

## Course Requirements and Registration Priorities Spring 2019

#	Abbr	Title	Cr(US)	Cr(ECTS)	PreRequisite	CoRequisite	AntiRequisite	1st priority registration	2nd priority registration	3rd priority registration	4th priority registration
<b>SST</b>											
<b>Mathematics</b>											
1	MATH 417	Cryptography	3	6	MATH 273 Linear Algebra with Applications (84) (C and above) AND (MATH 251 Discrete Mathematics (85) (C and above) OR MATH 301 Introduction to Number Theory (613) (C and above) OR MATH 355 Introduction to Proofs (86) (C and above))			Mathematics	SST	SHSS	
<b>CPS</b>											
<b>GSPP</b>											
2	ZEST 061	Basic Economics and Statistics	0	0							
<b>Mathematics</b>											
3	MATH 500Z	Linear Algebra with Applications	0	0							
<b>NUFYP</b>											
4	FBIO 011	Introduction to Biology	1	2							
5	FBUS 011	Introduction to Business	1	2							
6	FCHM 011	Introduction to Chemistry	1	2							
7	FEAP 020	Foundation English for Academic Purposes	1	2							
8	FGEO 011	Introduction to Geography	1	2							
9	FHUM 011	Introduction to Humanities and Social Science	1	2							
10	FMAT 020	Foundation Statistics	1	2							
11	FMAT 030	Mathematics for Life Sciences (Biology and Chemistry)	1	2							
12	FMAT 040	Mathematics for Physical Sciences	1	2							
13	FPHY 011	Introduction to Physics	1	2			FBIO 011 Introduction to Biology (4579) (C- and above)				

**NUZYP**

14	ZCOM 041	Academic Communications for Graduate Studies II	0	0						
15	ZRDG 031	Academic Reading for Graduate Studies II	0	0						
16	ZWRT 021	Academic Writing for Graduate Studies II	0	0						

**Sociology and Anthropology**

17	SOC 201Z	Social Science Research Methods	0	0						
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**GSB**

**GSB**

18	GSBF 512	Principles of Finance	2	4						
19	GSBF 513	Financial Econometrics	2	4						
20	GSBF 514	Corporate Finance	2	4						
21	GSBF 515a	Investments I	2	4						
22	GSBF 515b	Investments II	2	4	GSBF 515a Investments I (4106) (C- and above)					
23	GSBF 517	Financial Economics	2	4						
24	GSBF 520	Empirical Asset Pricing	2	4						
25	GSBF 541	Global Finance Experience Residency (I)	2	4						
26	MBA 08	Managerial Economics	2	4						
27	MBA 10	Foundations of Strategy	2	4						
28	MBA 11	Managerial Accounting	2	4						
29	MBA 12	Operations Management	2	4						
30	MBA 13	Macroeconomics	2	4						
31	MBA 15	Corporate Finance	2	4						
32	MBA 16	Entrepreneurship	2	4						
33	MBA 17	Negotiations	2	4						
34	MBAE 13	Raising Capital	2	4						
35	MSF 06	Credit Risk Modeling	2	4						

**GSPP**

**GSPP**

36	DPP 602	Macroeconomics in Public Sector	4	8				Public Policy		
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37	DPP 613	Research Design (qualitative and quantitative)	4	8				Public Policy			
38	DPP 615	Governance and Public Policy	4	8				Public Policy			
39	DPP 631	Politics of Public Policy	4	8				Public Policy			
40	DPP 689	PhD Qualifying Examination	0	0				Public Policy			
41	DPP 699	Thesis Design and Written Proposal	6	12				Public Policy			
42	MPA 608	Strategic Management and Leadership	4	8				Public Administration			
43	MPA 610	National Identity and Public Policy	4	8				Public Administration	Public Policy	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM	
44	MPA 611	Benefit Cost Analysis	4	8				Public Administration	Public Policy	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM	
45	MPA 699	Master's Project with Overseas Component	0	0				Public Administration			
46	MPE 671	Game Theory and Public Policy	4	8				GSPP	GSB, GSE, SEng, SHSS, SMG, SST, SoM		
47	MPP 602	Macroeconomics and Public Policy	4	8				Public Policy			
48	MPP 613	Public Policy Research Design and Analysis	4	8				Public Policy			
49	MPP 627	Environmental Economics and Public Policy	4	8				Public Administration	Public Policy	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM	
50	MPP 638	Terrorism and Counterterrorism Policy	4	8				Public Administration	Public Policy	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM	
51	MPP 641	Public Management and Leadership	4	8				Public Policy			
52	MPP 643	Marketing Public Policy	4	8				Public Administration	Public Policy	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM	
53	MPP 663	Applied Public Economics and Finance	4	8	MPP 601 Microeconomics and Public Policy (1449) (B- and above)			GSPP	GSB, GSE, SEng, SHSS, SMG, SST, SoM		

54	MPP 681	Natural Resource Management and Policy	4	8				Public Administration	Public Policy	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM	
55	MPP 682	Sustainable Development and Environmental Governance	4	8	MPP 601 Microeconomics and Public Policy (1449) (D and above)			GSPP	GSB, GSE, SEng, SHSS, SMG, SST, SoM		
56	MPP 685	Urban Planning and Public Policy	4	8				Public Administration	Public Policy	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM	
57	MPP 699	Policy Analysis Exercise with Singapore Component	8	16	MPP 601 Microeconomics and Public Policy (1449) (D and above) AND MPP 602 Macroeconomics and Public Policy (1023) (D and above) AND MPP 611 Statistical Techniques for Public Policy (1450) (D and above) AND MPP 612 Public Policy Research and Evaluation (1025) (D and above) AND MPP 613 Public Policy Research Design and Analysis (1301) (D and above) AND MPP 621 Introduction to Public Policy and Analysis (1451) (D and above) AND MPP 631 Politics and Public Policy (1303) (D and above)			Public Policy			
<b>GSE</b>											
<b>GSE</b>											
58	EDHE 665	Comparative Higher Education	3	6				Retake Course			
59	EDHE 692	Thesis Seminar III	4.5	9				2 year GSE Educ.Leadership			
60	EDIE 692	Thesis Seminar III	4.5	9				2 year GSE Educ.Leadership			
61	EDML 611	Plurilingual Individual	3	6				1 year GSE MA in Multil.Education			
62	EDML 612	Multilingual Society	3	6				1 year GSE MA in Multil.Education			
63	EDML 614	Multilingual curriculum development and assessment	3	6				2 year GSE MA in Multil.Education			
64	EDML 620	Language and Literacy Development	3	6				Multilingual Education			
65	EDML 691	Thesis Research II	6	12				2 year GSE MA in Multil.Education			

66	EDSE 620	Perspectives on Inclusive Education	3	6				2 year GSE MA in Multil.Education			
67	EDSE 692	Thesis Seminar III	4.5	9				2 year GSE Educ.Leadership			
68	EDUC 506	Academic English II	1.5	3				1 year GSE Educ.Leadership			
69	EDUC 508	Academic English IV	1.5	3				2 year GSE Educ.Leadership			
70	EDUC 511	Advanced English for Education Professionals II	3	6				1 year GSE MA in Multil.Education			
71	EDUC 513	English for Thesis Writing II	3	6				2 year GSE MA in Multil.Education			
72	EDUC 571	Basic Kazakh	3	6				1 year GSE MA in Multil.Education, 1 year GSE PhD Education			
73	EDUC 572	Kazakh for Professional Purposes	3	6				GSE			
74	EDUC 573	Academic Writing in Kazakh	3	6				Education, Multilingual Education			
75	EDUC 600	Research Methods II	3	6				1 year GSE Educ.Leadership, 1 year GSE MA in Multil.Education			
76	EDUC 670	Internship Project	6	12				1 year GSE Educ.Leadership			
77	EDUC 671	Work-based project	6	12				1 year GSE Educ.Leadership			
78	EDUC 675	Learning to Work	4.5	9				2 year GSE Educ.Leadership			
79	EDUC 704	Advanced Methods of Education Research	3	6				1 year GSE PhD Education			
80	EDUC 705	Advanced Methods of Education Research: Qualitative Methods	3	6				1 year GSE PhD Education			
81	EDUC 711	Globalisation and Education	3	6				1 year GSE PhD Education			
82	EDUC 730	Preparation for Proposal Defence I	6	12				1 year GSE PhD Education			
83	EDUC 731	Proposal Defence	3	6				2 Year PhD in Education only. Registration by School Office			
84	EDUC 740	Doctoral Seminar	3	6				2 Yr PhD in Education only. Registration by School Office			

85	EDUC 750	Dissertation Research	9	18				Yr 2, 3 PhD in Education only. Registration by School Office			
<b>Other</b>											
<b>Other</b>											
86	STUMOB 001	Student Mobility Course	0	0							
87	T - 19020	History of America	3	6							
88	T - 19185	Human Rights: Contemporary issues	3	6							
89	T - 19186	Seminar in Geopolitics	3	6							
90	T - 19405	Language Teaching (English)	3	6							
91	T - 009AM 16	Managerial Decision Making	3	6							
92	T - 032AM 16	Project Management: Managerial Approach	3	6							
93	T - UES 15	Political Analysis	3	6							
94	T-EE 4220	Probstc Sig and Sys	3	6							
95	T-EE 4360	VLSI Design	3	6							
96	T-EE 4390	Microprocessors	3	6							
97	T-EE 4621	Auto Control Systems	3	6							
98	T-PO 323	Urban & Metropolitan Politics	3	6							
99	T-PO 407	Contemporary Political Thought	3	6							
100	T-SO 101	Introduction to Sociology	3	6							
101	T-SO 202	Social Problems	3	6							
<b>SoM</b>											
<b>Biomedical Sciences</b>											
102	MMMM 507	Critical Analysis of the Contemporary Concepts in Molecular Medicine	3	6							
103	MMMM 508	Molecular Immunology	2	4							

