

Course Requirements and Registration Priorities Spring 2020

#	Abbr	Title	Cr(US)	Cr(ECTS)	PreRequisite	CoRequisite	AntiRequisite	1st priority registration	2nd priority registration	3rd priority registration	4th priority registration
CPS											
GSP											
1	ZEST 061	Basic Economics and Statistics	0	0							
Mathematics											
2	MATH 500Z	Linear Algebra with Applications	0	0							
NUFYP											
3	FBIO 011	Introduction to Biology	0	0							
4	FBUS 011	Introduction to Business	0	0							
5	FCHM 011	Introduction to Chemistry	0	0							
6	FEAP 020	Foundation English for Academic Purposes 2	0	0							
7	FGEO 011	Introduction to Geography	0	0							
8	FHUM 011	Introduction to Humanities and Social Science	0	0							
9	FMAT 041	Foundation Mathematics 2	0	0							
10	FPHY 011	Introduction to Physics	0	0							
NUZYP											
11	ZCOM 041	Academic Communications for Graduate Studies II	0	0							
12	ZRDG 031	Academic Reading for Graduate Studies II	0	0							
13	ZWRT 021	Academic Writing for Graduate Studies II	0	0							
Sociology and Anthropology											
14	SOC 201Z	Social Science Research Methods	0	0							
GSB											
GSB											
15	GSBF 513	Financial Data Analytics II	2.5	5				Registration by School Admin only			
16	GSBF 515b	Investments II	2.5	5	GSBF 515a Investments I (4106) (C- and above)			Registration by School Admin only			

17	GSBF 517	Macroeconomics for Finance	2.5	5				Registration by School Admin only			
18	GSBF 520	Empirical Asset Pricing	2	4				Registration by School Admin only			
19	GSBF 541	Global Finance Experience Residency (I)	2	4				Registration by School Admin only			
20	MBA 09	Marketing Management	2	4				Registration by School Admin only			
21	MBA 10	Foundations of Strategy	2	4				Registration by School Admin only			
22	MBA 13	Macroeconomics	2	4				Registration by School Admin only			
23	MBA 15	Corporate Finance	2	4				Registration by School Admin only			
24	MBA 16	Entrepreneurship	2	4				Registration by School Admin only			
25	MBAE 16	Project Management	2	4							
26	MBAE 18	Consumer Behavior	2	4							
27	MBAE 19	Global Economics for Managers	2	4	MBA 08 Managerial Economics (1722) (C and above)						
28	MBAE 4	Pricing	2	4							
29	MSF 01	Financial Modeling	2.5	5				Registration by School Admin only			
GSPP											
Master in Public Administration											
30	MPA 608	Strategic Management and Leadership	4	8				1 year GSPP Public Administration			
31	MPA 699	Master's Project with Overseas Component	0	0				1 year GSPP Public Administration			
32	MPE 610	National Identity and Public Policy	4	8				1 year GSPP Public Administration	1 year GSPP Public Policy, 2 year GSPP Public Policy	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM	
33	MPE 611	Benefit Cost Analysis	4	8				1 year GSPP Public Administration	1 year GSPP Public Policy, 2 year GSPP Public Policy	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM	
34	MPE 623	Law and Development	4	8				1 year GSPP Public Administration	1 year GSPP Public Policy, 2 year GSPP Public Policy	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM	
35	MPE 638	Contemporary Security Challenges in Central Asia and Beyond	4	8				GSPP	GSB, GSE, SEDS, SMG, SSH, SoM		

36	MPE 644	The Media and Public Policy	4	8				1 year GSPP Public Administration	1 year GSPP Public Policy, 2 year GSPP Public Policy	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM	
37	MPE 663	Applied Public Economics and Finance	4	8	MPP 601 Microeconomics and Public Policy (1449) (B- and above) OR MPA 603 Economic Applications for Public Managers (2074) (B- and above)			2 year GSPP Public Policy	1 year GSPP Public Administration, 2 year GSPP Public Administration	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM	
38	MPE 681	Natural Resource Management and Policy	4	8				1 year GSPP PhD Public Policy, 1 year GSPP Public Administration, 2 year GSPP Public Policy, GSPP			
39	MPE 682	Sustainable Development and Environmental Governance	4	8				1 year GSPP PhD Public Policy, 1 year GSPP Public Administration, 2 year GSPP Public Policy, GSPP			
40	MPE 688	New Technologies and Public Policy	4	8				1 year GSPP PhD Public Policy, 1 year GSPP Public Administration, 2 year GSPP Public Policy, GSPP			
41	MPE 689	Data Analytics for Public Policy	4	8				Public Administration, Public Policy			
Master in Public Policy											
42	MPP 602	Macroeconomics and Public Policy	4	8				1 year GSPP Public Policy			
43	MPP 613	Policy Research Design and Methods	4	8				1 year GSPP Public Policy			
44	MPP 641	Public Management and Leadership	4	8				1 year GSPP Public Policy			
45	MPP 699	Policy Analysis Exercise with Overseas Component	8	16	MPP 601 Microeconomics and Public Policy (1449) (C- and above) AND MPP 611 Statistics for Public Policy (1450) (C- and above) AND MPP 613 Policy Research Design and Methods (1301) (C- and above) AND MPP 621 Public Policy and Analysis (1451) (C- and above)			2 year GSPP Public Policy			
46	MPP 699-0	Policy Analysis Exercise with Overseas Component	0	0	MPP 613 Policy Research Design and Methods (1301) (C- and above)						

PhD in Public Policy

47	DPP 600	Developing Dissertation Research	0	0				Registration by School Admin only			
48	DPP 602	Macroeconomics in Public Sector	4	8				1 year GSPP PhD Public Policy			
49	DPP 613	Research Design (qualitative and quantitative)	4	8				1 year GSPP PhD Public Policy			
50	DPP 621	Public Policy and Analysis	4	8				1 year GSPP PhD Public Policy			
51	DPP 631	Politics of Public Policy	4	8				1 year GSPP PhD Public Policy			
52	DPP 689	PhD Qualifying Examinations	0	0				2 year GSPP PhD Public Policy			
53	DPP 689	PhD Qualifying Examination	6	12							
54	DPP 690-0	Thesis Preparation and Writing	0	0				Registration by School Admin only			
55	DPP 699	Thesis Design and Written Proposal	6	12				2 year GSPP PhD Public Policy			

GSE

MA in Multilingual Education

56	EDML 612	Multilingual Society	3	6				1 year GSE MA in Multil.Education			
57	EDML 613	The Multilingual School	3	6				2 year GSE MA in Multil.Education			
58	EDML 620	Language and Literacy Development	3	6				Registration by School Admin only			
59	EDML 630	Language Policy and Education Reform Across Contexts	3	6				1 year GSE MA in Multil.Education			
60	EDML 691	Thesis Research II	6	12				2 year GSE MA in Multil.Education			

MSc Educational Leadership HE

61	EDHE 692	Thesis Seminar III	4.5	9				2 year GSE Educ.Leadership			
62	EDUC 506	Academic English II	1.5	3				1 year GSE Educ.Leadership			
63	EDUC 508	Academic English IV	1.5	3				2 year GSE Educ.Leadership			
64	EDUC 511	Advanced English for Education Professionals II	3	6				1 year GSE MA in Multil.Education			
65	EDUC 513	English for Thesis Writing II	3	6				2 year GSE MA in Multil.Education			

66	EDUC 572	Kazakh for Professional Purposes	3	6				1 year GSE Educ.Leadership, 1 year GSE MA in Multil.Education, 1 year GSE PhD Education			
67	EDUC 591	Academic English Writing for Doctoral Students II	3	6				2 year GSE PhD Education			
68	EDUC 600	Research Methods II	3	6				1 year GSE Educ.Leadership, 1 year GSE MA in Multil.Education			
69	EDUC 670	Internship Project	6	12				Registration by School Admin only			
70	EDUC 671	Work-based project	6	12				Registration by School Admin only			
71	EDUC 675	Learning to Work	4.5	9				Registration by School Admin only			
72	EDUC 704	Advanced Methods of Education Research	3	6				1 year GSE PhD Education			
73	EDUC 705	Advanced Methods of Education Research: Qualitative Methods	3	6				1 year GSE PhD Education			
74	EDUC 711	Globalisation and Education	3	6				1 year GSE PhD Education			
75	EDUC 731	Proposal Defence	3	6				Registration by School Admin only			
76	EDUC 740	Doctoral Seminar	3	6				Registration by School Admin only			
77	EDUC 750	Dissertation Research	9	18				Registration by School Admin only			
78	EDUC 760	Teaching and Learning in the University Context: Curriculum, Pedagogy and Assessment	3	6				3 year GSE PhD Education			
MSc Educational Leadership IE											
79	EDIE 691	Thesis Seminar II	3	6							
80	EDIE 692	Thesis Seminar III	4.5	9				2 year GSE Educ.Leadership			
MSc Educational Leadership SE											
81	EDSE 692	Thesis Seminar III	4.5	9				2 year GSE Educ.Leadership			
82	EDSE 693	Thesis Seminar IV	9	18							
Other											
Other											

83	T - 16721	Economic Sociology	3	6							
84	T - 16722	Sociology of Population	3	6							
85	T - 16783	Sociology of Organizations	3	6							
86	T - 19152	Economic Development	3	6							
87	T - 19154	Anthropology of Migrations and Transnationalism	3	6							
88	T - 19158	European Institutions and Governance	3	6							
89	T - 19164	Early Modern and Modern Political Thought	3	6							
90	T - 19501	Sociology of Information and Knowledge	3	6							
91	T-MOA 106	Developing and Marketing Innovations	3	6							
92	T-OFF 510	Operations and Maintenance Management	1.5	3							
93	T-OFF 540	Condition Monitoring and Management	1.5	3							
94	TEST 001	TEST	3	6							
SoM											
MMM											
95	MMMM 507	Critical Analysis of the Contemporary Concepts in Molecular Medicine	3	6					For YR 1 MMM only. Registration by School Admin.		
96	MMMM 508	Molecular Immunology	3	6					For YR 1 MMM only. Registration by School Admin.		
97	MMMM 509	From the Bench to the Bedside: Drug Development and Clinical Trials	3	6					For YR 1 MMM only. Registration by School Admin.		
98	MMMM 510	Natural Medicine	3	6					For YR 1 MMM only. Registration by School Admin.		
99	MMMM 511	Research Methods in Molecular Biomedicine	3	6					For YR 1 MMM only. Registration by School Admin.		
100	MMMM 512	Molecular Basis of Chronic Inflammation	1	2					For YR 1 MMM only. Registration by School Admin.		
101	MMMM 690	Master Research Project	15	30					For YR 2 MMM only. Registration by School Admin.		

Medicine										
102	MHPW 200	Health, Physical Fitness, and Well Being	3	6				GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
Nursing										
103	NUR 102L	Human Anatomy and Physiology II with Lab	4	8				Nursing		
104	NUR 103L	Microbiology for Nurses with Lab	4	8				Nursing		
105	NUR 305	Research Methods for Nursing	3	6				For BApN only. Registration by School Admin.		
106	NUR 306	Medical-Surgical Nursing: Complex Medical Management for Acute and Chronic Patient	4	8				For BApN only. Registration by School Admin.		
107	NUR 307	Health Promotion and Disease Prevention in Culturally Diverse Populations	4	8				For BApN only. Registration by School Admin.		
108	NUR 308	Enhanced Communication in Professional Nursing	4	8				For BApN only. Registration by School Admin.		
Public Health										
109	PUBH 512	Biostatistical Modeling and Sampling	3	6				For YR 1 PUBH only. Registration by School Admin.		
110	PUBH 522	Advanced Analytical Epidemiology	3	6				For YR 1 PUBH only. Registration by School Admin.		
111	PUBH 551	Health Services Management, Health Economic and Health Policy	3	6				For YR 1 PUBH only. Registration by School Admin.		
112	PUBH 631	Social and Behavioral Sciences in Public Health	3	6				For YR 1 PUBH only. Registration by School Admin.		
113	PUBH 641	Problem Investigations in Environmental Health	3	6				For YR 1 PUBH only. Registration by School Admin.		
114	PUBH 651	Risk Management in Health Care	3	6				For YR 2 PUBH only. Registration by School Admin.		
115	PUBH 652	Applied Methods in Health Services Research	3	6				For YR 2 PUBH only. Registration by School Admin.		
116	PUBH 682	Master's Project Implementation	12	24				For YR 2 PUBH only. Registration by School Admin.		
SMG										

