.Leadership (2-year program)			
131	EDIE 652	Curriculum Design: perspectives on Addressing Barriers to Teaching and Learning (Including SEN)	3	6				1 year GSE Educ.Leadership (2-year program)			
132	EDIE 691	Thesis Seminar II	3	6				2 year GSE Educ.Leadership (2-year program)			
133	EDML 601	Introduction to Linguistics	3	6				1 year GSE MA in Multil.Educ. (2-year program)			
134	EDML 610	Foundations of Multilingual Education	3	6				1 year GSE MA in Multil.Educ. (2-year program)			
135	EDML 613	The Multilingual School	3	6				2 year GSE MA in Multil.Educ. (2-year program)			
136	EDML 620	Language and Literacy Development	3	6				2 year GSE MA in Multil.Educ. (2-year program)			
137	EDML 690	Thesis Research I	3	6				2 year GSE MA in Multil.Educ. (2-year program)			
138	EDSE 609	Introduction to Educational Leadership: School Education	3	6				1 year GSE Educ.Leadership (2-year program)			
139	EDSE 636	Preparing Children for the Future: Skills and Employability	3	6				1 year GSE Educ.Leadership (2-year program)			
140	EDSE 637	Student Discourse and Argumentation: Theories, Practices and Policies	3	6				1 year GSE Educ.Leadership (2-year program)			
141	EDSE 691	Thesis Seminar II	3	6				2 year GSE Educ.Leadership (2-year program)			
142	EDUC 505	Academic English 1	1.5	3				1 year GSE Educ.Leadership (2-year program)			
143	EDUC 507	Academic English III	1.5	3				2 year GSE Educ.Leadership (2-year program)			
144	EDUC 510	Advanced English for Education Professionals I	3	6				1 year GSE MA in Multil.Educ. (2-year program)			

145	EDUC 512	English for Thesis Writing I	3	6					2 year GSE MA in Multil.Educ. (2-year program)			
146	EDUC 571	Basic Kazakh	3	6					1 year GSE Educ.Leadership (2-year program)			
147	EDUC 572	Kazakh for Professional Purposes	3	6					2 year GSE Educ.Leadership (2-year program)			
148	EDUC 600	Research Methods I	3	6					1 year GSE Educ.Leadership (2-year program), 1 year GSE MA in Multil.Educ. (2-year program)			
149	EDUC 602	Educational Context and Reform in Kazakhstan	3	6					1 year GSE Educ.Leadership (2-year program), 1 year GSE MA in Multil.Educ. (2-year program)			
Other												
GSPP												
150	T-PP 5144	Decision and Game Theory for Public Managers	4	8								
151	T-PP 5168	Public Service Leadership	4	8								
152	T-PP 5178	Leadership and Decision-Making Skills	4	8								
153	T-PP 5191	Public Administration, Technology and Innovation	4	8								
154	T-PP 5196	Education Economics and Policy	4	8								
155	T-PP 5203	Behavioral Economics and Public Policy	4	8								
156	T-PP 5216	Economic Growth in Developing Asia	4	8								
157	T-PP 5267	Urban Transport Policy: A Global View	4	8								
158	T-PP 5298	Singapore's Development Experience	4	8								
159	T-PP 5511	Systemic and Integrated Policy Design and Analysis	4	8								
Other												
160	T-DECISION 618	Data Analytics for Business	3	6								
161	T-MARKETNG 797	Consumer Behavior	3	6								

SoM**Biomedical Sciences**

162	MMMM 501	Molecular Basis of Infection	3	6							
163	MMMM 502	Molecular Pathology of Cancer	3	6							
164	MMMM 504	Molecular Basis of Genetic Disease	3	6							
165	MMMM 505	Inferential Biostatistics	2	4							
166	MMMM 506	Biocomputing	1	2							
167	MMMM 513	Molecular Basis of Neurological Disorders	3	6							
168	MMMM 603	Recombinant Drugs	3	6							
169	MMMM 604	Nutrigenomics	1.5	3							
170	MMMM 605	Developmental Biology	1.5	3							

Public Health

171	PUBH 501	Principles of Public Health Problem Solving	3	6							
172	PUBH 511	Inferential Biostatistics	3	6							
173	PUBH 521	Principles of Analytical Epidemiology	3	6							
174	PUBH 528	Qualitative Research Methods	3	6							
175	PUBH 531	Emerging Infectious Diseases	3	6							
176	PUBH 551	Health Services Management, Health Economic and Health Policy	3	6							
177	PUBH 601	Health Education and Promotion	3	6							
178	PUBH 641	Problem Investigations in Environmental Health	3	6							
179	PUBH 662	Graduate Research Seminar II	3	6							
180	PUBH 681	Master's Project Planning	3	6							

SMG**Mining Engineering**

181	MINE 500	Foundations of Mining	3	6							
182	MINE 511	Applied Geostatistics	3	6							
183	MINE 512	Geology for Mining Engineers	3	6							
184	MINE 516	Advanced Mine Ventilation	3	6							
185	MINE 519	Mine Automation and Maintenance	3	6							

186	MINE 520	Mine Geomechanics	3	6	MINE 500 Foundations of Mining (C- and above) AND MINE 512 Geology for Mining Engineers (C- and above)						
187	MINE 521	Underground Hard Rock Geotechnical Engineering	3	6				2 year Gr SMG			
188	MINE 522	Advanced Geostatistical Modelling	3	6	MINE 511 Applied Geostatistics (C- and above)			2 year Gr SMG			
189	MINE 524	Advanced Tunnelling	3	6				2 year Gr SMG			
190	MINE 526	Thesis Literature Review	6	12							
191	MINE 604	Geology of Ore Deposits	3	6				2 year Gr SMG			
Petroleum Engineering											
192	PETE 501	Foundations of Petroleum Engineering	3	6							
193	PETE 502	Petroleum Geology	3	6							
194	PETE 503	Fluid Flow Through Porous Media	3	6							
195	PETE 504	Advanced Formation Evaluation	3	6	PETE 501 Foundations of Petroleum Engineering (C- and above)						
196	PETE 505	Advanced Drilling Engineering	3	6	PETE 501 Foundations of Petroleum Engineering (C- and above)						