104	MMMM 509	From the Bench to the Bedside: Drug Development and Clinical Trials	3	6						
105	MMMM 510	Natural Medicine	3	6						
106	MMMM 511	Research Methods in Molecular Biomedicine	3	6						
107	MMMM 512	Molecular Basis of Chronic Inflammation	1	2						
108	MMMM 690	Master Research Project	15	30						
<b>Nursing</b>										
109	NUR 402	Principles of Healthcare Administration	4	8						
110	NUR 405	Issues and Trends in Nursing	4	8						
111	NUR 406.2	Medical-Surgical Nursing: Complex Management	4	8						
112	NUR 407	Capstone (Clinical +EBP Quality Improvement Research)	4	8						
<b>Public Health</b>										
113	PUBH 512	Biostatistical Modeling and Sampling	3	6						
114	PUBH 522	Advanced Analytical Epidemiology	3	6						
115	PUBH 551	Health Services Management, Health Economic and Health Policy	3	6						
116	PUBH 552	Principles of Health Economics and Policy	3	6	PUBH 551 Health Services Management, Health Economic and Health Policy (3696) (C and above)					
117	PUBH 561	Graduate Research Seminar I	3	6						
118	PUBH 631	Social and Behavioral Sciences in Public Health	3	6						
119	PUBH 682	Master's Project Implementation	12	24						
<b>School of Medicine</b>										
120	MHPW 200	Health, Physical Fitness, and Well Being	3	6						
<b>SMG</b>										
<b>Mining Engineering</b>										

121	MINE 507	Rock Excavation Methods	3	6				1 year Gr SMG Mining Engineering	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
122	MINE 508	Advanced Rock Mechanics	3	6				1 year Gr SMG Mining Engineering	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
123	MINE 509	Advanced Surface Mine Design	3	6				1 year Gr SMG Mining Engineering	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
124	MINE 510	Advanced Underground Mine Design	3	6				1 year Gr SMG Mining Engineering	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
125	MINE 691	Thesis II	15	30	MINE 690 Thesis I (4531) (C- and above)			2 year Gr SMG Mining Engineering	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
<b>Petroleum Engineering</b>											
126	PETE 500	Research Methods	3	6				1 year Gr SMG Petroleum Engineering	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
127	PETE 506	Advanced Reservoir Simulation	3	6				1 year Gr SMG Petroleum Engineering	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
128	PETE 507	Advanced Reservoir Engineering	3	6				1 year Gr SMG Petroleum Engineering	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
129	PETE 508	Advanced Production Engineering	3	6				1 year Gr SMG Petroleum Engineering	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
130	PETE 606	Advanced Enhanced Oil Recovery	3	6				1 year Gr SMG Petroleum Engineering	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
<b>School of Mining and Geosciences</b>											
131	GEOL 101	Fundamentals of Geology	3	6				1 year UG SMG	SEng, SST	SHSS	
132	GEOL 102	Fundamentals of Geology	3	6				1 year UG SMG	SEng, SST	SHSS	
133	SMG 100	Introduction to Natural Resources Extraction	3	6				1 year UG SMG	SEng, SST	SHSS	
134	SMG 520	Research Methods	3	6				1 year Gr SMG Mining Engineering	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
<b>SSH</b>											
<b>Area Studies</b>											
135	EAS 502	Disciplinary Methodology	4	8				1 year Gr SHSS Eurasian Studies, 2 year Gr SHSS Eurasian Studies	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		



136	EAS 504	Thesis II	12.5	25	EAS 500 Introduction to Eurasia (1632) (C- and above) AND EAS 501 General Methodology (1633) (C- and above) AND EAS 502 Disciplinary Methodology (1379) (C- and above) AND EAS 503 Thesis I (2141) (C- and above)			1 year Gr SHSS Eurasian Studies, 2 year Gr SHSS Eurasian Studies	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
137	EAS 511	Independent Study in Eurasian Studies	4	8				1 year Gr SHSS Eurasian Studies, 2 year Gr SHSS Eurasian Studies	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
<b>Biological Science</b>											
138	BIOL 101	Biology for non-Science majors	3	6			BIOL 110 Modern Biology I (1070) (C- and above)	SHSS			
139	BIOL 120	Modern Biology II	3	6	BIOL 110 Modern Biology I (1070) (C and above)			Biological Sciences, Chemistry	SST	SHSS	
140	BIOL 231	Human Anatomy and Physiology II	4	8	BIOL 230 Human Anatomy and Physiology I (72) (C and above)			Biological Sciences	SST	SEng, SHSS, SMG	
141	BIOL 301	Molecular Biology of Cell with Lab	4	8	BIOL 120 Modern Biology II (177) (C and above) OR BIOL 120 Modern Biology II (177) (C and above) OR BIOL 120 Modern Biology II Lab (1445) (C and above) OR BIOL 120L Modern Biology II Laboratory (5443) (C and above)			Biological Sciences	SST	SEng, SHSS, SMG	
142	BIOL 341	Biochemistry I	3	6	CHEM 211 Organic Chemistry I (154) (C and above)			Biological Sciences	SST	SEng, SHSS, SMG	
143	BIOL 341L	Biochemistry I Lab	1	2		BIOL 341 Biochemistry I (2002) (C and above)		Biological Sciences	SST	SEng, SHSS, SMG	
144	BIOL 370	Genetics	3	6	BIOL 120 Modern Biology II (1195) (C and above)			Biological Sciences	SST	SEng, SHSS, SMG	
145	BIOL 420	Bioethics	3	6	BIOL 120 Modern Biology II (1195) (C and above)			3 year UG SST Biological Sciences, 3 year UG SST Chemistry, 4 year UG SST Biological Sciences, 4 year UG SST Chemistry			
146	BIOL 430	Histology with Laboratory	4	8	BIOL 230 Human Anatomy and Physiology I (72) (C and above)			Biological Sciences	SST	SEng, SHSS, SMG	

147	BIOL 440	Neuroscience	3	6	BIOL 230 Human Anatomy and Physiology I (72) (C and above)			Biological Sciences	SST	SEng, SHSS, SMG	
148	BIOL 450	Food Microbiology	3	6	BIOL 305 Introduction to Microbiology with Lab (1642) (C and above)			Biological Sciences	SST	SEng, SHSS, SMG	
149	BIOL 450L	Food Microbiology Lab	1	2	BIOL 305 Introduction to Microbiology with Lab (1642) (C and above)	BIOL 450 Food Microbiology (4609) (C and above)		Biological Sciences	SST	SEng, SHSS, SMG	
150	BIOL 456	Biology Research Design	3	6	BIOL 355 Critical Research Reasoning (1000) (C and above)			Biological Sciences	SST	SEng, SHSS, SMG	
151	BIOL 471	Light and Electron microscopy concepts and techniques	3	6	BIOL 110 Modern Biology I (1070) (C and above) AND BIOL 120 Modern Biology II (1195) (C and above) AND CHEM 101 General Chemistry I (113) (C and above) AND PHYS 161 Physics I for Scientists and Engineers with Laboratory (116) (C and above)			Biological Sciences	SST	SEng, SHSS, SMG	
152	BIOL 471L	Light and Electron Microscopy Concepts and Techniques-Lab	1	2		BIOL 471 Light and Electron microscopy concepts and techniques (4686) (C and above)		Biological Sciences	SST	SEng, SHSS, SMG	
153	BIOL 480	Molecular Immunology	3	6	BIOL 341 Biochemistry I (2002) (C and above) AND BIOL 410 Immunology (628) (C and above)			Biological Sciences	SST	SEng, SHSS, SMG	
154	BIOL 491	Graduation Project 2	4	8	BIOL 490 Graduation Project 1 (1581) (C- and above)			Through Add Course form only			
155	BIOL 492	Directed Study in Biology	3	6				Biological Sciences	SST	SEng, SHSS, SMG	
156	BIOL 570	Advanced Biotechnology	3	6				Biological Sciences	SST	GSB, GSE, GSPP, SEng, SHSS, SMG, SoM	
157	BIOL 580	Applied Bioinformatics	3	6	BIOL 520 Statistical Methods in Life Sciences (1203) (C+ and above)			Biological Sciences	SST	GSB, GSE, GSPP, SEng, SHSS, SMG, SoM	

158	BIOL 591	Cellular Biophysics	3	6				Biological Sciences	SST	GSB, GSE, GSPP, SEng, SHSS, SMG, SoM
159	BIOL 600	Graduate Seminar Series	3	6				Biological Sciences		
160	BIOL 699	Research Thesis II	6	12				Instructor's permission required. Registration by Add Course form only		
<b>Chemistry</b>										
161	CHEM 090	Chemistry for Non-Science majors	3	6				SHSS		
162	CHEM 092	Survey of Environmental Sciences for Non-Science Majors	3	6				SHSS		
163	CHEM 101	General Chemistry I	3	6				Biological Sciences, Chemistry	SST	SHSS
164	CHEM 102	General Chemistry II	3	6	CHEM 101 General Chemistry I (113) (C and above)			Biological Sciences, Chemistry, SMG	SST	SHSS
165	CHEM 102L	General Chemistry II lab	1	2	CHEM 101L General Chemistry I lab (179) (C and above)	CHEM 102 General Chemistry II (232) (C and above)		Biological Sciences, Chemistry, SMG	SST	SHSS
166	CHEM 211	Organic Chemistry I	3	6	CHEM 102 General Chemistry II (232) (C and above)			Chemistry	Biological Sciences	SST
167	CHEM 211L	Organic Chemistry I Lab	1	2	CHEM 101L General Chemistry I lab (179) (C and above)	CHEM 211 Organic Chemistry I (154) (C and above)		Chemistry	Biological Sciences	SST
168	CHEM 212	Organic Chemistry II	3	6	CHEM 211 Organic Chemistry I (154) (C and above) OR CHEM 191 Chemistry I for Engineers (1908) (C and above)			Chemistry	Biological Sciences	SST
169	CHEM 212L	Organic Chemistry II Lab	1	2	CHEM 211L Organic Chemistry I Lab (156) (C and above)	CHEM 212 Organic Chemistry II (443) (C and above) OR CHEM 292 Organic Chemistry for Biologists II (1901) (C and above)		Chemistry	Biological Sciences	SST