Mining Engineering											
117	MINE 201	Mineral Processing	3	6				Mining Engineering	Geology, Petroleum Engineering	SEDS, SMG, SSH, SoM	
118	MINE 507	Rock Excavation Methods	3	6				Mining Engineering			
119	MINE 508	Advanced Rock Mechanics	3	6				Mining Engineering			
120	MINE 509	Advanced Surface Mine Design	3	6				Mining Engineering			
121	MINE 510	Advanced Underground Mine Design	3	6				Mining Engineering			
122	MINE 691	Thesis II	15	30	MINE 690 Thesis I (4531) (P)			Mining Engineering			
123	MINE 702	Current Research Literature	4	8				Science, Engineering and Technology			
124	MINE 703	Advanced Mining Systems	4	8				Science, Engineering and Technology			
125	MINE 803	Advanced Geometallurgy	4	8				Science, Engineering and Technology			
126	MINE 806	Advanced Numerical Methods	4	8				Science, Engineering and Technology			
127	MINE 890-0	Thesis Research	0	0				Science, Engineering and Technology			
Petroleum Engineering											
128	PETE 202	Transport Phenomena	3	6	ENG 200 Engineering Mathematics III (Differential Equations and Linear Algebra) (5009) (C- and above) OR CHEM 101 General Chemistry I (113) (C- and above) OR CHEM 101L General Chemistry I lab (179) (C- and above)			Petroleum Engineering		SEDS, SMG, SSH, SoM	
129	PETE 203	Drilling Engineering with Laboratories	4	8	PETE 201 Fluid Mechanics and Thermodynamics (5120) (C- and above)			Petroleum Engineering		SEDS, SMG, SSH, SoM	
130	PETE 204	Reservoir Rock and Fluid Properties with Lab	4	8	PHYS 162 Physics II for Scientists and Engineers with Laboratory (173) (C- and above)			Petroleum Engineering		SEDS, SMG, SSH, SoM	
131	PETE 506	Advanced Reservoir Simulation	3	6				Petroleum Engineering		SEDS	

132	PETE 507	Advanced Reservoir Engineering	3	6				Petroleum Engineering	SEDS		
133	PETE 508	Advanced Production Engineering	3	6				Petroleum Engineering	SEDS		
134	PETE 600	Thesis I	6	12				Petroleum Engineering			
135	PETE 602	Research Seminar	3	6				Petroleum Engineering			
136	PETE 606	Advanced Enhanced Oil Recovery	3	6				Petroleum Engineering	SEDS		
137	PETE 610	Advanced Reservoir Geomechanics	3	6				Petroleum Engineering	SEDS		
138	PETE 702	Current Research Literature	4	8				Science, Engineering and Technology			
139	PETE 703	Advanced Reservoir Engineering	4	8				Science, Engineering and Technology			
140	PETE 803	Advanced Enhanced Oil Recovery	4	8				Science, Engineering and Technology			
141	PETE 890	Thesis Research	0	0				Science, Engineering and Technology			
School of Mining and Geosciences											
142	GEOL 101	Fundamentals of Geology	3	6				1 year UG SMG, Undeclared SMG	SEDS, SMG, SSH, SoM		
143	GEOL 204	Sedimentology and stratigraphy	3	6	GEOL 101 Fundamentals of Geology (4774) (D and above) OR GEOL 102 Fundamentals of Geology (4772) (D and above) AND GEOL 202 Geologic Maps and Cross-Sections (5123) (D and above)			Geology	Mining Engineering, Petroleum Engineering	SEDS, SMG, SSH, SoM	
144	GEOL 205	Paleontology	3	6	GEOL 101 Fundamentals of Geology (4774) (D and above) OR GEOL 102 Fundamentals of Geology (4772) (D and above)			Geology	Mining Engineering, Petroleum Engineering	SEDS, SMG, SSH, SoM	
145	GEOL 301	Sedimentary petrology	3	6	GEOL 101 Fundamentals of Geology (4774) (D and above) OR GEOL 202 Geologic Maps and Cross-Sections (5123) (D and above)	GEOL 202 Geologic Maps and Cross-Sections (5123) (D and above)		Geology	Mining Engineering, Petroleum Engineering	SEDS, SMG, SSH, SoM	
146	SMG 100	Introduction to Natural Resources Extraction	3	6				1 year UG SMG, Undeclared SMG	1 year UG SEDS, 1 year UG SSH	SEDS, SMG, SSH, SoM	

147	SMG 210	Strength of Materials	3	6				1 year UG SMG	SEDS, SMG, SSH, SoM		
148	SMG 520	Research Methods	3	6				Mining Engineering, Petroleum Engineering	GSE, GSP, GSPP, SEDS, SSH, SoM		
SSH											
Area Studies											
149	EAS 502	Disciplinary Methodology	4	8				SSH	GSE, GSP, GSPP, SEDS, SMG, SoM		
150	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)			GSE, GSP, GSPP, SEDS, SMG, SSH, SoM			
151	EAS 511	Independent Study in Eurasian Studies	4	8				GSE, GSP, GSPP, SEDS, SMG, SSH, SoM			
152	EAS 702	Elective in Eurasian Humanities	4	8				Instructor's Permission Required			
153	EAS 703	Elective in Eurasian Social Sciences	4	8				Instructor's Permission Required			
154	EAS 708	Proseminar in Eurasian Humanities	4	8				GSE, GSP, GSPP, SEDS, SMG, SSH, SoM			
155	EAS 709	Proseminar in Eurasian Social Sciences	4	8				Instructor's Permission Required			
156	EAS 710	Independent Study in Eurasian Studies	4	8				Instructor's Permission Required			
Biological Science											
157	BIOL 101	Biology for non-Science majors	3	6			BIOL 110 Modern Biology I (1070) (C- and above)	Anthropology, Economics, History, Political Science and International Relations, Sociology, Undeclared SSH, World Languages, Literatures and Cultures			

158	BIOL 110	Modern Biology I	3	6				Biological Sciences, Chemistry	Computer Science, Mathematics, Physics, Robotics and Mechatronics	Anthropology, Economics, History, Political Science and International Relations, Sociology, Undeclared SSH, World Languages, Literatures and Cultures	
159	BIOL 110L	Modern Biology I Laboratory	1	2		BIOL 110 Modern Biology I (1070) (C and above)		Biological Sciences, Chemistry	Computer Science, Mathematics, Physics, Robotics and Mechatronics	Anthropology, Economics, History, Political Science and International Relations, Sociology, Undeclared SSH, World Languages, Literatures and Cultures	
160	BIOL 120	Modern Biology II	3	6	BIOL 110 Modern Biology I (1070) (C and above)			Biological Sciences, Chemistry	Computer Science, Mathematics, Physics, Robotics and Mechatronics	Anthropology, Economics, History, Political Science and International Relations, Sociology, Undeclared SSH, World Languages, Literatures and Cultures	
161	BIOL 120L	Modern Biology II Laboratory	1	2	BIOL 110 Modern Biology I (1070) (C and above) OR BIOL 110L Modern Biology I Laboratory (5448) (C and above)	BIOL 120 Modern Biology II (1195) (C and above)		Biological Sciences, Chemistry	Computer Science, Mathematics, Physics, Robotics and Mechatronics	Anthropology, Economics, History, Political Science and International Relations, Sociology, Undeclared SSH, World Languages, Literatures and Cultures	

162	BIOL 231	Human Anatomy and Physiology II	4	8	BIOL 230 Human Anatomy and Physiology I (72) (C and above)		Biological Sciences	Chemistry, Computer Science, Mathematics, Physics, Robotics and Mechatronics	SEDS, SMG, SSH, SoM	
163	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 Lab (1445) (C and above) OR BIOL 120L Modern Biology II Laboratory (5443) (C and above)		Biological Sciences	Chemistry, Computer Science, Mathematics, Physics, Robotics and Mechatronics	SEDS, SMG, SSH, SoM	
164	BIOL 310	Immunology	3	6	BIOL 301 Molecular Biology of Cell with Lab (1197) (C and above) OR BIOL 305 Introduction to Microbiology with Lab (1642) (C and above) OR BIOL 301 Molecular Cell Biology (5809) (C and above) OR BIOL 305 Introduction to Microbiology (5789) (C and above)		Biological Sciences	Chemistry, Computer Science, Mathematics, Physics, Robotics and Mechatronics	SEDS, SMG, SSH, SoM	
165	BIOL 321	Bioethics	3	6	BIOL 120 Modern Biology II (1195) (C and above)		4 year UG SSH Biological Sciences, 4 year UG SSH Chemistry	3 year UG SSH Biological Sciences, 3 year UG SSH Chemistry	SEDS, SMG, SSH, SoM	
166	BIOL 341	Biochemistry I	3	6	CHEM 211 Organic Chemistry I (154) (C and above)		Biological Sciences	Chemistry, Computer Science, Mathematics, Physics, Robotics and Mechatronics	SEDS, SMG, SSH, SoM	
167	BIOL 341L	Biochemistry I Lab	1	2		BIOL 341 Biochemistry I (2002) (C and above)	Biological Sciences	Chemistry, Computer Science, Mathematics, Physics, Robotics and Mechatronics	SEDS, SMG, SSH, SoM	
168	BIOL 370	Genetics	3	6	BIOL 120 Modern Biology II (1195) (C and above)		Biological Sciences	Chemistry, Computer Science, Mathematics, Physics, Robotics and Mechatronics	SEDS, SMG, SSH, SoM	
169	BIOL 392	Directed Study in Biology	3	6			Instructor's Permission Required			

170	BIOL 430	Histology with Laboratory	4	8	BIOL 230 Human Anatomy and Physiology I (72) (C and above) OR BIOL 230 Human Anatomy and Physiology I (6217) (C and above)			Biological Sciences	Chemistry, Computer Science, Mathematics, Physics, Robotics and Mechatronics	SEDS, SMG, SSH, SoM	
171	BIOL 440	Neuroscience	3	6	BIOL 230 Human Anatomy and Physiology I (72) (C and above) OR BIOL 230 Human Anatomy and Physiology I (6217) (C and above)			Biological Sciences	Chemistry, Computer Science, Mathematics, Physics, Robotics and Mechatronics	SEDS, SMG, SSH, SoM	
172	BIOL 445	Medical Microbiology	3	6	BIOL 305 Introduction to Microbiology (5789) (C and above) OR BIOL 305 Introduction to Microbiology with Lab (1642) (C and above)			Biological Sciences	Chemistry, Computer Science, Mathematics, Physics, Robotics and Mechatronics	SEDS, SMG, SSH, SoM	
173	BIOL 450	Food Microbiology	3	6	BIOL 305 Introduction to Microbiology with Lab (1642) (C and above) OR BIOL 305 Introduction to Microbiology (5789) (C and above)			Biological Sciences	Chemistry, Computer Science, Mathematics, Physics, Robotics and Mechatronics	SEDS, SMG, SSH, SoM	
174	BIOL 450L	Food Microbiology Lab	1	2	BIOL 305 Introduction to Microbiology with Lab (1642) (C and above) OR BIOL 305 Introduction to Microbiology (5789) (C and above)	BIOL 450 Food Microbiology (4609) (C and above)		Biological Sciences	Chemistry, Computer Science, Mathematics, Physics, Robotics and Mechatronics	SEDS, SMG, SSH, SoM	
175	BIOL 452	Biology of Cancer	3	6	BIOL 231 Human Anatomy and Physiology II (479) (C and above) OR BIOL 301 Molecular Biology of Cell with Lab (1197) (C and above) OR BIOL 331 Human Anatomy and Physiology II (6218) (C and above) OR BIOL 301 Molecular Cell Biology (5809) (C and above)			Biological Sciences	Chemistry, Computer Science, Mathematics, Physics, Robotics and Mechatronics	SEDS, SMG, SSH, SoM	
176	BIOL 456	Biology Research Design	3	6		BIOL 355 Critical Research Reasoning (1000) (C and above)		Biological Sciences	Chemistry, Computer Science, Mathematics, Physics, Robotics and Mechatronics	SEDS, SMG, SSH, SoM	

177	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	Chemistry, Computer Science, Mathematics, Physics, Robotics and Mechatronics	SEDS, SMG, SSH, SoM	
178	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	Chemistry, Computer Science, Mathematics, Physics, Robotics and Mechatronics	SEDS, SMG, SSH, SoM	
179	BIOL 491	Honors Thesis	9	18	BIOL 490 Honors Thesis Research (1581) (P)			Instructor's Permission Required			
180	BIOL 570	Advanced Biotechnology	3	6				Biological Sciences	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	
181	BIOL 580	Applied Bioinformatics	3	6	BIOL 520 Statistical Methods in Life Sciences (1203) (C and above)			Biological Sciences	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	
182	BIOL 590	Research Design and Project Planning	3	6				1 year Gr SSH Biological Sciences and Technologies			
183	BIOL 591	Cellular Biophysics	3	6				Biological Sciences	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	
184	BIOL 800-0	Thesis Research	0	0				1 year PhD SEDS Science, Engineering and Technology	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	
185	BIOL 837	Advanced Optical and Electron Microscopy	4	8				1 year PhD SEDS Science, Engineering and Technology	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	
186	BIOL 870	Advanced Biotechnology	4	8				1 year PhD SEDS Science, Engineering and Technology	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	
187	BIOL 880	Applied Bioinformatics	4	8				1 year PhD SEDS Science, Engineering and Technology	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	
188	BIOL 891	Cellular Biophysics	4	8				1 year PhD SEDS Science, Engineering and Technology	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	