170	CHEM 320	Instrumental Analysis	3	6	CHEM 220 Quantitative Chemical Analysis (555) (C and above)			Chemistry	Biological Sciences	SST	
171	CHEM 332	Physical Chemistry II	3	6	CHEM 331 Physical Chemistry I (634) (C and above) AND MATH 274 Introduction to Differential Equations (484) (C and above)			Chemistry	Biological Sciences	SST	
172	CHEM 332L	Physical Chemistry II Lab	1	2	CHEM 331L Physical Chemistry Lab (1060) (C and above)	CHEM 332 Physical Chemistry II (1056) (C and above)		Chemistry	Biological Sciences	SST	
173	CHEM 380	Research Methods	3	6				Chemistry	Biological Sciences	SST	
174	CHEM 411	Advanced Organic Chemistry I	3	6	CHEM 212 Organic Chemistry II (443) (C and above) AND MATH 161 Calculus I (118) (C and above)			Chemistry			
175	CHEM 442	Biochemistry II with Lab-Metabolic Biochemistry	3	6	CHEM 341 Biochemistry I (1058) (C and above) AND CHEM 212 Organic Chemistry II (443) (C and above)			Chemistry	Biological Sciences	SST	
176	CHEM 451	Applied Homogenous Catalysis	3	6	CHEM 350 Advanced Inorganic Chemistry (1905) (C and above)			Chemistry	Biological Sciences	SST	
177	CHEM 490	Nanochemistry	3	6	CHEM 331 Physical Chemistry I (634) (C and above) AND CHEM 250 Descriptive Inorganic Chemistry (445) (C and above)			Chemistry			
<b>Communication and Composition</b>											
178	SHSS 300	SHSS Internship	3	6				Through Add Course form only			
179	SHSS 301	SHSS Internship Second Experience	3	6				Through Add Course form only			
180	WCS 150	Rhetoric and Composition	3	6				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST			
181	WCS 202	Introduction to Public Speaking	3	6	WCS 150 Rhetoric and Composition (2183) (C- and above)			SEng, SHSS, SMG, SST			
182	WCS 240	Writing for Digital Media	3	6	WCS 150 Rhetoric and Composition (2183) (C- and above)			SHSS	SEng, SMG, SST		

183	WCS 390	Writing Fellows I - Composition and Collaboration in Theory and Practice	3	6	WCS 150 Rhetoric and Composition (2183) (B+ and above) AND (WCS 210 Technical and Professional Writing (4881) (B+ and above) OR ( ) ( and above) OR WCS 230 Say What you Mean: Clarity, Precision, and Style in Academic Writing (3026) (B+ and above) OR WCS 240 Writing for Digital Media (4421) (B+ and above) OR WCS 250 Advanced Rhetoric and Composition (3027) (B+ and above))			Through Add Course form only			
184	WCS 391	Writing Fellows II - Practicum in Composition & Collaboration	3	6	WCS 390 Writing Fellows I - Composition and Collaboration in Theory and Practice (1969) (B and above)			Through Add Course form only			
<b>Communication and Composition, Languages, Literature and Linguistics</b>											
185	WCS 260/WLL 235	Creative Writing: Introduction to Fiction Writing I	3	6	WCS 150 Rhetoric and Composition (2183) (C- and above)			SHSS	SEng, SMG, SST		
<b>Economics</b>											
186	ECON 101	Introduction to Microeconomics	3	6				1 year UG SHSS	2 year UG SHSS	SEng, SHSS, SMG, SST	
187	ECON 102	Introduction to Macroeconomics	3	6				1 year UG SHSS	2 year UG SHSS	SEng, SHSS, SMG, SST	
188	ECON 201	Intermediate Microeconomics	3	6	ECON 101 Introduction to Microeconomics (379) (B- and above) AND (MATH 161 Calculus I (118) (B- and above) OR MATH 162 Calculus II (170) (B- and above))			Economics	SHSS	SEng, SMG, SST	
189	ECON 202	Intermediate Macroeconomics	3	6	ECON 102 Introduction to Macroeconomics (503) (B- and above) AND (MATH 161 Calculus I (118) (B- and above) OR MATH 162 Calculus II (170) (B- and above))			Economics	SHSS	SEng, SMG, SST	
190	ECON 211	Economic Statistics	3	6	ECON 101 Introduction to Microeconomics (379) (C and above) OR ECON 102 Introduction to Macroeconomics (503) (C and above)			Economics	SHSS	SEng, SMG, SST	

191	ECON 300	Research Assistance in Economics	1	2	ECON 101 Introduction to Microeconomics (379) (C- and above) AND ECON 102 Introduction to Macroeconomics (503) (C- and above)			Through Add Form Only			
192	ECON 321	Economic Growth	3	6	ECON 202 Intermediate Macroeconomics (207) (C- and above)			Economics	SHSS	SEng, SMG, SST	
193	ECON 332	Urban Economics	3	6	ECON 201 Intermediate Microeconomics (133) (C- and above)			Economics	SHSS	SEng, SMG, SST	
194	ECON 345	The Economics of Family	3	6	ECON 201 Intermediate Microeconomics (133) (C- and above)			Economics	SHSS	SEng, SMG, SST	
195	ECON 413	Econometrics II	3	6	ECON 301 Econometrics I (664) (C- and above)			Economics	SHSS	SEng, SMG, SST	
196	ECON 415	Industrial Organization	3	6	ECON 301 Econometrics I (664) (C- and above)			Economics	SHSS	SEng, SMG, SST	
197	ECON 428	Wages and the Labor Market	3	6	ECON 201 Intermediate Microeconomics (133) (C- and above) AND ECON 301 Econometrics I (664) (C- and above)			Economics	SHSS	SEng, SMG, SST	
198	ECON 515	Industrial Organization	4	8	ECON 531 Econometrics (2505) (C- and above)			1 year Gr SHSS Economics, 2 year Gr SHSS Economics	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
199	ECON 521	Microeconomic Theory II	4	8	ECON 501 Microeconomics I (2187) (C- and above) AND ECON 512 Mathematical Economics (2154) (C- and above)			1 year Gr SHSS Economics, 2 year Gr SHSS Economics	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
200	ECON 522	Macroeconomics II	4	8	ECON 502 Macroeconomics I (2186) (C- and above) AND ECON 512 Mathematical Economics (2154) (C- and above)			1 year Gr SHSS Economics, 2 year Gr SHSS Economics	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
201	ECON 524	Research Methodology	4	8	ECON 501 Microeconomics I (2187) (C- and above) AND ECON 502 Macroeconomics I (2186) (C- and above) AND ECON 511 Statistics (2188) (C- and above)	ECON 531 Econometrics (2505) (D and above)		1 year Gr SHSS Economics, 2 year Gr SHSS Economics	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
202	ECON 531	Econometrics	4	8	ECON 511 Statistics (2188) (C- and above) AND ECON 512 Mathematical Economics (2154) (C- and above)			1 year Gr SHSS Economics, 2 year Gr SHSS Economics	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
203	ECON 590	Thesis II	8	16	ECON 589 Thesis I (3714) (P)			1 year Gr SHSS Economics, 2 year Gr SHSS Economics	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		

**History, Philosophy and Religious Studies**

204	HST 100	History of Kazakhstan	3	6				4 year UG SENG, 4 year UG SHSS, 4 year UG SST	1 year UG SENG, 1 year UG SMG, 1 year UG SST	SEng, SHSS, SMG, SST	
205	HST 151	US History I (to 1877)	3	6				1 year UG SHSS, 2 year UG SHSS, History	SEng, SHSS, SMG, SST		
206	HST 214	An Introduction to Comparative History: The Eurasian Steppes and Great Plains of North America	3	6				SHSS	SEng, SMG, SST		
207	HST 233	The Russian Empire from Catherine the Great to the Bolshevik Revolution	3	6	Subject "HST" BETWEEN 100 and 199			SHSS	SEng, SMG, SST		
208	HST 235	Peter the Great (1682-1725): First Emperor of Russia and "Father of the Fatherland"	3	6				SHSS	SEng, SMG, SST		
209	HST 236	Eurasian revolutions, 1905-1949	3	6				SHSS	SEng, SMG, SST		
210	HST 239	Modernizing the Periphery: Nationalism, Communism, and Empire in Central Europe, 1890-Present	3	6	Subject "HST" BETWEEN 100 and 199			SHSS	SEng, SMG, SST		
211	HST 331	The Eurasian Enlightenment	3	6	HST 100 History of Kazakhstan (172) (B and above) OR Subject "HST" BETWEEN 100 and 199			SHSS	SEng, SMG, SST		
212	HST 411	Exploring Eurasian Environmental History	3	6	HST 100 History of Kazakhstan (172) (D and above)			SHSS	SEng, SMG, SST		
213	HST 499	History Capstone: Undergraduate Dissertation	4	8	HST 498 Directed Reading (1365) (C- and above)			4 year UG SHSS			
214	HST 511	Exploring Eurasian Environmental History	4	8				1 year Gr SHSS Eurasian Studies, 2 year Gr SHSS Eurasian Studies	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
215	PHIL 124	Knowledge and Reality	3	6				SEng, SHSS, SMG, SST			
216	PHIL 141	Critical Thinking	3	6				SEng, SHSS, SMG, SST			
217	PHIL 215	Bioethics	3	6				SEng, SHSS, SMG, SST			
218	PHIL 223	Philosophy of Science	3	6				SEng, SHSS, SMG, SST			
219	PHIL 320	Truth, Knowledge and Belief	3	6				SEng, SHSS, SMG, SST			

220	PHIL 361	Philosophy of Language	3	6				SEng, SHSS, SMG, SST		
221	REL 212	Buddhist Religious Traditions	3	6				SEng, SHSS, SMG, SST		
<b>History, Philosophy and Religious Studies, History, Philosophy and Religious Studies</b>										
222	HST 329/REL 329	Women in Islamic History	3	6				SHSS	SEng, SMG, SST	
223	PHIL 266/HST 266	Sunzi's Art of War and Unorthodox Military Strategy in Ancient China	3	6				SEng, SHSS, SMG, SST		
224	PHIL 267/REL 267	Chinese Roots of Martial Arts	3	6				SEng, SHSS, SMG, SST		
225	REL 273/HST 273	History of Sufism in the Middle East and Central Asia	3	6	Subject "HST" BETWEEN 100 and 199			SHSS	SEng, SMG, SST	
<b>History, Philosophy and Religious Studies, Sociology and Anthropology</b>										
226	HST 223/ANT 287	Cannibalism and Civilization	3	6				SHSS	SEng, SMG, SST	
227	HST 381/SOC 319	AIDS and Society	3	6	Subject "HST" BETWEEN 100 and 199 OR HST 100 History of Kazakhstan (172) (B- and above)			3 year UG SST, 4 year UG SST, SHSS	SEng, SMG, SST	
<b>Kazakh Language and Turkic Studies</b>										
228	KAZ 201	Academic Kazakh I	3	6	KLL "Basic" OR KLL "Intermediate"				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST
229	KAZ 202	Academic Kazakh II	3	6	KAZ 201 Academic Kazakh I (4561) (C- and above) OR KLL "Upper-Intermediate"				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST
230	KAZ 211	Academic Speaking in Kazakh	3	6	KAZ 201 Academic Kazakh I (4561) (C- and above) OR KLL "Upper-Intermediate" OR KLL "Advanced"				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST



231	KAZ 212	Academic Writing in Kazakh	3	6	KLL "Advanced" OR KLL "Upper-Intermediate"				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST	
232	KAZ 226	Kazakh for Medical School	3	6	KLL "Upper-Intermediate" OR KLL "Advanced"				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST	
233	KAZ 313	Kazakh for Business	3	6	KLL "Advanced" OR KLL "Upper-Intermediate"				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST	
234	KAZ 349	Kazakh Mythology	3	6	KAZ 202 Academic Kazakh II (4562) (C- and above) OR KLL "Advanced"				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST	
235	KAZ 351	Kazakh Short Stories	3	6	KLL "Advanced" OR KLL "Upper-Intermediate"				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST	
236	KAZ 354	Kazakh Drama	3	6	KLL "Advanced" OR KLL "Upper-Intermediate"				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST	
237	KAZ 356	Kazakh Music History	3	6	KLL "Advanced"				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST	

238	KAZ 357	Literature of Alash	3	6	KLL "Advanced" OR KLL "Upper-Intermediate"				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST	
239	KAZ 358	Technique of Translation	3	6	KLL "Upper-Intermediate" OR KLL "Advanced"						
240	KAZ 362	Creative Writing in Kazakh Language	3	6	KLL "Upper-Intermediate" OR KLL "Advanced"				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST	
241	KAZ 363	Language and Globalization	3	6	KLL "Upper-Intermediate" OR KLL "Advanced"				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST	
242	KAZ 364	Kazakh for Civil Service	3	6	KLL "Advanced" OR KLL "Upper-Intermediate" OR KAZ 314 Speech Culture in Business (1836) (C- and above)				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST	
243	KAZ 366	Kazakh Language for Engineers	3	6	KLL "Advanced" OR KLL "Upper-Intermediate"				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST	
244	KAZ 368	Onomastics: History and Function of Names	3	6	KLL "Advanced" OR KLL "Upper-Intermediate"				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST	
245	KAZ 371	Contemporary Kazakh Literature	3	6	KLL "Advanced"				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST	

246	KAZ 372	Language and ethnicity	3	6	KLL "Advanced" OR KAZ 211 Academic Speaking in Kazakh (702) (C- and above) OR KAZ 212 Academic Writing in Kazakh (703) (C- and above)				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST	
247	KAZ 373	Kazakh Terminology	3	6	KLL "Advanced" OR KAZ 202A Kazakh Literature 2/K(C) (228) (C- and above) OR KAZ 211 Academic Speaking in Kazakh (702) (C- and above) OR KAZ 212 Academic Writing in Kazakh (703) (C- and above)				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST	
248	KAZ 374	Kazakh Diplomacy	3	6	KAZ 202A Kazakh Literature 2/K(C) (228) (C- and above) OR KAZ 211 Academic Speaking in Kazakh (702) (C- and above) OR KAZ 212 Academic Writing in Kazakh (703) (C- and above) OR KLL "Advanced"				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST	
249	KAZ 375	Cultural Studies and Kazakh Culture	3	6	KLL "Advanced" OR KAZ 202A Kazakh Literature 2/K(C) (228) (C- and above) OR KAZ 211 Academic Speaking in Kazakh (702) (C- and above) OR KAZ 212 Academic Writing in Kazakh (703) (C- and above)				1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST, 4 year UG SENG, 4 year UG SHSS, 4 year UG SST	SEng, SHSS, SMG, SST	
250	TUR 230	Literatures of Central Asia	3	6				SHSS	SEng, SMG, SST		
<b>Kazakh Language and Turkic Studies, Languages, Literature and Linguistics</b>											
251	LING 280/TUR 280	Introduction to Turkic Historical and Comparative Linguistics	3	6				SHSS	SEng, SMG, SST		
<b>Languages, Literature and Linguistics</b>											
252	CHN 101	Beginning Mandarin I	4	8				World Languages, Literature and Culture	1 year UG SHSS, 2 year UG SHSS	SEng, SHSS, SMG, SST	
253	CHN 201	Intermediate Mandarin I	4	8	CHN 102 Beginning Mandarin II (1844) (B- and above)			SEng, SHSS, SMG, SST			
254	FRE 102	Beginning French II	4	8	FRE 101 Beginning French I (246) (C- and above)			SEng, SHSS, SMG, SST			
255	FRE 314	Advanced French Grammar and Composition	3	6	FRE 202 Intermediate French II (1122) (C- and above)			SEng, SHSS, SMG, SST			
256	GER 101	Beginning German	4	8				World Languages, Literature and Culture	1 year UG SHSS, 2 year UG SHSS	SEng, SHSS, SMG, SST	

257	GER 102	Beginning German II	4	8	GER 101 Beginning German (3173) (C- and above)			SEng, SHSS, SMG, SST			
258	KOR 102	Beginning Korean II	4	8	KOR 101 Beginning Korean I (4672) (C- and above)			SEng, SHSS, SMG, SST			
259	LING 130	Introduction to Language and Communication	3	6				World Languages, Literature and Culture	SHSS	SEng, SMG, SST	
260	LING 131	Introduction to Linguistics	3	6				World Languages, Literature and Culture	SHSS	SEng, SMG, SST	
261	LING 270	Languages of Eurasia	3	6				SHSS	SEng, SMG, SST		
262	LING 277	Language Diversity and Language Universals	3	6				SHSS	SEng, SMG, SST		
263	LING 278	Sounds of the World's Languages	3	6				SHSS	SEng, SMG, SST		
264	LING 370	Methods of Teaching Foreign Languages	3	6				SHSS	SEng, SMG, SST		
265	LING 372	Discourse Analysis	3	6	Subject "LLL" BETWEEN 100 and 199 OR Subject "WLL" BETWEEN 100 and 199 OR WLL 171/ANT 175 Introduction to Linguistic Anthropology (4417) (C- and above) OR Subject "LING" BETWEEN 100 and 199			SHSS	SEng, SMG, SST		
266	PER 102	Beginning Persian II	4	8	PER 101 Beginning Persian I (4474) (C- and above)			SEng, SHSS, SMG, SST			
267	SPA 102	Beginning Spanish II	4	8	SPA 101 Beginning Spanish I (685) (C- and above)			SEng, SHSS, SMG, SST			
268	SPA 202	Intermediate Spanish II	4	8	SPA 201 Intermediate Spanish I (1475) (C- and above)			SEng, SHSS, SMG, SST			
269	SPA 320	The Hispanic Short Story	3	6	Subject "WLL" BETWEEN 100 and 199 AND SPA 202 Intermediate Spanish II (1842) (C- and above)			SEng, SHSS, SMG, SST			
270	WLL 110	Introduction to Literary Studies	3	6				World Languages, Literature and Culture	SHSS	SEng, SMG, SST	
271	WLL 121	Introduction to Cultural Studies	3	6				World Languages, Literature and Culture	SHSS	SEng, SMG, SST	
272	WLL 211	World Literature II: from the 18th to the 20th century	3	6				World Languages, Literature and Culture	SHSS	SEng, SMG, SST	
273	WLL 212	Introduction to Poetry	3	6				World Languages, Literature and Culture	SHSS	SEng, SMG, SST	
274	WLL 241	Survey of Folk Tales	3	6				World Languages, Literature and Culture	SHSS	SEng, SMG, SST	

275	WLL 245	Terrible Perfection: Heroines of Classical Russian Literature	3	6				World Languages, Literature and Culture	SHSS	SEng, SMG, SST	
276	WLL 246	Survey of Contemporary Russian Literature and Culture	3	6	Subject "WLL" BETWEEN 100 and 199 OR WCS 150 Rhetoric and Composition (2183) (C- and above)			2 year UG SHSS	SHSS	SEng, SMG, SST	
277	WLL 442	Contemporary Russian and Russophone Literature	3	6	Subject "WLL" BETWEEN 100 and 199			World Languages, Literature and Culture	4 year UG SHSS	SEng, SMG, SST	
278	WLL 499	Languages, Linguistics, and Literatures Capstone II	3	6	WLL 498 Languages, Linguistics, and Literatures Capstone I (3048) (C- and above)			4 year UG SHSS World Language and Literature			
279	WLL 542	Contemporary Russian and Russophone Literature	4	8				1 year Gr SHSS Eurasian Studies, 2 year Gr SHSS Eurasian Studies	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
<b>Languages, Literature and Linguistics, Languages, Literature and Linguistics</b>											
280	WLL 254/SPA 254	Superstition, Magical Realism, and Horror in Hispanic Culture	3	6	Subject "WLL" BETWEEN 100 and 499 OR Subject "HST" BETWEEN 100 and 499			World Languages, Literature and Culture	SHSS	SEng, SMG, SST	
<b>Mathematics</b>											
281	MATH 161	Calculus I	4	8				Biological Sciences, Chemistry	1 year UG SENG, 1 year UG SHSS, 1 year UG SMG, 1 year UG SST	SEng, SHSS, SMG, SST	
282	MATH 162	Calculus II	4	8	MATH 161 Calculus I (118) (C and above)			1 year UG SENG, 1 year UG SMG, 1 year UG SST	SST	SHSS	
283	MATH 251	Discrete Mathematics	3	6	MATH 162 Calculus II (170) (C and above)			Computer Science, Mathematics	SST	SHSS	
284	MATH 263	Calculus III	4	8	MATH 162 Calculus II (170) (C and above)			Mathematics	SST	SHSS	
285	MATH 273	Linear Algebra with Applications	4	8	MATH 161 Calculus I (118) (C and above)	MATH 162 Calculus II (170) (C and above)		Mathematics	SST	SHSS	
286	MATH 274	Introduction to Differential Equations	3	6	MATH 162 Calculus II (170) (C and above)			Mathematics	SST	SHSS	
287	MATH 302	Abstract Algebra I	3	6	MATH 273 Linear Algebra with Applications (84) (C and above) AND MATH 251 Discrete Mathematics (85) (C and above)			3 year UG SST Mathematics	SST	SHSS	