Chemistry

189	CHEM 092	Survey of Environmental Sciences for Non-Science Majors	3	6				Anthropology, Economics, History, Nursing, Political Science and International Relations, Sociology, Undeclared SSH, World Languages, Literatures and Cultures			
190	CHEM 101	General Chemistry I	3	6				Biological Sciences, Chemistry	SEDS, SMG, SSH, SoM		
191	CHEM 101L	General Chemistry I lab	1	2			CHEM 101 General Chemistry I (113) (C and above)	Biological Sciences, Chemistry	SEDS, SMG, SSH, SoM		
192	CHEM 102	General Chemistry II	3	6	CHEM 101 General Chemistry I (113) (C and above)			Biological Sciences, Chemistry, SMG	SEDS, SSH, SoM		
193	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	SEDS, SSH, SoM		
194	CHEM 189c	Independent Study	3	6				Instructor's permission required			
195	CHEM 211	Organic Chemistry I	3	6	CHEM 102 General Chemistry II (232) (C and above)			Chemistry	Biological Sciences	SEDS, SMG, SSH, SoM	
196	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	SEDS, SMG, SSH, SoM	
197	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	SEDS, SMG, SSH, SoM	
198	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	SEDS, SMG, SSH, SoM	

199	CHEM 250	Descriptive Inorganic Chemistry	3	6	CHEM 101 General Chemistry I (113) (C and above)			Chemistry	Biological Sciences	SEDS, SMG, SSH, SoM	
200	CHEM 320	Instrumental Analysis	3	6	CHEM 220 Quantitative Chemical Analysis (555) (C and above)			Chemistry	Biological Sciences	SEDS, SMG, SSH, SoM	
201	CHEM 320L	Instrumental Analysis Lab	1	2	(CHEM 220 Quantitative Chemical Analysis (555) (C and above) AND CHEM 220L Quantitative Chemical Analysis Lab (5271) (C and above)) OR CHEM 220 Quantitative Chemical Analysis (555) (C and above)	CHEM 320 Instrumental Analysis (1055) (C and above)		Chemistry	Biological Sciences	SEDS, SMG, SSH, SoM	
202	CHEM 332	Physical Chemistry II	3	6	CHEM 331 Physical Chemistry I (634) (C and above)	MATH 274 Introduction to Differential Equations (484) (C and above)		Chemistry	Biological Sciences	SEDS, SMG, SSH, SoM	
203	CHEM 332L	Physical Chemistry II Lab	1	2		CHEM 332 Physical Chemistry II (1056) (C and above) AND CHEM 331L Physical Chemistry Lab (1060) (C and above)		Chemistry	Biological Sciences	SEDS, SMG, SSH, SoM	
204	CHEM 380	Research Methods	3	6				Chemistry	Biological Sciences	SEDS, SMG, SSH, SoM	
205	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	Biological Sciences	SEDS, SMG, SSH, SoM	
206	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	SEDS, SMG, SSH, SoM	
207	CHEM 451	Applied Homogenous Catalysis	3	6	CHEM 350 Advanced Inorganic Chemistry (1905) (C and above)			Chemistry	Biological Sciences	SEDS, SMG, SSH, SoM	

208	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	Biological Sciences	SEDS, SMG, SSH, SoM	
209	CHEM 511	Theoretical Chemistry	3	6	CHEM 510 Principles of Physical Chemistry (5266) (C and above)			Chemistry	Biological Sciences	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM	
210	CHEM 540	Organic Reactions and Mechanisms	3	6				Chemistry	Biological Sciences	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM	
Communication and Composition											
211	COMM 325	Computer-Mediated Communication	3	6				SSH	SEDS, SMG, SoM		
212	WCS 150	Rhetoric and Composition	3	6				1 year UG SEDS, 1 year UG SMG, 1 year UG SOM, 1 year UG SSH		2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH	
213	WCS 200	Introduction to Public Speaking	3	6	WCS 150 Rhetoric and Composition (2183) (C-and above)			2 year UG SSH Biological Sciences, 2 year UG SSH Chemistry, 2 year UG SSH Mathematics, 2 year UG SSH Physics	2 year UG SEDS	2 year UG SSH	
214	WCS 210	Technical and Professional Writing	3	6	WCS 150 Rhetoric and Composition (2183) (C-and above)			2 year UG SEDS, 2 year UG SMG	2 year UG SOM, 2 year UG SSH	3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	
215	WCS 230	Say What you Mean: Clarity, Precision, and Style in Academic Writing	3	6	WCS 150 Rhetoric and Composition (2183) (C-and above)			2 year UG SSH Biological Sciences, 2 year UG SSH Chemistry, 2 year UG SSH Mathematics, 2 year UG SSH Physics	2 year UG SEDS	2 year UG SSH	
216	WCS 240	Writing for Digital Media	3	6	WCS 150 Rhetoric and Composition (2183) (C-and above)			2 year UG SEDS	2 year UG SSH	3 year UG SEDS, 3 year UG SSH, 4 year UG SEDS, 4 year UG SSH	
217	WCS 250	Advanced Rhetoric and Composition	3	6	WCS 150 Rhetoric and Composition (2183) (C-and above)			2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH		3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	

218	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 WCS 220 Science Writing (5686) (B+ 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))			Instructor's permission required			
219	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)			Instructor's permission required			
Communication and Composition, Languages, Literature and Linguistics											
220	WCS 260/WLL 235	Creative Writing: Introduction to Fiction Writing I	3	6	WCS 150 Rhetoric and Composition (2183) (C- and above)			2 year UG SSH		3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	
221	WCS 360/WLL 360	Poetry Writing Seminar	3	6				Instructor's permission required			
Economics											
222	ECON 101	Introduction to Microeconomics	3	6				Undeclared SSH	1 year UG SEDS, 1 year UG SMG, 1 year UG SOM, 1 year UG SSH	SEDS, SMG, SSH, SoM	
223	ECON 102	Introduction to Macroeconomics	3	6				Undeclared SSH	1 year UG SEDS, 1 year UG SMG, 1 year UG SOM, 1 year UG SSH	SEDS, SMG, SSH, SoM	

224	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	2 year UG SSH Undeclared	SSH	
225	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	2 year UG SSH Undeclared	SSH	
226	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	2 year UG SSH Undeclared	SSH	
227	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)						
228	ECON 301	Econometrics I	3	6	ECON 211 Economic Statistics (2280) (C- and above) OR (MATH 321 Probability (482) (C- and above) AND (MATH 322 Mathematical Statistics (1165) (C- and above) OR MATH 310 Applied Statistical Methods (82) (C- and above)))			Economics		SSH	
229	ECON 302	Game Theory and Economic Analysis	3	6	ECON 201 Intermediate Microeconomics (133) (C- and above)		PLS 315 Political Game Theory (704) (C- and above)	3 year UG SSH Economics	4 year UG SSH Economics	SSH	
230	ECON 305	Advanced Microeconomics	3	6	ECON 201 Intermediate Microeconomics (133) (C- and above)	ECON 211 Economic Statistics (2280) (D and above)	ECON 398 General Special Topics in Economics (2184) (C- and above)	3 year UG SSH Economics	4 year UG SSH Economics	SSH	

231	ECON 328	Labor Economics	3	6	ECON 201 Intermediate Microeconomics (133) (C- and above)			3 year UG SSH Economics	4 year UG SSH Economics	SSH	
232	ECON 332	Urban Economics	3	6	ECON 201 Intermediate Microeconomics (133) (C- and above)			3 year UG SSH Economics	4 year UG SSH Economics	SSH	
233	ECON 399	Independent Study in Economics	3	6				Instructor's Permission Required			
234	ECON 413	Econometrics II Time Series	3	6	ECON 301 Econometrics I (664) (C- and above)			Economics		SSH	
235	ECON 416	Empirical Industrial Organization	3	6	ECON 201 Intermediate Microeconomics (133) (C- and above) AND ECON 301 Econometrics I (664) (C- and above)			Economics		SSH	
236	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		SSH	
237	ECON 443	Topics in Macroeconomic Theory	3	6	ECON 202 Intermediate Macroeconomics (207) (C- and above) AND ECON 301 Econometrics I (664) (C- and above)			Economics		SSH	
238	ECON 516	Empirical Industrial Organization	4	8	ECON 501 Microeconomics I (2187) (C- and above) AND ECON 531 Econometrics (2505) (C- and above)			Economics			
239	ECON 521	Microeconomic Theory II	4	8	ECON 501 Microeconomics I (2187) (C- and above) AND ECON 512 Mathematical Economics (2154) (C- and above)			Economics			
240	ECON 522	Macroeconomics II	4	8	ECON 502 Macroeconomics I (2186) (C- and above) AND ECON 512 Mathematical Economics (2154) (C- and above)			Economics			

241	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)		Economics			
242	ECON 528	Wages and the Labor Market	4	8	ECON 521 Microeconomic Theory II (2506) (C- and above) AND ECON 531 Econometrics (2505) (C- and above)			Economics			
243	ECON 531	Econometrics	4	8	ECON 511 Statistics (2188) (C- and above) AND ECON 512 Mathematical Economics (2154) (C- and above)			Economics			
244	ECON 543	Topics in Macroeconomic Theory	4	8	ECON 502 Macroeconomics I (2186) (C- and above)			Economics			
245	ECON 590	Thesis II	8	16	ECON 589 Thesis I (3714) (P)			2 year Gr SSH Economics			
History, Philosophy and Religious Studies											
246	HST 100	History of Kazakhstan	3	6				4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	1 year UG SEDS, 1 year UG SMG, 1 year UG SOM, 1 year UG SSH	SEDS, SMG, SSH, SoM	
247	HST 123	Introduction to the History of Science and Technology	3	6				SSH	SEDS, SMG, SoM		
248	HST 132	European History II (from 1700)	3	6				SSH	SEDS, SMG, SoM		
249	HST 152	US History II (from 1877)	3	6				SSH	SEDS, SMG, SoM		
250	HST 214	An Introduction to Comparative History: The Eurasian Steppes and Great Plains of North America	3	6				SSH	SEDS, SMG, SoM		
251	HST 238	Clash of Civilizations: Communities, Confessions and Empires in Central Europe, 1000-1890	3	6				SSH	SEDS, SMG, SoM		
252	HST 241	History of Sexuality	3	6				SSH	SEDS, SMG, SoM		
253	HST 242	History of the Soviet Union: Politics, Society, Culture	3	6				SSH	SEDS, SMG, SoM		

254	HST 315	The Wild East: Colonialism, Rebellion, and Nation-building in the Steppe (1731 -1917)	3	6				SSH	SEDS, SMG, SoM		
255	HST 424	Global Histories	3	6	Subject "HST" BETWEEN 100 and 199 OR Subject "HST" BETWEEN 200 and 299 OR Subject "HST" BETWEEN 300 and 399 OR Subject "HST" BETWEEN 400 and 499				3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH		
256	HST 499	History Capstone: Undergraduate Dissertation	4	8	HST 498 Directed Reading (1365) (C- and above)			History	SSH		
257	HST 524	Global Histories	4	8				SSH	GSB, GSE, GSPP, SEDS, SMG, SoM		
258	PHIL 124	Knowledge and Reality	3	6				SEDS, SMG, SSH, SoM			
259	PHIL 131	Introduction to Contemporary Political Philosophy	3	6				SEDS, SMG, SSH, SoM			
260	PHIL 141	Critical Thinking	3	6				SEDS, SMG, SSH, SoM			
261	PHIL 180	Environmental Philosophy	3	6				SEDS, SMG, SSH, SoM			
262	PHIL 210	Ethics	3	6				2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH			
263	PHIL 223	Philosophy of Science	3	6				SEDS, SMG, SSH, SoM			
264	PHIL 240	Formal Logic	3	6				SEDS, SMG, SSH, SoM			
265	PHIL 242	Philosophy of Cognitive Science	3	6				SEDS, SMG, SSH, SoM			
266	PHIL 361	Philosophy of Language	3	6				SEDS, SMG, SSH, SoM			
267	PHIL 362	Philosophy of Mind	3	6				SEDS, SMG, SSH, SoM			
History, Philosophy and Religious Studies, History, Philosophy and Religious Studies											
268	HST 263/REL 263	The History of Islam II: Islam in the Modern World	3	6				SSH	SEDS, SMG, SoM		
269	HST 350/REL 350	Religion and Power in Islamic Central Asia	3	6	HST 100 History of Kazakhstan (172) (C- and above)			SSH	SEDS, SMG, SoM		