288	MATH 310	Applied Statistical Methods	3	6	MATH 161 Calculus I (118) (C and above)		MATH 322 Mathematical Statistics (1165) (D and above)	Biological Sciences	SST	SHSS	
289	MATH 321	Probability	3	6	MATH 162 Calculus II (170) (C and above)		ECON 211 Economic Statistics (2280) (C- and above) OR PLS 211 Quantitative Methods (221) (C- and above)	Computer Science, Mathematics	SST	SHSS	
290	MATH 322	Mathematical Statistics	3	6	MATH 321 Probability (482) (C and above) OR ECON 211 Economic Statistics (2280) (C and above)			3 year UG SST Mathematics	SST	SHSS	
291	MATH 351	Numerical Methods with Applications	3	6	MATH 274 Introduction to Differential Equations (484) (C and above) AND MATH 263 Calculus III (81) (C and above)		ENG 202 Numerical Methods in Engineering (5506) (C and above)	Mathematics	SST	SHSS	
292	MATH 361	Real Analysis I	3	6	MATH 263 Calculus III (81) (C and above) AND MATH 251 Discrete Mathematics (85) (C and above)			Mathematics	SST	SHSS	
293	MATH 371	Introduction to Mathematical Biology	3	6	MATH 273 Linear Algebra with Applications (84) (C and above) AND MATH 274 Introduction to Differential Equations (484) (C and above)			3 year UG SST Mathematics	Mathematics	SST	
294	MATH 407	Graph Theory	3	6	MATH 301 Introduction to Number Theory (613) (C and above) OR (MATH 251 Discrete Mathematics (85) (C and above) AND MATH 273 Linear Algebra with Applications (84) (C and above))			Mathematics	SST	SHSS	
295	MATH 412	Nonlinear Optimization	3	6	MATH 273 Linear Algebra with Applications (84) (C and above) AND MATH 263 Calculus III (81) (C and above)			Mathematics	SST	SHSS	
296	MATH 423	Actuarial Mathematics II	3	6	MATH 321 Probability (482) (C and above) OR ECON 211 Economic Statistics (2280) (C and above)			Mathematics	SST	SHSS	

297	MATH 449	Statistical Programming	3	6	MATH 322 Mathematical Statistics (1165) (C and above)			4 year UG SST Mathematics	Mathematics		
298	MATH 477	Applied Finite Element Methods	3	6	MATH 351 Numerical Methods with Applications (1166) (C and above)			Mathematics	SST	SHSS	
299	MATH 480	Complex Analysis	3	6	MATH 263 Calculus III (81) (C and above)			Mathematics	SST	SHSS	
300	MATH 482	Fourier Analysis	3	6	MATH 263 Calculus III (81) (C and above) AND MATH 274 Introduction to Differential Equations (484) (C and above)			Mathematics	SST	SHSS	
301	MATH 490	Special Topics in Mathematics I	3	6				Mathematics	SST	SHSS	
302	MATH 499	Capstone Project	3	6				Through Add Course form only			
303	MATH 512	Optimization Methods and Techniques	3	6	MATH 517 Scientific Modeling and Simulation with Mathematics (2341) (B- and above)			Applied Mathematics	SST	GSB, GSE, GSPP, SEng, SHSS, SMG, SoM	
304	MATH 519	Scientific Computing	3	6				Applied Mathematics	SST	GSB, GSE, GSPP, SEng, SHSS, SMG, SoM	
305	MATH 541	Data Analysis and Statistical Learning	3	6	MATH 540 Statistical Learning (2340) (B- and above)			Applied Mathematics	SST	GSB, GSE, GSPP, SEng, SHSS, SMG, SoM	
306	MATH 551	Advanced Numerical Methods	3	6	MATH 517 Scientific Modeling and Simulation with Mathematics (2341) (B- and above)			Applied Mathematics	SST	GSB, GSE, GSPP, SEng, SHSS, SMG, SoM	
<b>Physics</b>											
307	PHYS 161	Physics I for Scientists and Engineers with Laboratory	4	8		MATH 161 Calculus I (118) (C and above)	PHYS 171 Physics I for Physics Majors with Laboratory (1401) (C- and above)	1 year UG SENG, 1 year UG SMG, 1 year UG SST	SST	SHSS	
308	PHYS 162	Physics II for Scientists and Engineers with Laboratory	4	8	PHYS 161 Physics I for Scientists and Engineers with Laboratory (116) (C- and above) OR PHYS 151 Introductory Physics I with Lab (649) (C- and above)		PHYS 172 Physics II for Physics Majors with Laboratory (1402) (C- and above)	1 year UG SENG, 1 year UG SMG, 1 year UG SST	SST	SHSS	

309	PHYS 202	Introductory Astrophysics	3	6	PHYS 162 Physics II for Scientists and Engineers with Laboratory (173) (C- and above)			SST	SHSS		
310	PHYS 222	Classical Mechanics II	3	6	PHYS 221 Classical Mechanics I (652) (C- and above)	MATH 274 Introduction to Differential Equations (484) (D and above)		Physics	SST		
311	PHYS 270	Computational Physics with Laboratory	3	6	(CSCI 150 Fundamentals of Programming (1501) (C- and above) OR CSCI 151 Programming for Scientists and Engineers (192) (C- and above)) AND MATH 263 Calculus III (81) (C- and above) AND (PHYS 162 Physics II for Scientists and Engineers with Laboratory (173) (C- and above) OR PHYS 172 Physics II for Physics Majors with Laboratory (1402) (C- and above))	MATH 273 Linear Algebra with Applications (84) (D and above)		Physics	SST		
312	PHYS 280	Thermodynamics and Statistical Physics	3	6	MATH 263 Calculus III (81) (C- and above) AND (PHYS 162 Physics II for Scientists and Engineers with Laboratory (173) (C- and above) OR PHYS 172 Physics II for Physics Majors with Laboratory (1402) (C- and above))			Physics	SST		
313	PHYS 362	Classical Electrodynamics II	3	6	PHYS 361 Classical Electrodynamics I (651) (C- and above)			Physics	SST		
314	PHYS 370	Optics with Laboratory	4	8	PHYS 361 Classical Electrodynamics I (651) (C- and above)			Physics	SST		
315	PHYS 451	Quantum Mechanics I	3	6	PHYS 221 Classical Mechanics I (652) (C- and above) AND PHYS 361 Classical Electrodynamics I (651) (C- and above)			Physics	SST		
316	PHYS 463	Astrophysics and General Relativity	3	6	MATH 162 Calculus II (170) (C- and above) AND PHYS 221 Classical Mechanics I (652) (C- and above) AND MATH 274 Introduction to Differential Equations (484) (C- and above)			Physics	SST		



317	PHYS 473	Introduction to Solid State Physics	3	6	PHYS 280 Thermodynamics and Statistical Physics (1179) (C- and above) AND PHYS 451 Quantum Mechanics I (1415) (C- and above)		Physics	SST		
318	PHYS 483	Statistical Mechanics	3	6	PHYS 280 Thermodynamics and Statistical Physics (1179) (C- and above)		Physics	SST		
319	PHYS 491	Directed Study of Advanced Physics Topics	3	6			Physics			
320	PHYS 495	Physics Colloquium	0	0			Physics			
321	PHYS 499	Honors Thesis	3	6			Physics			
322	PHYS 510	Quantum Mechanics	3	6			Physics	SST	GSB, GSE, GSPP, SEng, SHSS, SMG, SoM	
323	PHYS 520	Statistical Physics	3	6			Physics	SST	GSB, GSE, GSPP, SEng, SHSS, SMG, SoM	
324	SST 502	Teaching Practicum	3	6	SST 501 Teaching and Learning (2260) (C- and above)		Registration by SST School Office			
325	SST 504	Innovation & Entrepreneurship	3	6			Registration by SST School Office			
326	SST 592	Research Seminar	3	6			Registration by SST School Office			
327	SST 692	Thesis	15	30			Registration by SST School Office			
<b>Political Science and International Relations</b>										
328	PLS 101	Introduction to Political Science	3	6			SEng, SMG, SST	SHSS		
329	PLS 140	Introduction to Comparative Politics	3	6			1 year UG SHSS, Political Science and International Relations	SHSS	SEng, SMG, SST	
330	PLS 150	Introduction to International Relations	3	6			1 year UG SHSS, Political Science and International Relations	SHSS	SEng, SMG, SST	
331	PLS 210	Political Science Research Methods	3	6			Political Science and International Relations	SHSS	SEng, SMG, SST	
332	PLS 211	Quantitative Methods	3	6		ECON 211 Economic Statistics (2280) (C- and above)	Political Science and International Relations	SHSS	SEng, SMG, SST	

333	PLS 341	Politics of Development	3	6	PLS 210 Political Science Research Methods (129) (C- and above)			Political Science and International Relations	SHSS	SEng, SMG, SST	
334	PLS 351	International Political Economy	3	6	PLS 150 Introduction to International Relations (511) (C- and above) AND PLS 210 Political Science Research Methods (129) (C- and above) AND PLS 211 Quantitative Methods (221) (C- and above)			Political Science and International Relations	SHSS	SEng, SMG, SST	
335	PLS 354	Introduction to International Law	3	6	PLS 150 Introduction to International Relations (511) (C- and above) AND PLS 210 Political Science Research Methods (129) (C- and above)			Political Science and International Relations	SHSS	SEng, SMG, SST	
336	PLS 355	European Union: Institutions and Policies	3	6	PLS 210 Political Science Research Methods (129) (C- and above)			Political Science and International Relations	SHSS	SEng, SMG, SST	
337	PLS 356	International Politics of the Korean Peninsula	3	6	PLS 210 Political Science Research Methods (129) (C- and above) AND PLS 150 Introduction to International Relations (511) (C- and above)			Political Science and International Relations	SHSS	SEng, SMG, SST	
338	PLS 360	Foreign Policy Analysis	3	6	PLS 150 Introduction to International Relations (511) (C- and above) AND PLS 211 Quantitative Methods (221) (C- and above)			Political Science and International Relations	SHSS	SEng, SMG, SST	
339	PLS 365	Civil-Military Relations	3	6	PLS 211 Quantitative Methods (221) (C- and above) AND PLS 210 Political Science Research Methods (129) (C- and above)			Political Science and International Relations	SHSS	SEng, SMG, SST	
340	PLS 391	Intermediate Special Topics in Comparative Politics	3	6	PLS 210 Political Science Research Methods (129) (C- and above)			Political Science and International Relations	SHSS	SEng, SMG, SST	
341	PLS 392	Politics of China	3	6	PLS 210 Political Science Research Methods (129) (C- and above)			Political Science and International Relations	SHSS	SEng, SMG, SST	
342	PLS 395	Independent Study	3	6	PLS 210 Political Science Research Methods (129) (C- and above) AND PLS 211 Quantitative Methods (221) (C- and above)			Through Add Course form only			
343	PLS 441	Advanced Topics in Comparative Politics	3	6	PLS 140 Introduction to Comparative Politics (223) (C- and above) AND PLS 210 Political Science Research Methods (129) (C- and above)			Political Science and International Relations	SHSS	SEng, SMG, SST	

344	PLS 445	Political Violence	3	6	(PLS 140 Introduction to Comparative Politics (223) ( and above) OR PLS 150 Introduction to International Relations (511) (C- and above)) AND PLS 210 Political Science Research Methods (129) (C- and above)			Political Science and International Relations	SHSS	SEng, SMG, SST	
345	PLS 447	Comparative Political Parties	3	6	PLS 140 Introduction to Comparative Politics (223) (C- and above) AND PLS 210 Political Science Research Methods (129) (C- and above)			Political Science and International Relations	SHSS	SEng, SMG, SST	
346	PLS 457	International Security and Conflict	3	6	PLS 150 Introduction to International Relations (511) (C- and above) AND PLS 210 Political Science Research Methods (129) (C- and above) AND PLS 211 Quantitative Methods (221) (C- and above)						
347	PLS 495	Research Practicum in PSIR	1	2	PLS 210 Political Science Research Methods (129) (C- and above) AND PLS 211 Quantitative Methods (221) (C- and above)			Through Add Course form only			
348	PLS 510	Advanced Research II	4	8	PLS 511 Advanced Research I (1631) (D and above)			1 year Gr SHSS Political Sciences and Int. Relations, 2 year Gr SHSS Political Sciences and Int. Relations	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
349	PLS 522	Just War Theory	4	8				1 year Gr SHSS Political Sciences and Int. Relations, 2 year Gr SHSS Political Sciences and Int. Relations	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
350	PLS 541	Advanced Topics in Comparative Politics	4	8				1 year Gr SHSS Political Sciences and Int. Relations, 2 year Gr SHSS Political Sciences and Int. Relations	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
351	PLS 545	Political Violence	4	8				1 year Gr SHSS Political Sciences and Int. Relations, 2 year Gr SHSS Political Sciences and Int. Relations	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		

352	PLS 547	Comparative Political Parties	4	8				1 year Gr SHSS Political Sciences and Int. Relations, 2 year Gr SHSS Political Sciences and Int. Relations	GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
353	PLS 551	Advanced Topics in International Relations	4	8				1 year Gr SHSS Political Sciences and Int. Relations, 2 year Gr SHSS Political Sciences and Int. Relations	GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
354	PLS 557	International Security and Conflict	4	8				1 year Gr SHSS Political Sciences and Int. Relations, 2 year Gr SHSS Political Sciences and Int. Relations	GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
355	PLS 598	MA Thesis I	6	12				1 year Gr SHSS Political Sciences and Int. Relations, 2 year Gr SHSS Political Sciences and Int. Relations	GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
<b>Sociology and Anthropology</b>											
356	ANT 101	Introduction to Sociocultural Anthropology	3	6				1 year UG SHSS, 2 year UG SHSS, Anthropology, Sociology	SHSS	SEng, SMG, SST	
357	ANT 140	World Prehistory	3	6				1 year UG SHSS, 2 year UG SHSS, Anthropology, Sociology	SHSS	SEng, SMG, SST	
358	ANT 160	Introduction to Biological Anthropology	3	6			ANT 361 Human Evolution: Bones, Stones and Genomes (160) (C- and above)	1 year UG SHSS, 2 year UG SHSS, Anthropology, Sociology	Biological Sciences, SHSS	SEng, SMG, SST	
359	ANT 232	Life, Death and Economy: Archaeology of Central Asia	3	6				1 year UG SHSS, 2 year UG SHSS, Anthropology	SHSS	SEng, SMG, SST	
360	ANT 280	Introduction to Medical Anthropology	3	6			() ( and above)	1 year UG SHSS, 2 year UG SHSS, Anthropology, Sociology	Biological Sciences, SHSS	SEng, SMG, SST	
361	ANT 286	Nomads: Around the world and through time	3	6				1 year UG SHSS, 2 year UG SHSS, Anthropology	SHSS	SEng, SMG, SST	

362	ANT 306	Anthropology of Performance	3	6				Anthropology, Sociology	SHSS	SEng, SMG, SST	
363	ANT 314	Politics of Identity in Eurasia	3	6	Subject "HST" BETWEEN 100 and 499 OR Subject "SOC" BETWEEN 100 and 499 OR Subject "ANT" BETWEEN 100 and 499 OR Subject "PLS" BETWEEN 100 and 499			Anthropology, Political Science and International Relations, Sociology	SHSS	SEng, SMG, SST	
364	ANT 333	Anthropology of Space	3	6				3 year UG SHSS, 4 year UG SHSS, Anthropology, Sociology	SHSS	SEng, SMG, SST	
365	ANT 400	Research Assistance in Anthropology	1	2				Through Add Course form only			
366	ANT 475	Digital Ethnographies	3	6	ANT 101 Introduction to Sociocultural Anthropology (501) (C- and above) OR PLS 210 Political Science Research Methods (129) (C- and above) OR SOC 201 Social Science Research Methods (1341) (C- and above) OR ANT 214/SOC 214 Qualitative Methods (1033) (C- and above)			Anthropology, Sociology	SHSS	SEng, SMG, SST	
367	SOC 101	Introduction to Sociology	3	6				Anthropology, Sociology	1 year UG SHSS, 2 year UG SHSS, 3 year UG SST Biological Sciences	SEng, SHSS, SMG, SST	
368	SOC 201	Social Science Research Methods	3	6				Anthropology, Sociology	SHSS	SEng, SMG, SST	
369	SOC 203	Quantitative Methods in Sociology	3	6				Anthropology, Sociology	SHSS	SEng, SMG, SST	
370	SOC 215	Sociology of Race and Ethnicity	3	6				Anthropology, Sociology	SHSS	SEng, SMG, SST	
371	SOC 221	International Migration	3	6				Anthropology, Sociology	SHSS	SEng, SMG, SST	
372	SOC 301	Classical Sociological Theory	3	6	SOC 101 Introduction to Sociology (508) (C- and above) OR SOC 115 Global Social Problems (1032) (C- and above)			Anthropology, Sociology	SHSS	SEng, SMG, SST	
373	SOC 320	Organized Crime and Corruption	3	6	SOC 101 Introduction to Sociology (508) (C- and above)						
374	SOC 400	Research Assistance in Sociology	1	2				Through add form only			
375	SOC 499	Capstone Seminar II	3	6	SOC 498 Capstone Seminar Part I (3043) (C- and above)			4 year UG SHSS Sociology			

376	SOC 521	Informal Practices and Social Order in Eurasia	4	8				1 year Gr SHSS Eurasian Studies, 2 year Gr SHSS Eurasian Studies	GSB, GSE, GSPP, SEng, SHSS, SMG, SST, SoM		
<b>Sociology and Anthropology, Sociology and Anthropology</b>											
377	ANT 214/SOC 214	Qualitative Methods	3	6				Anthropology, Sociology	SHSS	SEng, SMG, SST	
378	ANT 222/SOC 222	Approaches to Global Development	3	6			ANT 222/SOC 222 Approaches to Global Development (158) (C- and above)	Anthropology, Sociology	SHSS	SEng, SMG, SST	
379	ANT 281/SOC 281	Health, Illness and Society	3	6			ANT 280 Introduction to Medical Anthropology (2961) (C- and above)	Anthropology, Sociology	SHSS	SEng, SMG, SST	
<b>SEDS</b>											
<b>Chemical Engineering</b>											
380	MCHE 600	MSc Thesis in Chemical Engineering	15	30							
<b>Chemical and Materials Engineering</b>											
381	ECHE 210	Foundations of Unit Operations	3	6				Registration by School Office			
382	ECHE 221	Engineering Fluid Mechanics	3	6				Registration by School Office			
383	ECHE 270	Transport Phenomena-I	3	6				Registration by School Office			
384	ECHE 323	Computational methods in Chemical Engineering-I	3	6	ECHE 333 Separation Processes-I (1271) (D and above)	ECHE 481 Chemical Reaction Engineering (1985) (D and above)		Registration by School Office			
385	ECHE 383	Separation Processes II	3	6	ECHE 126 Introduction to Chemical Engineering (33) (D and above) AND ECHE 225 Heat and Mass Transfer Operations (541) (D and above)			Registration by School Office			
386	ECHE 386	Chemical Plant Design and Optimization	3	6				Registration by School Office			
387	ECHE 387	Chemical Reaction Engineering 2	3	6				Registration by School Office			