270	PHIL 265/REL 265	Becoming a Sage: Introduction to Daoism	3	6				SEDS, SMG, SSH, SoM			
271	REL 110/HST 110	Introduction to World Religions	3	6				SSH	SEDS, SMG, SoM		
History, Philosophy and Religious Studies, Kazakh Language and Turkic Studies											
272	HST 552/TUR 552	Proseminar in Eurasian History, 552-1917	4	8				GSE, GSP, SEDS, SMG, SSH, SoM			
History, Philosophy and Religious Studies, Kazakh Language and Turkic Studies, Sociology and Anthropology											
273	ANT 375/HST 375/TUR 375	Inner Asian Frontiers of China: A Cultural Perspective	3	6				SEDS, SMG, SSH, SoM			
History, Philosophy and Religious Studies, Languages, Literature and Linguistics											
274	WLL 102 /PHIL 102	Language, Experience, Culture	3	6				World Languages, Literatures and Cultures	SSH	SEDS, SMG, SoM	
History, Philosophy and Religious Studies, Languages, Literature and Linguistics, Political Science and International Relations											
275	HST 342/WLL 342/PLS 322	Russian Intellectual History (1762 - 1905)	3	6	Subject "HST" BETWEEN 100 and 199 OR Subject "WLL" BETWEEN 100 and 199 OR Subject "PLS" BETWEEN 100 and 199 OR Subject "REL" BETWEEN 100 and 199			SSH	SEDS, SMG, SoM		
Kazakh Language and Turkic Studies											
276	KAZ 201	Academic Kazakh I	3	6	KAZ 150 Basic Kazakh (1215) (C- and above) OR KLL "[B1.2] Intermediate"			1 year UG SEDS Chemical Engineering, 1 year UG SEDS Chemical and Materials Engineering, 1 year UG SEDS Civil Engineering, 1 year UG SEDS Civil and Environmental Engineering, 1 year UG SEDS Electrical and Computer Engineering, 1 year UG SEDS Electrical and Electronic Engineering, 1 year UG SEDS Mechanical Engineering, 1 year UG SEDS Mechanical and Aerospace Engineering, 1 year UG SEDS Undeclared, 1 year UG SOM	3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	1 year UG SMG, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH	

277	KAZ 202	Acadmic Kazakh II	3	6	KAZ 201 Academic Kazakh I (4561) (C- and above) OR KLL "[B2.2] Upper-Interm."			1 year UG SEDS, 1 year UG SEDS Chemical Engineering, 1 year UG SEDS Chemical and Materials Engineering, 1 year UG SEDS Civil Engineering, 1 year UG SEDS Civil and Environmental Engineering, 1 year UG SEDS Electrical and Computer Engineering, 1 year UG SEDS Electrical and Electronic Engineering, 1 year UG SEDS Mechanical Engineering, 1 year UG SEDS Mechanical and Aerospace Engineering, 1 year UG SEDS Undeclared, 1 year UG SOM	3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	1 year UG SMG, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH	
278	KAZ 226	Kazakh for Medical School	3	6	KLL "[B1.2] Intermediate"			1 year UG SEDS, 1 year UG SEDS Chemical Engineering, 1 year UG SEDS Chemical and Materials Engineering, 1 year UG SEDS Civil Engineering, 1 year UG SEDS Civil and Environmental Engineering, 1 year UG SEDS Electrical and Computer Engineering, 1 year UG SEDS Electrical and Electronic Engineering, 1 year UG SEDS Mechanical Engineering, 1 year UG SEDS Mechanical and Aerospace Engineering, 1 year UG SEDS Undeclared, 1 year UG SOM	3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	1 year UG SMG, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH	

279	KAZ 313	Kazakh for Business	3	6	KAZ 202 Academic Kazakh II (4562) (C-and above) OR KLL "[C1.1] Advanced"			1 year UG SEDS, 1 year UG SEDS Chemical Engineering, 1 year UG SEDS Chemical and Materials Engineering, 1 year UG SEDS Civil Engineering, 1 year UG SEDS Civil and Environmental Engineering, 1 year UG SEDS Electrical and Computer Engineering, 1 year UG SEDS Electrical and Electronic Engineering, 1 year UG SEDS Mechanical Engineering, 1 year UG SEDS Mechanical and Aerospace Engineering, 1 year UG SEDS Undeclared, 1 year UG SOM	3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	1 year UG SMG, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH	
280	KAZ 351	Kazakh Short Stories	3	6	KAZ 202 Academic Kazakh II (4562) (C-and above) OR KLL "[C1.1] Advanced"			1 year UG SEDS, 1 year UG SEDS Chemical Engineering, 1 year UG SEDS Chemical and Materials Engineering, 1 year UG SEDS Civil Engineering, 1 year UG SEDS Civil and Environmental Engineering, 1 year UG SEDS Electrical and Computer Engineering, 1 year UG SEDS Electrical and Electronic Engineering, 1 year UG SEDS Mechanical Engineering, 1 year UG SEDS Mechanical and Aerospace Engineering, 1 year UG SEDS Undeclared, 1 year UG SOM	3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	1 year UG SMG, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH	

281	KAZ 357	Literature of Alash	3	6	KAZ 202 Academic Kazakh II (4562) (C-and above) OR KLL "[C1.1] Advanced"			1 year UG SEDS, 1 year UG SEDS Chemical Engineering, 1 year UG SEDS Chemical and Materials Engineering, 1 year UG SEDS Civil Engineering, 1 year UG SEDS Civil and Environmental Engineering, 1 year UG SEDS Electrical and Computer Engineering, 1 year UG SEDS Electrical and Electronic Engineering, 1 year UG SEDS Mechanical Engineering, 1 year UG SEDS Mechanical and Aerospace Engineering, 1 year UG SEDS Undeclared, 1 year UG SOM	3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	1 year UG SMG, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH	
282	KAZ 362	Creative Writing in Kazakh Language	3	6	KAZ 202 Academic Kazakh II (4562) (C-and above) OR KLL "[C1.1] Advanced"			1 year UG SEDS, 1 year UG SEDS Chemical Engineering, 1 year UG SEDS Chemical and Materials Engineering, 1 year UG SEDS Civil Engineering, 1 year UG SEDS Civil and Environmental Engineering, 1 year UG SEDS Electrical and Computer Engineering, 1 year UG SEDS Electrical and Electronic Engineering, 1 year UG SEDS Mechanical Engineering, 1 year UG SEDS Mechanical and Aerospace Engineering, 1 year UG SEDS Undeclared, 1 year UG SOM	3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	1 year UG SMG, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH	

283	KAZ 364	Kazakh for Civil Service	3	6	KAZ 202 Academic Kazakh II (4562) (C-and above) OR KLL "[C1.1] Advanced"			1 year UG SEDS, 1 year UG SEDS Chemical Engineering, 1 year UG SEDS Chemical and Materials Engineering, 1 year UG SEDS Civil Engineering, 1 year UG SEDS Civil and Environmental Engineering, 1 year UG SEDS Electrical and Computer Engineering, 1 year UG SEDS Electrical and Electronic Engineering, 1 year UG SEDS Mechanical Engineering, 1 year UG SEDS Mechanical and Aerospace Engineering, 1 year UG SEDS Undeclared, 1 year UG SOM	3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	1 year UG SMG, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH	
284	KAZ 365	Abai's World	3	6	KAZ 202 Academic Kazakh II (4562) (C-and above) OR KLL "[C1.1] Advanced"			1 year UG SEDS, 1 year UG SEDS Chemical Engineering, 1 year UG SEDS Chemical and Materials Engineering, 1 year UG SEDS Civil Engineering, 1 year UG SEDS Civil and Environmental Engineering, 1 year UG SEDS Electrical and Computer Engineering, 1 year UG SEDS Electrical and Electronic Engineering, 1 year UG SEDS Mechanical Engineering, 1 year UG SEDS Mechanical and Aerospace Engineering, 1 year UG SEDS Undeclared, 1 year UG SOM	3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	1 year UG SMG, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH	

285	KAZ 366	Kazakh Language for Engineers	3	6	KAZ 202 Academic Kazakh II (4562) (C-and above) OR KLL "[C1.1] Advanced"			1 year UG SEDS, 1 year UG SEDS Chemical Engineering, 1 year UG SEDS Chemical and Materials Engineering, 1 year UG SEDS Civil Engineering, 1 year UG SEDS Civil and Environmental Engineering, 1 year UG SEDS Electrical and Computer Engineering, 1 year UG SEDS Electrical and Electronic Engineering, 1 year UG SEDS Mechanical Engineering, 1 year UG SEDS Mechanical and Aerospace Engineering, 1 year UG SEDS Undeclared, 1 year UG SOM	3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	1 year UG SMG, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH	
286	KAZ 368	Onomastics: History and Function of Names	3	6	KAZ 202 Academic Kazakh II (4562) (C-and above) OR KLL "[C1.1] Advanced"			1 year UG SEDS, 1 year UG SEDS Chemical Engineering, 1 year UG SEDS Chemical and Materials Engineering, 1 year UG SEDS Civil Engineering, 1 year UG SEDS Civil and Environmental Engineering, 1 year UG SEDS Electrical and Computer Engineering, 1 year UG SEDS Electrical and Electronic Engineering, 1 year UG SEDS Mechanical Engineering, 1 year UG SEDS Mechanical and Aerospace Engineering, 1 year UG SEDS Undeclared, 1 year UG SOM	3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	1 year UG SMG, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH	

287	KAZ 371	Contemporary Kazakh Literature	3	6	KAZ 202 Academic Kazakh II (4562) (C-and above) OR KLL "[C1.1] Advanced"			1 year UG SEDS, 1 year UG SEDS Chemical Engineering, 1 year UG SEDS Chemical and Materials Engineering, 1 year UG SEDS Civil Engineering, 1 year UG SEDS Civil and Environmental Engineering, 1 year UG SEDS Electrical and Computer Engineering, 1 year UG SEDS Electrical and Electronic Engineering, 1 year UG SEDS Mechanical Engineering, 1 year UG SEDS Mechanical and Aerospace Engineering, 1 year UG SEDS Undeclared, 1 year UG SOM	3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	1 year UG SMG, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH	
288	KAZ 372	Language and ethnicity	3	6	KAZ 202 Academic Kazakh II (4562) (C-and above) OR KLL "[C1.1] Advanced"			1 year UG SEDS, 1 year UG SEDS Chemical Engineering, 1 year UG SEDS Chemical and Materials Engineering, 1 year UG SEDS Civil Engineering, 1 year UG SEDS Civil and Environmental Engineering, 1 year UG SEDS Electrical and Computer Engineering, 1 year UG SEDS Electrical and Electronic Engineering, 1 year UG SEDS Mechanical Engineering, 1 year UG SEDS Mechanical and Aerospace Engineering, 1 year UG SEDS Undeclared, 1 year UG SOM	3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	1 year UG SMG, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH	

289	KAZ 373	Kazakh Terminology	3	6	KAZ 202 Academic Kazakh II (4562) (C-and above) OR KLL "[C1.1] Advanced"			1 year UG SEDS, 1 year UG SEDS Chemical Engineering, 1 year UG SEDS Chemical and Materials Engineering, 1 year UG SEDS Civil Engineering, 1 year UG SEDS Civil and Environmental Engineering, 1 year UG SEDS Electrical and Computer Engineering, 1 year UG SEDS Electrical and Electronic Engineering, 1 year UG SEDS Mechanical Engineering, 1 year UG SEDS Mechanical and Aerospace Engineering, 1 year UG SEDS Undeclared, 1 year UG SOM	3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	1 year UG SMG, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH	
290	KAZ 374	Kazakh Diplomacy	3	6	KAZ 202 Academic Kazakh II (4562) (C-and above) OR KLL "[C1.1] Advanced"			1 year UG SEDS, 1 year UG SEDS Chemical Engineering, 1 year UG SEDS Chemical and Materials Engineering, 1 year UG SEDS Civil Engineering, 1 year UG SEDS Civil and Environmental Engineering, 1 year UG SEDS Electrical and Computer Engineering, 1 year UG SEDS Electrical and Electronic Engineering, 1 year UG SEDS Mechanical Engineering, 1 year UG SEDS Mechanical and Aerospace Engineering, 1 year UG SEDS Undeclared, 1 year UG SOM	3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	1 year UG SMG, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH	