388	ECHE 388	Process Dynamics and Control	3	6				Registration by School Office			
389	ECHE 420	Polymer Processing and Rheology	3	6				4 year UG SEng Chemical Engineering	4 year UG SENG	SEng, SHSS, SMG, SST	
390	ECHE 421	Tissue Engineering	3	6				4 year UG SEng Chemical Engineering	4 year UG SENG	SEng, SHSS, SMG, SST	
391	ECHE 479	Capstone Project II	9	18	ECHE 418 Capstone project 1 (1278) (D and above)			Registration by School Office			
392	ECHE 483	Chemistry II	3	6	ECHE 222 Chemistry I (731) (D and above)			Registration by School Office			
393	ECHE 485	Introduction to Biochemical Engineering	3	6				4 year UG SEng Chemical Engineering	4 year UG SENG	SEng, SHSS, SMG, SST	
394	MCHME 600	Research Seminar	3	6				1 year Gr SEng Chemical and Materials Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
395	MCHME 606	Advanced Heat and Mass Transfer	3	6				1 year Gr SEng Chemical and Materials Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		

396	MCHME 704	Advanced Safety, Reliability and Risk Engineering in Process Industries	3	6				1 year Gr SEng Chemical and Materials Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
397	MCHME 712	Advanced Tissue Engineering	3	6				1 year Gr SEng Chemical and Materials Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
<b>Civil Engineering</b>											
398	ECE 210	Soil Mechanics	3	6				Registration by School Office			
399	ECE 218	Environmental Chemistry	3	6				Registration by School Office			
400	ECE 219	Hydraulics	3	6				Registration by School Office			
401	ECE 306	Geotechnical Design	3	6	ECE 210 Soil Mechanics (862) (D and above)			Registration by School Office			
402	ECE 319	Structural Design - Steel	3	6				Registration by School Office			
403	ECE 320	Engineering Hydrology	3	6				Registration by School Office			
404	ECE 420	Modern Information Technology in Construction	3	6				4 year UG SEng Civil Engineering	4 year UG SENG	SEng, SHSS, SMG, SST	
405	ECE 422	Prestressed Concrete Design	3	6				3 year UG SEng Civil Engineering	3 year UG SENG, 4 year UG SENG	SEng, SHSS, SMG, SST	
406	ECE 423	Structure and Properties of Concrete Materials	3	6				3 year UG SEng Civil Engineering	3 year UG SENG, 4 year UG SENG	SEng, SHSS, SMG, SST	



407	ECE 427	Individual Research Projects in Civil Engineering (II)	3	6	ECE 481 Individual Research Projects in Civil Engineering (4484) (D and above)			4 year UG SEng Civil Engineering	4 year UG SENG	SEng, SHSS, SMG, SST	
408	ECE 472	Water and Wastewater Treatment Processes	3	6	ECE 218 Environmental Chemistry (3296) (D and above)			Registration by School Office			
409	ECE 473	Environmental Systems	3	6				4 year UG SEng Civil Engineering	4 year UG SENG	SEng, SHSS, SMG, SST	
410	ECE 478	Capstone Project II	9	18	ECE 401 Capstone Project 1 (1270) (D and above)			Registration by School Office			
411	ECE 479	Structural Analysis II	3	6	ECE 217 Structural Analysis I (3156) (D and above)			Registration by School Office			
412	EMEM 510	Managerial Accounting	2	4				1 year Gr SENG Engineering Management	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
413	EMEM 511	Business Strategy	2	4				1 year Gr SENG Engineering Management	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		

414	EMEM 512	Leading Change	2	4				1 year Gr SENG Engineering Management	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
415	EMEM 513	Entrepreneurship	2	4				1 year Gr SENG Engineering Management	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
416	EMEM 514	Finance	2	4				1 year Gr SENG Engineering Management	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		

417	EMEM 516	Management of Organizations	2	4				1 year Gr SENG Engineering Management	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
418	EMEM 517	Marketing	2	4				1 year Gr SENG Engineering Management	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
419	EMEM 527	Globalization and Engineering	3	6				2 year Gr SENG Engineering Management	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		

420	EMEM 529	Capstone Project	8	16				2 year Gr SENG Engineering Management	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
421	EMEM 535	Managing Product and Service Development	3	6				2 year Gr SENG Engineering Management	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
422	EMEM 543	Quality and Lean Management	3	6				2 year Gr SENG Engineering Management	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		

423	EMEM 545	Business Communication	2	4				1 year Gr SENG Engineering Management	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
424	MCEE 600	Research Seminar	3	6				1 year Gr SEng Civil and Environmental Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
425	MCEE 606	Advanced Project Management	3	6				1 year Gr SEng Civil and Environmental Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		

426	MCEE 700	Structural Dynamics and Earthquake Engineering	3	6				1 year Gr SEng Civil and Environmental Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
427	MCEE 701	Advanced Concrete Technology	3	6				1 year Gr SEng Civil and Environmental Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
428	MCEE 703	Theory of Physico- Chemical Treatment Processes	3	6				1 year Gr SEng Civil and Environmental Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		

429	MCEE 704	Contaminated Site Management and Soil Treatment Technologies	3	6				1 year Gr SEng Civil and Environmental Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
430	MSC 600	Research methods and ethics	3	6				1 year Gr SEng Chemical and Materials Engineering, 1 year Gr SEng Civil and Environmental Engineering, 1 year Gr SEng Electrical and Computer Engineering, 1 year Gr SEng Mechanical and Aerospace Engineering	Science, Engineering and Technology		
<b>Computer Science</b>											
431	CSCI 101	Introduction to Computational Sciences	3	6				1 year UG SHSS	SHSS		
432	CSCI 111	Web Programming & Problem Solving	3	6			CSCI 100 Computation and Problem Solving (1078) (C- and above)	1 year UG SHSS	SHSS		
433	CSCI 151	Programming for Scientists and Engineers	4	8			ROBT 102 Programming for robotics and physics (188) (C- and above) OR CSCI 150 Fundamentals of Programming (1501) (C- and above)	1 year UG SST, SMG	SST	SHSS	

434	CSCI 152	Performance and Data Structures	4	8	CSCI 151 Programming for Scientists and Engineers (192) (C- and above) OR CSCI 150 Fundamentals of Programming (1501) (C- and above) OR CSCI 261 Object Oriented Programming with Java I (171) (C- and above) OR ROBT 102 Programming for robotics and physics (188) (C- and above)			1 year UG SST	SST	SHSS	
435	CSCI 245	System Analysis and Design	3	6	CSCI 341 Database Systems (195) (C- and above)			Computer Science	SST	SEng, SHSS, SMG	
436	CSCI 270	Algorithms	3	6	CSCI 152 Performance and Data Structures (489) (C- and above) AND MATH 251 Discrete Mathematics (85) (C- and above)			2 year UG SST Computer Science	Computer Science	SEng, SHSS, SMG, SST	
437	CSCI 272	Formal Languages	3	6	CSCI 152 Performance and Data Structures (489) (C and above) AND MATH 251 Discrete Mathematics (85) (C- and above)			2 year UG SST Computer Science	Computer Science	SEng, SHSS, SMG, SST	
438	CSCI 307	Research Methods	3	6				Computer Science			
439	CSCI 325	Introduction to Parallel Systems and GPU Programming	3	6	CSCI 332 Operating Systems (490) (C- and above)			Computer Science	SST	SEng, SHSS, SMG	
440	CSCI 330	Mobile Computing	3	6	CSCI 332 Operating Systems (490) (C- and above)			Computer Science	SST	SEng, SHSS, SMG	
441	CSCI 332	Operating Systems	3	6	CSCI 231 Computer Systems and Organization (194) (C- and above)			2 year UG SST Computer Science	Computer Science	SEng, SHSS, SMG, SST	
442	CSCI 399A	Internship II - A	1	2							
443	CSCI 409	Senior Project II	3	6	CSCI 408 Senior Project I (1481) (C- and above)			4 year UG SST Computer Science			
444	CSCI 447	Machine Learning: Theory and Practice	3	6	MATH 273 Linear Algebra with Applications (84) (C and above) AND MATH 321 Probability (482) (C and above)			Computer Science	SST	SEng, SHSS, SMG	
445	CSCI 462	Open Source Software	3	6	CSCI 361 Software Engineering (640) (C- and above)			Computer Science	SST	SEng, SHSS, SMG	
446	CSCI 502	Hardware Software Co-Design	3	6	CSCI 501 Software Principles and Practice (2408) (C- and above)			Computer Science, Robotics	SST	GSE, GSPP, SEng, SHSS, SMG, SoM	



447	CSCI 515	Modeling and Simulation for Computer Science	3	6				Computer Science, Robotics	SST	GSB, GSE, GSPP, SEng, SHSS, SMG, SoM	
448	CSCI 591	Advanced Artificial Intelligence	3	6	CSCI 501 Software Principles and Practice (2408) (C- and above)			Computer Science	SST	GSB, GSE, GSPP, SEng, SHSS, SMG, SoM	
<b>Electrical and Computer Engineering</b>											
449	MECE 600	Research Seminar	3	6				1 year Gr SEng Electrical and Computer Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
450	MECE 700	Industrial and Commercial Power System	3	6				1 year Gr SEng Electrical and Computer Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		

451	MECE 703	Advanced Photonics	3	6				1 year Gr SENG Electrical and Computer Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
452	MECE 705	Advanced Mixed Signal Circuit Design	3	6				1 year Gr SENG Electrical and Computer Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
453	MECE 717	Pattern Recognition and Machine Learning	3	6				1 year Gr SENG Electrical and Computer Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		

454	MECE 718	Deep Learning for Internet of Things	3	6				1 year Gr SEng Electrical and Computer Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
455	MECE 724	System Modelling and Control	3	6	MSC 602 Advanced Applied Mathematics (4499) (C- and above)			1 year Gr SEng Electrical and Computer Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
<b>Electrical and Electronic Engineering</b>											
456	EEE 210	Software Engineering	3	6	BENG 146 Programming for Engineers (2234) (D and above)			Registration by School Office			
457	EEE 211	Computer Systems Architecture	3	6	ECHE 126 Introduction to Chemical Engineering (33) (D and above)			Registration by School Office			
458	EEE 239	Communication systems	3	6				Registration by School Office			
459	EEE 340	Data Communications	3	6				Registration by School Office			
460	EEE 341	Digital Electronic System Design	3	6				Registration by School Office			
461	EEE 343	Embedded Microcontrollers	3	6				Registration by School Office			
462	EEE 379	Power Systems Analysis	3	6				Registration by School Office			
463	EEE 381	Electrical Machines and Drives	3	6				Registration by School Office			

464	EEE 411	Special Topics in Signal Processing	3	6				4 year UG SEng Electrical and Electronic Engineering	4 year UG SENG	SEng, SHSS, SMG, SST	
465	EEE 480	Capstone Project II	9	18				Registration by School Office			
466	EEE 484	Electric Power Generation	3	6				4 year UG SEng Electrical and Electronic Engineering	4 year UG SENG	SEng, SHSS, SMG, SST	
467	EEE 485	Power System Operation and Control	3	6	EEE 379 Power Systems Analysis (1956) (D and above) OR EEE 452 Power Systems Protection (2652) (D and above)			4 year UG SEng Electrical and Electronic Engineering	4 year UG SENG	SEng, SHSS, SMG, SST	
468	EEE 486	Photonics for Engineering	3	6	EEE 342 Electromagnetics (533) (D and above)			4 year UG SEng Electrical and Electronic Engineering	4 year UG SENG	SEng, SHSS, SMG, SST	
469	EEE 489	Analog Circuit Design	3	6				Registration by School Office			
470	EEE 494	Modern Characterizations for Semiconductor Industry	3	6				4 year UG SEng Electrical and Electronic Engineering	4 year UG SENG	SEng, SHSS, SMG, SST	
471	EEE 495	Fundamentals of Biomedical Engineering and Biophysics	3	6				4 year UG SEng Electrical and Electronic Engineering	4 year UG SENG	SEng, SHSS, SMG, SST	
<b>Mechanical Engineering</b>											
472	EME 275	Fluid Mechanics I	3	6				Registration by School Office			
473	EME 300	Research Project	3	6				Registration by School Office			
474	EME 352	Computational Fluid Dynamics	3	6				Registration by School Office			
475	EME 357	Fluid Mechanics 2	3	6				Registration by School Office			
476	EME 377	Mechanical Systems Design	3	6	EME 361 Machine Design (1051) (D and above)			Registration by School Office			
477	EME 414	Fire Engineering	3	6	BENG 226 Engineering Thermodynamics (1553) (D and above)			4 year UG SEng Mechanical Engineering	4 year UG SENG	SEng, SHSS, SMG, SST	
478	EME 415	Flight Mechanics	3	6				4 year UG SEng Mechanical Engineering	4 year UG SENG	SEng, SHSS, SMG, SST	
479	EME 464	Materials and Manufacturing 1	3	6				Registration by School Office			
480	EME 476	Materials and Manufacturing II	3	6				Registration by School Office			
481	EME 477	Capstone Project II	9	18				Registration by School Office			

482	EME 480	Industrial Automation	3	6				Registration by School Office			
483	EME 489	Advanced Engineering Mathematics	3	6	BENG 228 Engineering Mathematics III (3154) (D and above)			4 year UG SEng Mechanical Engineering	4 year UG SENG	SEng, SHSS, SMG, SST	
484	MME 600	MSc Thesis in Mechanical Engineering	15	30							
<b>Mechanical and Aerospace Engineering</b>											
485	ENG 102	Engineering Materials I	3	6				1 year UG SEng Civil and Environmental Engineering, 1 year UG SEng Mechanical and Aerospace Engineering, 1 year UG SMG	1 year UG SHSS, 1 year UG SST, 2 year UG SENG, 3 year UG SENG, 4 year UG SENG	SEng, SHSS, SMG, SST	
486	ENG 103	Engineering Materials 2	3	6				1 year UG SEng Chemical and Materials Engineering, 1 year UG SEng Electrical and Computer Engineering, 1 year UG SMG	1 year UG SHSS, 1 year UG SST, 2 year UG SENG, 3 year UG SENG, 4 year UG SENG	SEng, SHSS, SMG, SST	
487	MMAE 600	Research Seminar	3	6				1 year Gr SEng Mechanical and Aerospace Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		

488	MMAE 604	Advanced Computational Fluid Dynamics (CFD) and Heat Transfer in Mechanical Engineering	3	6				1 year Gr SEng Mechanical and Aerospace Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
489	MMAE 700	Advanced Statistics and Probability	3	6				1 year Gr SEng Mechanical and Aerospace Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		
490	MMAE 701	Numerical Techniques for Engineers	3	6				1 year Gr SEng Mechanical and Aerospace Engineering	1 year PhD SENG Science, Engineering and Technology, 2 year PhD SENG Science, Engineering and Technology, 3 year PhD SENG Science, Engineering and Technology, 4 year PhD SENG Science, Engineering and Technology, 5 year PhD SENG Science, Engineering and Technology		

**Robotics and Mechatronics**

491	ROBT 202	System Dynamics and Modeling	3	6	MATH 162 Calculus II (170) (C- and above) AND (PHYS 162 Physics II for Scientists and Engineers with Laboratory (173) (C- and above) OR PHYS 172 Physics II for Physics Majors with Laboratory (1402) (C- and above))			Robotics and Mechatronics	SST		
492	ROBT 204	Electrical and Electronic Circuits II with Lab	4	8	ROBT 203 Electrical and Electronic Circuits I with Lab (62) (C- and above)			Physics, Robotics and Mechatronics	SST		
493	ROBT 206	Microcontrollers with Lab	4	8	CSCI 151 Programming for Scientists and Engineers (192) (C- and above) OR ROBT 102 Programming for robotics and physics (188) (C- and above) OR CSCI 150 Fundamentals of Programming (1501) (C- and above)			Computer Science, Robotics and Mechatronics	SST		
494	ROBT 302	Mechanical Design II with Machining Laboratory	4	8	ROBT 301 Mechanical Design with CAD and Machining Laboratory (622) (C- and above)			Robotics and Mechatronics	SST		
495	ROBT 304	Electromechanical Systems with lab	4	8	ROBT 204 Electrical and Electronic Circuits II with Lab (491) (C- and above)			Robotics and Mechatronics	SST		
496	ROBT 310	Image Processing	3	6	MATH 162 Calculus II (170) (C- and above) AND MATH 273 Linear Algebra with Applications (84) (C- and above)			Computer Science, Robotics and Mechatronics	SST		
497	ROBT 402	Robotic/Mechatronic System Design	3	6	ROBT 204 Electrical and Electronic Circuits II with Lab (491) (C- and above) AND ROBT 206 Microcontrollers with Lab (476) (C- and above) AND ROBT 302 Mechanical Design II with Machining Laboratory (1170) (C- and above)			Robotics and Mechatronics			
498	ROBT 407	Machine Learning with Applications	3	6	MATH 273 Linear Algebra with Applications (84) (C and above) AND MATH 321 Probability (482) (C and above) AND CSCI 152 Performance and Data Structures (489) (C and above)			Computer Science, Robotics and Mechatronics	SST		

499	ROBT 414	Human-Robot Interaction	3	6	CSCI 152 Performance and Data Structures (489) (C- and above)			Computer Science, Robotics and Mechatronics	SST		
500	ROBT 491	Graduation Project	3	6				4 year UG SST Robotics and Mechatronics			
501	ROBT 502	Robot Perception & Vision	3	6	ROBT 501 Robot Manipulation and Mobility (2263) (C- and above)			Robotics	SST	GSB, GSE, GSPP, SEng, SHSS, SMG, SoM	
<b>School of Engineering</b>											
502	BENG 114	Introduction to Electrical Systems	3	6				Registration by School Office			
503	BENG 219	Control Systems	3	6				Registration by School Office			
504	BENG 226	Engineering Thermodynamics	3	6				Registration by School Office			
505	BENG 343	Interdisciplinary Design Project	3	6							
506	DENG 784	Doctoral Proposal I	0	6				Science, Engineering and Technology			
507	DENG 785	PhD proposal oral defence	0	0				Science, Engineering and Technology			
508	DENG 787	Doctoral Proposal II	3	6	DENG 784 Doctoral Proposal I (1774) (C- and above)	DENG 785 PhD proposal oral defence (2604) (D and above)		Science, Engineering and Technology			
509	DENG 789	Doctoral Seminar I	3	6	DENG 785 PhD proposal oral defence (2604) (C- and above)			Science, Engineering and Technology			
510	DENG 790	Doctoral Seminar II	3	6	DENG 789 Doctoral Seminar I (4598) (C- and above)			Science, Engineering and Technology			
511	DENG 794	Dissertation Research	12	24	DENG 785 PhD proposal oral defence (2604) (C- and above)			Science, Engineering and Technology			
512	DENG 795	Research at Host University	6	12	DENG 785 PhD proposal oral defence (2604) (C- and above)			Science, Engineering and Technology			
513	DENG 796	Thesis Completion	0	0				Science, Engineering and Technology			
514	DENG 797	Oral Defence of PhD Dissertation	0	0	DENG 785 PhD proposal oral defence (2604) (C- and above) AND DENG 789 Doctoral Seminar I (4598) (C- and above) AND DENG 790 Doctoral Seminar II (4599) (C- and above)			Science, Engineering and Technology			