291	KAZ 375	Cultural Studies and Kazakh Culture	3	6	KAZ 202 Academic Kazakh II (4562) (C-and above) OR KLL "[C1.1] Advanced"			1 year UG SEDS, 1 year UG SEDS Chemical Engineering, 1 year UG SEDS Chemical and Materials Engineering, 1 year UG SEDS Civil Engineering, 1 year UG SEDS Civil and Environmental Engineering, 1 year UG SEDS Electrical and Computer Engineering, 1 year UG SEDS Electrical and Electronic Engineering, 1 year UG SEDS Mechanical Engineering, 1 year UG SEDS Mechanical and Aerospace Engineering, 1 year UG SEDS Undeclared, 1 year UG SOM	3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	1 year UG SMG, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH	
292	KAZ 376	Language and Culture	3	6	KAZ 202 Academic Kazakh II (4562) (C-and above) OR KLL "[C1.1] Advanced"			1 year UG SEDS, 1 year UG SEDS Chemical Engineering, 1 year UG SEDS Chemical and Materials Engineering, 1 year UG SEDS Civil Engineering, 1 year UG SEDS Civil and Environmental Engineering, 1 year UG SEDS Electrical and Computer Engineering, 1 year UG SEDS Electrical and Electronic Engineering, 1 year UG SEDS Mechanical Engineering, 1 year UG SEDS Mechanical and Aerospace Engineering, 1 year UG SEDS Undeclared, 1 year UG SOM	3 year UG SEDS, 3 year UG SMG, 3 year UG SSH, 4 year UG SEDS, 4 year UG SMG, 4 year UG SSH	1 year UG SMG, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH	
293	TUR 230	Literatures of Central Asia	3	6				SEDS, SMG, SSH, SoM			
294	TUR 305	Introduction to Chagatay and Ottoman Turkish	3	6	KAZ 202 Academic Kazakh II (4562) (C-and above) OR KLL "[C1.1] Advanced"			SEDS, SMG, SSH, SoM			
295	TUR 412	Advanced Turkish in Media and Politics	3	6				SEDS, SMG, SSH, SoM			
296	TUR 451	The Turkish Novel	3	6				SEDS, SMG, SSH, SoM			

297	TUR 575	Advanced Topics in Turkic Studies	4	8				GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
298	TUR 775	Doctoral Topic in Turkic Studies	4	8				GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
Languages, Literature and Linguistics										
299	CHN 101	Beginning Mandarin I	4	8				2 year UG SSH World Languages, Literatures and Cultures, 3 year UG SSH World Languages, Literatures and Cultures	Undeclared SSH	1 year UG SSH, 2 year UG SSH, 3 year UG SSH
300	CHN 102	Beginning Mandarin II	4	8	CHN 101 Beginning Mandarin I (1384) (C and above)			World Languages, Literatures and Cultures	SSH	SEDS, SMG, SoM
301	CHN 201	Intermediate Mandarin I	4	8	CHN 102 Beginning Mandarin II (1844) (C and above)			2 year UG SSH World Languages, Literatures and Cultures	SSH	SEDS, SMG, SoM
302	FRE 101	Beginning French I	4	8				2 year UG SSH World Languages, Literatures and Cultures, 3 year UG SSH World Languages, Literatures and Cultures	Undeclared SSH	1 year UG SSH, 2 year UG SSH, 3 year UG SSH
303	FRE 202	Intermediate French II	4	8	FRE 201 Intermediate French I (667) (C- and above)			World Languages, Literatures and Cultures	SSH	SEDS, SMG, SoM
304	FRE 221	Introduction to French and Francophone Studies	3	6	FRE 102 Beginning French II (454) (C- and above)			SSH	SEDS, SMG, SoM	
305	KOR 101	Beginning Korean I	4	8				SEDS, SMG, SSH, SoM		
306	KOR 102	Beginning Korean II	4	8	KOR 101 Beginning Korean I (4672) (C- and above)			2 year UG SSH World Languages, Literatures and Cultures, 3 year UG SSH World Languages, Literatures and Cultures	Undeclared SSH	1 year UG SSH, 2 year UG SSH, 3 year UG SSH
307	KOR 202	Intermediate Korean II	4	8	KOR 201 Intermediate Korean I (5059) (C- and above)			World Languages, Literatures and Cultures	SSH	SEDS, SMG, SoM
308	LING 130	Introduction to Language and Communication	3	6				1 year UG SSH	2 year UG SSH	SEDS, SMG, SSH, SoM
309	LING 131	Introduction to Linguistics	3	6				1 year UG SSH	2 year UG SSH	SEDS, SMG, SSH, SoM
310	LING 273	Survey of Research Methods in Linguistics	3	6	LING 131 Introduction to Linguistics (1394) (C- and above)			World Languages, Literatures and Cultures	SSH	SEDS, SMG, SoM
311	LING 277	Language Diversity and Language Universals	3	6	LING 131 Introduction to Linguistics (1394) (C and above)			World Languages, Literatures and Cultures	SSH	SEDS, SMG, SoM
312	LING 278	Sounds of the World's Languages	3	6				World Languages, Literatures and Cultures	SSH	SEDS, SMG, SoM

313	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 OR Subject "LING" BETWEEN 100 and 199			2 year UG SSH World Languages, Literatures and Cultures	SSH	SEDS, SMG, SoM	
314	LING 374	Language Contact in Central Asia	3	6	LING 131 Introduction to Linguistics (1394) (C- and above)			4 year UG SSH World Languages, Literatures and Cultures	SSH	SEDS, SMG, SoM	
315	PER 202	Intermediate Persian II	4	8	PER 201 Intermediate Persian 1 (4987) (C- and above)			World Languages, Literatures and Cultures	SSH	SEDS, SMG, SoM	
316	RFL 404	Advanced and Superior Composition and Conversation Russian II	4	8				Instructor's Permission Required			
317	SPA 102	Beginning Spanish II	4	8	SPA 101 Beginning Spanish I (685) (C- and above)			2 year UG SSH World Languages, Literatures and Cultures, 3 year UG SSH World Languages, Literatures and Cultures	Undeclared SSH	SEDS, SMG, SSH, SoM	
318	SPA 202	Intermediate Spanish II	4	8	SPA 201 Intermediate Spanish I (1475) (C- and above)			World Languages, Literatures and Cultures	SSH	SEDS, SMG, SoM	
319	SPA 320	The Hispanic Short Story	3	6	Subject "WLL" BETWEEN 100 and 199 AND SPA 202 Intermediate Spanish II (1842) (C- and above)			World Languages, Literatures and Cultures	SSH	SEDS, SMG, SoM	
320	WLL 110	Introduction to Literary Studies	3	6				1 year UG SSH	SSH	SEDS, SMG, SoM	
321	WLL 211	World Literature II: from the 18th to the 20th century	3	6				World Languages, Literatures and Cultures	SSH	SEDS, SMG, SoM	
322	WLL 248	Survey of Soviet Literature and Culture	3	6				World Languages, Literatures and Cultures	SSH	SEDS, SMG, SoM	
323	WLL 250	From Page to Screen	3	6				World Languages, Literatures and Cultures	SSH	SEDS, SMG, SoM	
324	WLL 399	Independent Study	3	6				Instructor's Permission Required			
325	WLL 401	Advanced Topics in World Literature	3	6				World Languages, Literatures and Cultures	SSH	SEDS, SMG, SoM	
326	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 SSH World Languages, Literatures and Cultures			

327	WLL 501	Advanced Topics in World Literature	4	8				GSB, GSE, GSPP, SEDS, SMG, SSH, SoM			
Mathematics											
328	MATH 161	Calculus I	4	8				Biological Sciences, Chemistry	1 year UG SEDS, 1 year UG SMG, 1 year UG SOM, 1 year UG SSH	SEDS, SMG, SSH, SoM	
329	MATH 162	Calculus II	4	8	MATH 161 Calculus I (118) (C and above)			1 year UG SEDS, 1 year UG SMG, 1 year UG SSH Mathematics, 1 year UG SSH Physics	Mathematics, Physics, SEDS, SMG	SSH, SoM	
330	MATH 251	Discrete Mathematics	3	6	MATH 161 Calculus I (118) (C and above)			2 year UG SEDS Computer Science, 2 year UG SSH Mathematics	Computer Science, Mathematics	SEDS, SMG, SSH, SoM	
331	MATH 263	Calculus III	4	8	MATH 162 Calculus II (170) (C and above)			Mathematics	SEDS, SMG, SSH, SoM		
332	MATH 273	Linear Algebra with Applications	4	8	MATH 161 Calculus I (118) (C and above)	MATH 162 Calculus II (170) (C and above)		2 year UG SSH Chemistry	Chemistry, Computer Science, Mathematics, Physics, Robotics and Mechatronics	SEDS, SMG, SSH, SoM	
333	MATH 274	Introduction to Differential Equations	3	6	MATH 162 Calculus II (170) (C and above)			2 year UG SEDS Robotics and Mechatronics, 2 year UG SSH Mathematics, 2 year UG SSH Physics	Mathematics, Physics, Robotics and Mechatronics	SEDS, SMG, SSH, SoM	
334	MATH 301	Introduction to Number Theory	3	6	MATH 273 Linear Algebra with Applications (84) (C and above) AND MATH 251 Discrete Mathematics (85) (C and above)			Mathematics	SEDS, SMG, SSH, SoM		
335	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)			4 year UG SSH Mathematics	Mathematics	SEDS, SMG, SSH, SoM	
336	MATH 310	Applied Statistical Methods	3	6	MATH 161 Calculus I (118) (C and above)		MATH 321 Probability (482) (C and above)	2 year UG SSH Biological Sciences	Biological Sciences	SEDS, SMG, SSH, SoM	
337	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)	2 year UG SEDS Computer Science, 2 year UG SSH Mathematics, 3 year UG SEDS Robotics and Mechatronics	Computer Science, Mathematics, Robotics and Mechatronics	SEDS, SMG, SSH, SoM	

338	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 SSH Mathematics, 4 year UG SSH Mathematics	Mathematics	SEDS, SMG, SSH, SoM	
339	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)	3 year UG SSH Mathematics, 4 year UG SSH Mathematics	Mathematics	SEDS, SMG, SSH, SoM	
340	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)			Mathematics	SEDS, SMG, SSH, SoM		
341	MATH 399	Internship	3	6				Instructor's Permission Required			
342	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)			4 year UG SSH Mathematics	Mathematics	SEDS, SMG, SSH, SoM	
343	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)			4 year UG SSH Mathematics	Mathematics	SEDS, SMG, SSH, SoM	
344	MATH 423	Actuarial Mathematics II	3	6	MATH 321 Probability (482) (C and above) OR ECON 211 Economic Statistics (2280) (C and above)			4 year UG SSH Mathematics	4 year UG SSH Economics, Mathematics	SEDS, SMG, SSH, SoM	
345	MATH 424	Mathematical Finance	3	6	MATH 321 Probability (482) (C and above) OR ECON 211 Economic Statistics (2280) (C and above)			4 year UG SSH Mathematics	4 year UG SSH Economics, Mathematics	SEDS, SMG, SSH, SoM	
346	MATH 461	Real Analysis II	3	6	MATH 361 Real Analysis I (483) (C and above)			Mathematics	SEDS, SMG, SSH, SoM		

347	MATH 477	Applied Finite Element Methods	3	6	MATH 351 Numerical Methods with Applications (1166) (C and above)			4 year UG SSH Mathematics	Mathematics	SEDS, SMG, SSH, SoM	
348	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)			4 year UG SSH Mathematics	Mathematics	SEDS, SMG, SSH, SoM	
349	MATH 497	Directed Study in Mathematics I	3	6							
350	MATH 498	Directed Study in Mathematics II	3	6				Instructor's Permission Required			
351	MATH 499	Capstone Project	3	6				Instructor's permission required			
352	MATH 512	Optimization Methods and Techniques	3	6				Applied Mathematics	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
353	MATH 541	Data Analysis and Statistical Learning	3	6	MATH 540 Statistical Learning (2340) (B- and above)			Applied Mathematics	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
354	MATH 551	Advanced Numerical Methods	3	6				Applied Mathematics	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
355	MATH 700-0	Thesis Research	0	0				Science, Engineering and Technology			
356	MATH 701	Real Analysis	4	8				GSB, GSE, GSPP, SEDS, SMG, SSH, SoM			
357	MATH 702	Functional Analysis with Applications	4	8				GSB, GSE, GSPP, SEDS, SMG, SSH, SoM			
358	MATH 711	Abstract Algebra	4	8				GSB, GSE, GSPP, SEDS, SMG, SSH, SoM			
359	MATH 791	Topics in Mathematics	4	8				GSB, GSE, GSPP, SEDS, SMG, SSH, SoM			
Physics											
360	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 SEDS, 1 year UG SMG, 1 year UG SOM, 1 year UG SSH	SSH	SEDS, SMG, SoM	

361	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 SEDS, 1 year UG SMG, 1 year UG SOM, SSH	SEDS, SMG, SoM		
362	PHYS 202	Introductory Astrophysics	3	6	PHYS 162 Physics II for Scientists and Engineers with Laboratory (173) (C- and above)			SSH	SEDS, SMG, SoM		
363	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	SSH	SEDS, SMG, SoM	
364	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	SSH	SEDS, SMG, SoM	
365	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	SSH	SEDS, SMG, SoM	
366	PHYS 362	Classical Electrodynamics II	3	6	PHYS 361 Classical Electrodynamics I (651) (C- and above)			Physics	SSH	SEDS, SMG, SoM	

367	PHYS 370	Optics with Laboratory	4	8	PHYS 361 Classical Electrodynamics I (651) (C- and above)			Physics	SSH	SEDS, SMG, SoM	
368	PHYS 395	Research Methods	3	6				2 year UG SSH Physics, 3 year UG SSH Physics, 4 year UG SSH Physics			
369	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	SSH	SEDS, SMG, SoM	
370	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	SSH	SEDS, SMG, SoM	
371	PHYS 474	Lasers and Photonics	3	6	PHYS 370 Optics with Laboratory (1405) (C- and above)			Physics	SSH	SEDS, SMG, SoM	
372	PHYS 483	Statistical Mechanics	3	6	PHYS 280 Thermodynamics and Statistical Physics (1179) (C- and above)			Physics	SSH	SEDS, SMG, SoM	
373	PHYS 491	Directed Study of Advanced Physics Topics	3	6				3 year UG SSH Physics, 4 year UG SSH Physics			
374	PHYS 499	Honors Thesis	3	6				Instructor's Permission Required			
375	PHYS 510	Quantum Mechanics	3	6				Physics	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
376	PHYS 520	Statistical Physics	3	6				Physics	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
377	PHYS 574	Lasers and Photonics	3	6				Physics	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
378	PHYS 700-0	Thesis Research	0	0				Science, Engineering and Technology			
379	PHYS 701	Current Research Literature	3	6				Science, Engineering and Technology	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
380	PHYS 710	Quantum Mechanics	4	8				Science, Engineering and Technology	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		

381	PHYS 720	Statistical Physics	4	8				Science, Engineering and Technology	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
382	PHYS 774	Lasers and Photonics	4	8				Science, Engineering and Technology	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
383	SST 501	Teaching and Learning	3	6				SSH			
Political Science and International Relations											
384	PLS 101	Introduction to Political Science	3	6				SEDS, SMG	Biological Sciences, Chemistry, Mathematics, Physics	SSH	
385	PLS 120	Introduction to Political Theory	3	6				Undeclared SSH	Political Science and International Relations	SEDS, SMG, SSH, SoM	
386	PLS 140	Introduction to Comparative Politics	3	6				Undeclared SSH	Political Science and International Relations	SEDS, SMG, SSH, SoM	
387	PLS 150	Introduction to International Relations	3	6				Undeclared SSH	Political Science and International Relations	SEDS, SMG, SSH, SoM	
388	PLS 210	Political Science Research Methods	3	6				2 year UG SSH Political Sciences and International Relations	Political Science and International Relations	SSH	
389	PLS 211	Quantitative Methods	3	6			ECON 211 Economic Statistics (2280) (C- and above)	2 year UG SSH Political Sciences and International Relations	Political Science and International Relations	SSH	
390	PLS 331	Nationalism and Multi-Ethnic Governance	3	6	PLS 210 Political Science Research Methods (129) (C- and above) AND PLS 140 Introduction to Comparative Politics (223) (C- and above)			Political Science and International Relations	SSH	SEDS, SMG, SoM	
391	PLS 338	U.S. Government and Politics	3	6	(PLS 140 Introduction to Comparative Politics (223) (C- and above) OR PLS 101 Introduction to Political Science (513) (C- and above)) AND PLS 210 Political Science Research Methods (129) (C- and above)			Political Science and International Relations	SSH	SEDS, SMG, SoM	

392	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	SSH	SEDS, SMG, SoM	
393	PLS 355	European Union: Institutions and Policies	3	6	PLS 210 Political Science Research Methods (129) (C- and above)			Political Science and International Relations	SSH	SEDS, SMG, SoM	
394	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	SSH	SEDS, SMG, SoM	
395	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	SSH	SEDS, SMG, SoM	
396	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	SSH	SEDS, SMG, SoM	
397	PLS 372	Post-Soviet Public Policy	3	6				Political Science and International Relations	SSH	SEDS, SMG, SoM	
398	PLS 392	Politics of China	3	6	PLS 210 Political Science Research Methods (129) (C- and above)			Political Science and International Relations	SSH	SEDS, SMG, SoM	
399	PLS 422	Just War Theory	3	6	PLS 120 Introduction to Political Theory (512) (C- and above) AND PLS 210 Political Science Research Methods (129) (C- and above)			Political Science and International Relations	SSH	SEDS, SMG, SoM	
400	PLS 426	Hannah Arendt on Power, Violence, and Revolution	3	6	PLS 120 Introduction to Political Theory (512) (C- and above) AND PLS 210 Political Science Research Methods (129) (C- and above)			Political Science and International Relations	SSH	SEDS, SMG, SoM	

401	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	SSH	SEDS, SMG, SoM	
402	PLS 445	Political Violence	3	6	(PLS 140 Introduction to Comparative Politics (223) (C- 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	SSH	SEDS, SMG, SoM	
403	PLS 469	International Relations of Eurasia	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	SSH	SEDS, SMG, SoM	
404	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)			Instructor's Permission Required			
405	PLS 510	Advanced Research I	4	8				Political Science and International Relations		Eurasian Studies	
406	PLS 522	Just War Theory	4	8				Political Science and International Relations		Eurasian Studies	
407	PLS 526	Hannah Arendt on Power, Violence, and Revolution	4	8			PLS 426 Hannah Arendt on Power, Violence, and Revolution (5398) (C- and above)	Political Science and International Relations		Eurasian Studies	
408	PLS 541	Advanced Topics in Comparative Politics	4	8				Political Science and International Relations		Eurasian Studies	
409	PLS 545	Political Violence	4	8				Political Science and International Relations		Eurasian Studies	
410	PLS 569	International Relations of Eurasia	4	8				Political Science and International Relations		Eurasian Studies	

411	PLS 596	Thesis Preparation	2	4	PLS 540 Core Seminar in Comparative Politics (1374) (C+ and above) OR PLS 550 Core Seminar in IR (1372) (C+ and above) AND PLS 511 Advanced Research I (1631) (C+ and above)			Political Science and International Relations			
412	PLS 599	MA Thesis II	10	20				Political Science and International Relations			
SSH											
413	SSH 300	School of Sciences and Humanities Internship	3	6				Instructor's Permission Required			
414	SSH 301	School of Sciences and Humanities Internship: Second Experience	3	6				Instructor's Permission Required			
415	SSH 398	Independent Study	1	2				Instructor's Permission Required			
Sociology and Anthropology											
416	ANT 110	Introduction to Sociocultural Anthropology	3	6				1 year UG SEDS, 1 year UG SMG, 1 year UG SOM, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH, Anthropology, Sociology	SSH	SEDS, SMG, SoM	
417	ANT 160	Introduction to Biological Anthropology	3	6			ANT 361 Human Evolution: Bones, Stones and Genomes (160) (C- and above)	1 year UG SEDS, 1 year UG SMG, 1 year UG SOM, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH, Anthropology, Sociology	SSH	SEDS, SMG, SoM	
418	ANT 232	Life, Death and Economy: Archaeology of Central Asia	3	6				1 year UG SEDS, 1 year UG SMG, 1 year UG SOM, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH, Anthropology	SSH	SEDS, SMG, SoM	
419	ANT 280	Introduction to Medical Anthropology	3	6				1 year UG SEDS, 1 year UG SMG, 1 year UG SOM, 1 year UG SSH, 2 year UG SEDS, 2 year UG SMG, 2 year UG SOM, 2 year UG SSH, Anthropology, Sociology	SSH	SEDS, SMG, SoM	

420	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 OR Subject "SOC" BETWEEN 100 and 499 OR Subject "ANT" BETWEEN 100 and 499			Anthropology, Sociology	SSH	SEDS, SMG, SoM	
421	ANT 331	Archaeology of Power and Inequality	3	6				Anthropology, Sociology	SSH	SEDS, SMG, SoM	
422	ANT 399	Special Topics in Anthropology	3	6				Instructor's Permission Required			
423	ANT 400	Research Assistance in Anthropology	1	2				Instructor's permission required			
424	ANT 410	Ethnography, Fiction, Memoir	3	6				Anthropology, Sociology	SSH	SEDS, SMG, SoM	
425	ANT 499	Capstone Seminar II	3	6	ANT 498 Capstone Seminar I (2965) (C- and above)			4 year UG SSH Anthropology			
426	ANT 510	Ethnography, Fiction, Memoir	4	8				Eurasian Studies, SSH	GSB, GSE, GSPP, SEDS, SMG, SoM		
427	ANT 710	Ethnography, Fiction, Memoir	4	8				GSB, GSE, GSPP, SEDS, SMG, SSH, SoM			
428	SOC 101	Introduction to Sociology	3	6				1 year UG SOM, Anthropology, Sociology, Undeclared SSH	2 year UG SSH, 3 year UG SSH Biological Sciences	SEDS, SMG, SSH, SoM	
429	SOC 203	Quantitative Methods in Sociology	3	6				Anthropology, Sociology	SSH	SEDS, SMG, SoM	
430	SOC 213	Work and Society	3	6				Anthropology, Sociology	SSH	SEDS, SMG, SoM	
431	SOC 215	Sociology of Race and Ethnicity	3	6				Anthropology, Sociology	SSH	SEDS, SMG, SoM	
432	SOC 223	Social Movements: How People Make Change	3	6				Anthropology, Sociology	SSH	SEDS, SMG, SoM	
433	SOC 310	Social Inequality	3	6	SOC 101 Introduction to Sociology (508) (C- and above) OR SOC 115 Global Social Problems (1032) (C- and above)			Anthropology, Sociology	SSH	SEDS, SMG, SoM	

434	SOC 318	Sexuality and Gender in a Transnational World	3	6	SOC 101 Introduction to Sociology (508) (C- and above) OR SOC 115 Global Social Problems (1032) (C- and above) OR SOC 210 Gender and Society (226) (C- and above)		Anthropology, Sociology	SSH	SEDS, SMG, SoM	
435	SOC 400	Research Assistance in Sociology	1	2			Instructor's permission required			
436	SOC 403	Research Assistance in Sociology	2	4			Instructor's permission required			
437	SOC 498	Capstone Seminar Part I	3	6			Instructor's Permission Required			
438	SOC 499	Capstone Seminar II	3	6	SOC 498 Capstone Seminar Part I (3043) (C- and above)		4 year UG SEDS, 4 year UG SMG, 4 year UG SSH, Sociology	SSH	SEDS, SMG, SoM	
Sociology and Anthropology, Sociology and Anthropology										
439	ANT 214/SOC 214	Qualitative Methods	3	6			Anthropology, Sociology	SSH	SEDS, SMG, SoM	
440	SOC 212/ANT 285	Food and Society	3	6			Anthropology, Sociology	SSH	SEDS, SMG, SoM	
SEDS										
Chemical and Materials Engineering										
441	CHME 202	Fluid Mechanics	3	6			2 year UG SEDS Chemical Engineering, 2 year UG SEDS Chemical and Materials Engineering	SEDS		
442	CHME 203	Organic and Polymer Chemistry	3	6	CHME 222 Inorganic and Analytical Chemistry (5039) (D and above)		2 year UG SEDS Chemical Engineering, 2 year UG SEDS Chemical and Materials Engineering	SEDS		
443	CHME 421	Tissue Engineering	3	6			4 year UG SEDS Chemical Engineering, 4 year UG SEDS Chemical and Materials Engineering	SEDS	SMG, SSH, SoM	
444	CHME 454	Transport Phenomena and Operations	3	6			4 year UG SEDS Chemical Engineering, 4 year UG SEDS Chemical and Materials Engineering	SEDS		
445	DCHME 700-0	Thesis Research	0	0			Science, Engineering and Technology			
446	DCHME 701	Current Research Literature	4	8			Science, Engineering and Technology			
447	DCHME 715	Air Quality, Toxicity and Health	4	8			Science, Engineering and Technology			

448	DCHME 751	Advanced Safety, Reliability and Risk Engineering in Process Industries	4	8				Science, Engineering and Technology			
449	DCHME 752	Polymer Melt Fluid Mechanics and Processing	4	8				Science, Engineering and Technology			
450	DCHME 763	Advanced Heat and Mass Transfer	4	8				Science, Engineering and Technology			
451	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 Admin only			
452	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 Admin only			
453	ECHE 386	Chemical Plant Design and Optimization	3	6				Registration by School Admin only			
454	ECHE 387	Chemical Reaction Engineering 2	3	6				Registration by School Admin only			
455	ECHE 388	Process Dynamics and Control	3	6				Registration by School Admin only			
456	ECHE 420	Polymer Processing and Rheology	3	6				4 year UG SEDS Chemical Engineering, 4 year UG SEDS Chemical and Materials Engineering	SEDS		
457	ECHE 479	Capstone Project II	9	18	ECHE 418 Capstone project 1 (1278) (D and above)			Registration by School Admin only			
458	ECHE 485	Introduction to Biochemical Engineering	3	6				4 year UG SEDS Chemical Engineering, 4 year UG SEDS Chemical and Materials Engineering	SEDS		
459	MBME 600	Research Seminar	3	6				Biomedical Engineering	SEDS		
460	MBME 607	Advanced Tissue Engineering	3	6				Biomedical Engineering, Chemical Engineering, Chemical and Materials Engineering	SEDS	GSB, GSE, GSPP, SMG, SSH, SoM	
461	MBME 700	Strategies for Controlled Topical Delivery of Drugs	3	6				Biomedical Engineering	SEDS		
462	MBME 705	Infectious Diseases and Antimicrobial Strategies	3	6				Biomedical Engineering	SEDS		
463	MBME 708	Biomedical Imaging	3	6				Biomedical Engineering	SEDS		

464	MCHME 600	Research Seminar	3	6				Chemical Engineering, Chemical and Materials Engineering	SEDS		
465	MCHME 602	MSc Thesis II	12	24				Chemical Engineering, Chemical and Materials Engineering	SEDS		
466	MCHME 606	Advanced Heat and Mass Transfer	3	6				Chemical Engineering, Chemical and Materials Engineering	SEDS		
467	MCHME 701	Advanced Chemical Thermodynamics	3	6				Chemical Engineering, Chemical and Materials Engineering	SEDS		
468	MCHME 704	Advanced Safety, Reliability and Risk Engineering in Process Industries	3	6				Chemical Engineering, Chemical and Materials Engineering	SEDS		
469	MCHME 707	Polymer Melt Fluid Mechanics and Processing	3	6				Chemical Engineering, Chemical and Materials Engineering	SEDS		
470	MCHME 709	Food Engineering and Processing	3	6				Chemical Engineering, Chemical and Materials Engineering	SEDS		
471	MCHME 715	Air Quality, Toxicity and Health	3	6				Chemical Engineering, Chemical and Materials Engineering	SEDS		
Civil Engineering											
472	MSC 600	Research Methods and Ethics	3	6				SEDS			
Civil and Environmental Engineering											
473	CEE 202	Environmental Engineering	3	6	CEE 201 Environmental Chemistry (4999) (D and above)			2 year UG SEDS Civil Engineering, 2 year UG SEDS Civil and Environmental Engineering	SEDS		
474	CEE 203	Structural Analysis	3	6	MAE 200 Structural Mechanics I (5010) (D and above) OR CEE 200 Structural Mechanics I (5005) (D and above)			2 year UG SEDS Civil Engineering, 2 year UG SEDS Civil and Environmental Engineering	SEDS		
475	CEE 464	Individual Research Project in Civil and Environmental Engineering II	3	6	CEE 463 Individual Research Project in Civil & Environmental Engineering 1 (6594) (C and above)			3 year UG SEDS Civil Engineering, 3 year UG SEDS Civil and Environmental Engineering, 4 year UG SEDS Civil Engineering, 4 year UG SEDS Civil and Environmental Engineering	SEDS		
476	DCEE 700-0	Thesis Research	0	0				Science, Engineering and Technology			

477	DCEE 701	Current Research Literature	4	8				Science, Engineering and Technology			
478	DCEE 759	Geotechnical Earthquake Engineering	4	8				Science, Engineering and Technology			
479	DCEE 762	Advanced Project Management	4	8				Science, Engineering and Technology			
480	DCEE 766	Advanced Pavement Design, Analysis, and Rehabilitation	4	8				Science, Engineering and Technology			
481	DCEE 767	Advanced Concrete Design	4	8				Science, Engineering and Technology			
482	DCEE 769	Sustainable Development	4	8				Science, Engineering and Technology			
483	ECE 306	Geotechnical Design	3	6	ECE 210 Soil Mechanics (862) (D and above)			Registration by School Admin only			
484	ECE 319	Structural Design - Steel	3	6				Registration by School Admin only			
485	ECE 320	Engineering Hydrology	3	6				Registration by School Admin only			
486	ECE 420	Modern Information Technology in Construction	3	6				3 year UG SEDS Civil Engineering, 3 year UG SEDS Civil and Environmental Engineering, 4 year UG SEDS Civil Engineering, 4 year UG SEDS Civil and Environmental Engineering	SEDS		
487	ECE 422	Prestressed Concrete Design	3	6				3 year UG SEDS Civil Engineering, 3 year UG SEDS Civil and Environmental Engineering, 4 year UG SEDS Civil Engineering, 4 year UG SEDS Civil and Environmental Engineering	SEDS		
488	ECE 428	Introduction to Finite Element Methods	3	6				3 year UG SEDS Civil Engineering, 3 year UG SEDS Civil and Environmental Engineering, 4 year UG SEDS Civil Engineering, 4 year UG SEDS Civil and Environmental Engineering	SEDS		
489	ECE 472	Water and Wastewater Treatment Processes	3	6	ECE 218 Environmental Chemistry (3296) (D and above)			Registration by School Admin only			

490	ECE 473	Environmental Systems	3	6				3 year UG SEDS Civil Engineering, 3 year UG SEDS Civil and Environmental Engineering, 4 year UG SEDS Civil Engineering, 4 year UG SEDS Civil and Environmental Engineering	SEDS		
491	ECE 478	Capstone Project II	9	18	ECE 401 Capstone Project 1 (1270) (D and above)			Registration by School Admin only			
492	E MEM 510	Managerial Accounting	2	4				1 year Gr SEDS Engineering Management			
493	E MEM 511	Business Strategy	2	4				1 year Gr SEDS Engineering Management			
494	E MEM 513	Entrepreneurship	2	4				1 year Gr SEDS Engineering Management			
495	E MEM 514	Finance	2	4				1 year Gr SEDS Engineering Management			
496	E MEM 516	Management of Organizations	2	4				1 year Gr SEDS Engineering Management			
497	E MEM 517	Marketing	2	4				1 year Gr SEDS Engineering Management			
498	E MEM 527	Globalization and Engineering	3	6				Engineering Management			
499	E MEM 529	Capstone Project	8	16				Engineering Management			
500	E MEM 535	Managing Product and Service Development	3	6				Engineering Management			
501	E MEM 545	Business Communication	2	4				1 year Gr SEDS Engineering Management			
502	E MEM 548	Understanding and Predicting Consumer Behavior	2	4							
503	MCEE 600	Research Seminar	3	6				Civil Engineering, Civil and Environmental Engineering	SEDS		
504	MCEE 602	MSc Thesis II	12	24				Civil Engineering, Civil and Environmental Engineering	SEDS		
505	MCEE 606	Advanced Project Management	3	6				Civil Engineering, Civil and Environmental Engineering	SEDS		
506	MCEE 707	Geotechnical Earthquake Engineering	3	6				Civil Engineering, Civil and Environmental Engineering	SEDS		

507	MCEE 712	Advanced Pavement Design, Analysis, and Rehabilitation	3	6				Civil Engineering, Civil and Environmental Engineering	SEDS		
508	MCEE 713	Advanced Concrete Design	3	6				Civil Engineering, Civil and Environmental Engineering	SEDS		
509	MCEE 714	Advanced Wastewater Treatment	3	6				Civil Engineering, Civil and Environmental Engineering	SEDS		
510	MCEE 715	Sustainable Development	3	6				Civil Engineering, Civil and Environmental Engineering	SEDS		
Computer Science											
511	CSCI 101	Introduction to Computational Sciences	3	6				SSH			
512	CSCI 111	Web Programming and Problem Solving	3	6			CSCI 101 Introduction to Computational Sciences (147) (D and above) OR CSCI 115 Programming Fundamentals (5257) (D and above) OR CSCI 151 Programming for Scientists and Engineers (192) (D and above) OR ENG 101 Programming for Engineers (4517) (D and above)	SSH			

513	CSCI 115	Programming Fundamentals	4	8			CSCI 101 Introduction to Computational Sciences (147) (D and above) OR CSCI 111 Web Programming and Problem Solving (110) (D and above) OR CSCI 151 Programming for Scientists and Engineers (192) (D and above) OR ENG 101 Programming for Engineers (4517) (D and above)	Biological Sciences, Chemistry	SSH		
514	CSCI 151	Programming for Scientists and Engineers	4	8			CSCI 111 Web Programming and Problem Solving (110) (D and above) OR CSCI 115 Programming Fundamentals (5257) (D and above) OR ENG 101 Programming for Engineers (4517) (B- and above)	Computer Science	Mathematics, Physics, Robotics and Mechatronics	SEDS, SMG, SSH, SoM	
515	CSCI 152	Performance and Data Structures	4	8	CSCI 151 Programming for Scientists and Engineers (192) (C- and above) OR ENG 101 Programming for Engineers (4517) (B- and above)			Computer Science, Mathematics, Physics, Robotics and Mechatronics	SSH	SEDS, SMG, SoM	
516	CSCI 245	System Analysis and Design	3	6	CSCI 152 Performance and Data Structures (489) (C- and above)			Computer Science	SEDS	SMG, SSH, SoM	
517	CSCI 270	Algorithms	3	6	CSCI 152 Performance and Data Structures (489) (C- and above)	MATH 251 Discrete Mathematics (85) (D and above)		Computer Science	SEDS	SMG, SSH, SoM	

518	CSCI 272	Formal Languages	3	6	CSCI 151 Programming for Scientists and Engineers (192) (C- and above) OR ENG 101 Programming for Engineers (4517) (B- and above)	MATH 251 Discrete Mathematics (85) (D and above)		Computer Science	SEDS	SMG, SSH, SoM	
519	CSCI 307	Research Methods	3	6				3 year UG SEDS Computer Science			
520	CSCI 330	Mobile Computing	3	6	CSCI 332 Operating Systems (490) (C- and above)			Computer Science	SEDS	SMG, SSH, SoM	
521	CSCI 332	Operating Systems	3	6	CSCI 231 Computer Systems and Organization (194) (C- and above)			Computer Science	SEDS	SMG, SSH, SoM	
522	CSCI 333	Computer Networks	3	6	CSCI 152 Performance and Data Structures (489) (C- and above)			Computer Science	SEDS	SMG, SSH, SoM	
523	CSCI 399A	Internship II - A	1	2				Registration by School Admin only			
524	CSCI 409	Senior Project II	3	6	CSCI 408 Senior Project I (1481) (C- and above)			4 year UG SEDS Computer Science			
525	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	SEDS	SMG, SSH, SoM	
526	CSCI 462	Open Source Software	3	6	CSCI 361 Software Engineering (640) (C- and above)			Computer Science	SEDS	SMG, SSH, SoM	
527	CSCI 502	Hardware Software Co-Design	3	6	CSCI 501 Software Principles and Practice (2408) (C- and above)			Computer Science	SEDS		
528	CSCI 545	Big Data Analytics	3	6				Data Science	SEDS	GSB, GSE, GSPP, SMG, SSH, SoM	
529	CSCI 547	Algorithmic Trading	3	6				Computer Science	SEDS		
530	CSCI 581	Acquisition and Analysis of Biomedical Data	3	6				Computer Science	SEDS		
531	CSCI 591	Advanced Artificial Intelligence	3	6	CSCI 501 Software Principles and Practice (2408) (C- and above) OR DS 501 Fundamentals of Data Science (5218) (C- and above)			Computer Science	SEDS		

532	CSCI 694	Thesis	15	30				Applied Mathematics, Biological Sciences, Chemistry, Computer Science, Physics, Robotics	SEDS		
533	CSCI 700-0	Thesis Research	0	0				Science, Engineering and Technology			
534	CSCI 702	Advanced Hardware/Software Co-Design	4	8				Science, Engineering and Technology			
535	CSCI 722	Current Research Literature	4	8				Science, Engineering and Technology			
536	CSCI 745	Advanced Big Data Analytics	4	8				Science, Engineering and Technology			
537	CSCI 747	Advanced Algorithmic Trading	4	8				Science, Engineering and Technology			
538	CSCI 791	Advanced Artificial Reasoning and Problem solving	4	8				Science, Engineering and Technology			
539	DS 502	Probability and Statistics for Data Science	3	6				Data Science			
540	DS 504	Data Mining and Decision Support	3	6				Data Science	SEDS	GSB, GSE, GSPP, SMG, SSH, SoM	
541	DS 704	Advanced Data Mining and Decision Support	4	8				Science, Engineering and Technology			
542	SEDS 502	Teaching Practicum	3	6				Applied Mathematics, Computer Science, Physics, Robotics	SEDS		
543	SEDS 504	Innovation and Entrepreneurship	3	6				Applied Mathematics, Biological Sciences, Chemistry, Computer Science, Economics, Eurasian Studies, Physics, Political Science and International Relations, Robotics	SEDS		
544	SEDS 592	Research Seminar	3	6				Applied Mathematics, Biological Sciences, Chemistry, Computer Science, Data Science, Physics, Robotics	SEDS		
Electrical and Computer Engineering											
545	DELCE 700-0	Thesis Research	0	0				Science, Engineering and Technology			
546	DELCE 701	Current Research Literature	4	8				Science, Engineering and Technology			
547	DELCE 755	Advanced Electromagnetics	4	8				Science, Engineering and Technology			

548	DELCE 759	Advanced Pattern Recognition and Machine Learning	4	8				Science, Engineering and Technology			
549	DELCE 760	Advanced System Modelling and Control	4	8				Science, Engineering and Technology			
550	EEE 239	Communication systems	3	6				Registration by School Admin only			
551	EEE 343	Embedded Microcontrollers	3	6				Registration by School Admin only			
552	EEE 379	Power Systems Analysis	3	6				Registration by School Admin only			
553	EEE 381	Electrical Machines and Drives	3	6				Registration by School Admin only			
554	EEE 480	Capstone Project II	9	18				Registration by School Admin only			
555	EEE 484	Electric Power Generation	3	6				4 year UG SEDS Electrical and Computer Engineering, 4 year UG SEDS Electrical and Electronic Engineering	SEDS		
556	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 SEDS Electrical and Computer Engineering, 4 year UG SEDS Electrical and Electronic Engineering	SEDS		
557	EEE 486	Photonics for Engineering	3	6	EEE 342 Electromagnetics (533) (D and above)			4 year UG SEDS Electrical and Computer Engineering, 4 year UG SEDS Electrical and Electronic Engineering	SEDS		
558	EEE 488	Numerical Optimization Techniques and Computer Applications	3	6				4 year UG SEDS Electrical and Computer Engineering, 4 year UG SEDS Electrical and Electronic Engineering	SEDS		
559	EEE 489	Analog Circuit Design	3	6				Registration by School Admin only			
560	EEE 495	Fundamentals of Biomedical Engineering and Biophysics	3	6				4 year UG SEDS Electrical and Computer Engineering, 4 year UG SEDS Electrical and Electronic Engineering	SEDS		
561	ELCE 201	Circuit Theory	3	6	ELCE 200 Introduction to Electrical Circuits (4991) (C- and above)			2 year UG SEDS Electrical and Computer Engineering, 2 year UG SEDS Electrical and Electronic Engineering	SEDS		

562	ELCE 204	Solid State Devices	3	6	ENG 103 Engineering Materials II (4818) (C- and above)	ELCE 204L Solid State Devices Laboratory (7769) (D and above)	2 year UG SEDS Electrical and Computer Engineering, 2 year UG SEDS Electrical and Electronic Engineering	SEDS		
563	MECE 600	Research Seminar	3	6			Electrical and Computer Engineering, Electrical and Electronic Engineering	SEDS		
564	MECE 602	Master Thesis II	12	24			Electrical and Computer Engineering, Electrical and Electronic Engineering	SEDS		
565	MECE 700	Industrial and Commercial Power System	3	6			Electrical and Computer Engineering, Electrical and Electronic Engineering	SEDS		
566	MECE 702	Advanced Power Electronics	3	6			Electrical and Computer Engineering, Electrical and Electronic Engineering	SEDS		
567	MECE 717	Pattern Recognition and Machine Learning	3	6			Electrical and Computer Engineering, Electrical and Electronic Engineering	SEDS		
568	MECE 719	Advanced Electromagnetics	3	6			Electrical and Computer Engineering, Electrical and Electronic Engineering	SEDS		
569	MECE 724	System Modelling and Control	3	6			Electrical and Computer Engineering, Electrical and Electronic Engineering	SEDS		
Mechanical and Aerospace Engineering										
570	DMAE 700-0	Thesis Research	0	0			Science, Engineering and Technology			
571	DMAE 702	Current Research Literature	4	8			Science, Engineering and Technology			
572	DMAE 703	Numerical Techniques for Engineers	4	8			Science, Engineering and Technology			
573	DMAE 756	Design and Manufacturing with Environmental Concern	4	8			Science, Engineering and Technology			
574	DMAE 757	Design Optimization	4	8			Science, Engineering and Technology			

575	DMAE 769	Advanced Computational Fluid Dynamics and Heat Transfer in Mechanical Engineering	4	8				Science, Engineering and Technology			
576	EME 300	Research Project	3	6				Registration by School Admin only			
577	EME 352	Computational Fluid Dynamics	3	6				Registration by School Admin only			
578	EME 357	Fluid Mechanics II	3	6				Registration by School Admin only			
579	EME 377	Mechanical Systems Design	3	6	EME 361 Machine Design (1051) (D and above)			Registration by School Admin only			
580	EME 413	Computer Aided Geometric Design	3	6	EME 253 Computer Aided Engineering (1050) (C- and above)			Registration by School Admin only			
581	EME 414	Fire Engineering	3	6	BENG 226 Engineering Thermodynamics (1553) (D and above)			4 year UG SEDS Mechanical Engineering, 4 year UG SEDS Mechanical and Aerospace Engineering	SEDS		
582	EME 415	Flight Mechanics	3	6				4 year UG SEDS Mechanical Engineering, 4 year UG SEDS Mechanical and Aerospace Engineering	SEDS		
583	EME 476	Materials and Manufacturing II	3	6				Registration by School Admin only			
584	EME 477	Capstone Project II	9	18				Registration by School Admin only			
585	EME 489	Advanced Engineering Mathematics	3	6	BENG 228 Engineering Mathematics III (3154) (D and above)			4 year UG SEDS Mechanical Engineering, 4 year UG SEDS Mechanical and Aerospace Engineering	SEDS		

586	ENG 101	Programming for Engineers	3	6			CSCI 151 Programming for Scientists and Engineers (192) (F) OR CSCI 111 Web Programming and Problem Solving (110) (F) OR CSCI 115 Programming Fundamentals (5257) (F) OR CSCI 152 Performance and Data Structures (489) (F) OR CSCI 408 Senior Project I (1481) (F) OR CSCI 409 Senior Project II (1483) (F)	SEDS, SMG			
587	ENG 102	Engineering Materials I	3	6				1 year UG SEDS Civil Engineering, 1 year UG SEDS Civil and Environmental Engineering, 1 year UG SEDS Mechanical Engineering, 1 year UG SEDS Mechanical and Aerospace Engineering	Civil Engineering, Civil and Environmental Engineering, Mechanical Engineering, Mechanical and Aerospace Engineering	SEDS	
588	ENG 103	Engineering Materials II	3	6				1 year UG SEDS Chemical Engineering, 1 year UG SEDS Chemical and Materials Engineering, 1 year UG SEDS Electrical and Computer Engineering, 1 year UG SEDS Electrical and Electronic Engineering	Chemical Engineering, Chemical and Materials Engineering, Electrical and Computer Engineering, Electrical and Electronic Engineering	SEDS	

589	ENG 201	Applied Probability and Statistics	3	6	MATH 162 Calculus II (170) (C- and above)			2 year UG SEDS Chemical Engineering, 2 year UG SEDS Chemical and Materials Engineering, 2 year UG SEDS Electrical and Computer Engineering, 2 year UG SEDS Electrical and Electronic Engineering, 2 year UG SEDS Mechanical Engineering, 2 year UG SEDS Mechanical and Aerospace Engineering	2 year UG SEDS Civil Engineering, 2 year UG SEDS Civil and Environmental Engineering	SEDS	
590	ENG 202	Numerical Methods in Engineering	3	6	ENG 200 Engineering Mathematics III (Differential Equations and Linear Algebra) (5009) (D and above)			2 year UG SEDS Chemical Engineering, 2 year UG SEDS Chemical and Materials Engineering, 2 year UG SEDS Electrical and Computer Engineering, 2 year UG SEDS Electrical and Electronic Engineering, 2 year UG SEDS Mechanical Engineering, 2 year UG SEDS Mechanical and Aerospace Engineering	2 year UG SEDS Civil Engineering, 2 year UG SEDS Civil and Environmental Engineering	SEDS	
591	MAE 205	Material and Manufacturing I	3	6				2 year UG SEDS Mechanical Engineering, 2 year UG SEDS Mechanical and Aerospace Engineering	SEDS		
592	MAE 206	Engineering Dynamics I	3	6				2 year UG SEDS Mechanical Engineering, 2 year UG SEDS Mechanical and Aerospace Engineering	SEDS		
593	MMAE 600	Research Seminar	3	6				Mechanical Engineering, Mechanical and Aerospace Engineering	SEDS		
594	MMAE 602	Master Thesis II	12	24	MMAE 601 Master Thesis I (5014) (P)			Mechanical Engineering, Mechanical and Aerospace Engineering	SEDS		
595	MMAE 604	Advanced Computational Fluid Dynamics and Heat Transfer in Mechanical Engineering	3	6				Mechanical Engineering, Mechanical and Aerospace Engineering	SEDS		
596	MMAE 700	Advanced Statistics and Probability	3	6				Mechanical Engineering, Mechanical and Aerospace Engineering	SEDS		
597	MMAE 701	Numerical Techniques for Engineers	3	6				Mechanical Engineering, Mechanical and Aerospace Engineering	SEDS		

598	MMAE 703	Advanced Engineering Design and Manufacturing	3	6				Mechanical Engineering, Mechanical and Aerospace Engineering	SEDS		
599	MMAE 704	Design and Manufacturing with Environmental Concern	3	6				Mechanical Engineering, Mechanical and Aerospace Engineering	SEDS		
600	MMAE 705	Design Optimization	3	6				Mechanical Engineering, Mechanical and Aerospace Engineering	SEDS		
601	MMAE 716	Digital Transformation Concepts	3	6				Engineering Management, Mechanical Engineering, Mechanical and Aerospace Engineering	SEDS		
Robotics and Mechatronics											
602	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	SEDS		
603	ROBT 204	Electrical and Electronic Circuits II with Lab	4	8	ROBT 203 Electrical and Electronic Circuits I with Lab (62) (C- and above)			Robotics and Mechatronics	SEDS		
604	ROBT 206	Microcontrollers with Lab	4	8	CSCI 150 Fundamentals of Programming (1501) (C and above) OR CSCI 151 Programming for Scientists and Engineers (192) (C and above) OR ENG 101 Programming for Engineers (4517) (C and above)			Computer Science, Robotics and Mechatronics	SEDS		
605	ROBT 304	Electromechanical Systems with lab	4	8	ROBT 204 Electrical and Electronic Circuits II with Lab (491) (C- and above)			Robotics and Mechatronics	SEDS		
606	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)			Robotics and Mechatronics	SEDS		

607	ROBT 312	Robotics I: Kinematics and Dynamics	3	6	ROBT 201 Mechanics: Statics and Dynamics (475) (C and above) AND MATH 273 Linear Algebra with Applications (84) (C and above)			Robotics and Mechatronics	SEDS		
608	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)			Robotics and Mechatronics	SEDS		
609	ROBT 407	Statistical Methods and Machine Learning	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)			Robotics and Mechatronics	SEDS		
610	ROBT 491	Graduation Project	3	6				Robotics and Mechatronics	SEDS		
611	ROBT 502	Robot Perception & Vision	3	6	ROBT 501 Robot Manipulation and Mobility (2263) (C- and above)			Computer Science, Robotics	SEDS		
612	ROBT 700-0	Thesis Research	0	0				Science, Engineering and Technology			
613	ROBT 702	Advanced Robot Perception and Vision	4	8				Science, Engineering and Technology			
614	ROBT 722	Current Research Literature	4	8				Science, Engineering and Technology			
School of Engineering											
615	DENG 789	Doctoral Seminar I	3	6	DENG 785 PhD Proposal Oral Defence (2604) (P)			SEDS			
616	DENG 790	Doctoral Seminar II	3	6	DENG 789 Doctoral Seminar I (4598) (P)			Science, Engineering and Technology			
617	DENG 791	Doctoral Seminar III	3	6	DENG 790 Doctoral Seminar II (4599) (P)						
618	DENG 792	Doctoral Seminar IV	3	6	DENG 791 Doctoral Seminar III (4600) (P)			Science, Engineering and Technology			
619	DENG 794	Dissertation Research	12	24	DENG 785 PhD Proposal Oral Defence (2604) (P)			Science, Engineering and Technology			

620	DENG 796	Thesis Completion	0	0				Science, Engineering and Technology			
621	DENG 797	Oral Defence of PhD Dissertation	0	0	DENG 785 PhD Proposal Oral Defence (2604) (P) AND DENG 789 Doctoral Seminar I (4598) (P) AND DENG 790 Doctoral Seminar II (4599) (P)			Science, Engineering and Technology			