

Course Requirements and Registration Priorities (Master), Spring 2023

#	Abbr	Title	Cr(US)	Cr(ECTS)	PreRequisite	CoRequisite	AntiRequisite	1st priority registration	2nd priority registration	3rd priority registration	4th priority registration
GSB											
GSB											
1	GSBF 513	Financial Data Analytics II	2.5	5				For GSB programs only! Registration by School admin.			
2	GSBF 514	Corporate Finance	2.5	5							
3	GSBF 515b	Investments II	2.5	5	GSBF 515a Investments I (4106) (C- and above)						
4	GSBF 520	Empirical Asset Pricing	2	4				For GSB programs only! Registration by School admin.			
5	MBA 08	Managerial Economics	2	4				For GSB programs only! Registration by School admin.			
6	MBA 09	Marketing Management	2	4				For GSB programs only! Registration by School admin.			
7	MBA 10	Foundations of Strategy	2	4				For GSB programs only! Registration by School admin.			
8	MBA 12	Operations Management	2	4				For GSB programs only! Registration by School admin.			
9	MBA 15	Corporate Finance	2	4				For GSB programs only! Registration by School admin.			
10	MBA 16	Entrepreneurship	2	4				For GSB programs only! Registration by School admin.			
11	MSF 01	Financial Modeling	2.5	5				For GSB programs only! Registration by School admin.			
12	MSF 11	FinTech	2.5	5				For GSB programs only! Registration by School admin.			
GSPP											
Master in Public Administration											
13	MPA 608	Strategic Management and Leadership	4	8				1 year GSPP Public Administration			

14	MPA 610	Program Evaluation	4	8	MPA 602 Public Administration in Theory and Practice (2077) (C- and above) AND MPA 603 Economic Applications for Public Managers (2074) (C- and above) AND MPA 605 Research Methods for Public Managers (2108) (C- and above)			1 year GSPP Public Administration			
15	MPA 699	Master's Project with Overseas Component	0	0				1 year GSPP Public Administration			
16	MPE 600	Internship in Public Policy	4	8	(MPP 601 Microeconomics and Public Policy (1449) (C- and above) AND MPP 602 Macroeconomics and Public Policy (1023) (C- and above) AND MPP 611 Statistics for Public Policy (1450) (C- and above) AND MPP 621 Public Policy and Analysis (1451) (C- and above) AND MPP 641 Public Management and Leadership (1907) (C- and above) AND MPP 603 Data Analytics in Public Policy (6618) (C- and above)) OR (MPA 602 Public Administration in Theory and Practice (2077) (C- and above) AND MPA 603 Economic Applications for Public Managers (2074) (C- and above) AND MPA 605 Research Methods for Public Managers (2108) (C- and above) AND MPA 608 Strategic Management and Leadership (2491) (C- and above) AND MPA 610 Program Evaluation (6617) (C- and above))			2 year GSPP Public Policy			

17	MPE 610	National Identity and Public Policy	4	8				Public Administration	Public Policy	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM	
18	MPE 611	Benefit Cost Analysis	4	8				Public Administration, Public Policy	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
19	MPE 638	Contemporary Security Challenges in Central Asia and Beyond	4	8				Public Administration	Public Policy	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM	
20	MPE 641	Globalisation and Public Policy	4	8			MPE 640 International Political Economy (1307) (C- and above) OR DPE 623 International Political Economy (6338) (C- and above)	Public Administration, Public Policy	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
21	MPE 670	Behavioural Insights and Public Policy	4	8				Public Administration, Public Policy	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
22	MPE 672	The Third Sector: civil society, nonprofit organizations, and voluntary action	4	8				Public Administration, Public Policy	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
23	MPE 673	Development Assistance and Governance	4	8				Public Administration, Public Policy	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
24	MPE 681	Natural Resource Management and Policy	4	8				Public Administration, Public Policy	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
Master in Public Policy											
25	MPP 602	Macroeconomics and Public Policy	4	8				1 year GSPP Public Policy			
26	MPP 603	Data Analytics in Public Policy	4	8			MPP 611 Statistics for Public Policy (1450) (C- and above) AND MPP 601 Microeconomics and Public Policy (1449) (C- and above) AND MPP 621 Public Policy and Analysis (1451) (C- and above) AND MPP 613 Policy Research Design and Methods (1301) (C- and above)	1 year GSPP Public Policy			

27	MPP 641	Public Management and Leadership	4	8				1 year GSPP Public Policy			
28	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			
29	MPP 699-0	Policy Analysis Exercise with Overseas Component	0	0	MPP 613 Policy Research Design and Methods (1301) (C- and above)			1 year GSPP Public Policy			
GSE											
MA in Multilingual Education											
30	EDML 612	Multilingual Society	3	6				1 year GSE MA in Multil.Education			
31	EDML 620	Language and Literacy Development	3	6				2 year GSE MA in Multil.Education			
32	EDML 691	Thesis Research II	6	12				2 year GSE MA in Multil.Education			
MSc Educational Leadership HE											
33	EDHE 604	Thesis Seminar 4	0	0				2 year GSE Educ.Leadership			
34	EDHE 605	Thesis Submission and Defense	10.5	21				2 year GSE Educ.Leadership			
35	EDHE 626	Organization and Governance in Higher Education	3	6				1 year GSE Educ.Leadership			
36	EDHE 628	Higher Education Policy Analysis and Development	3	6				1 year GSE Educ.Leadership			
37	EDUC 507	Academic English III	1.5	3				Registration available only for MSc Yr2 student Albina Kassenova			
38	EDUC 508	Academic English IV	1.5	3				Registration available only for MSc Yr2 students Ilyas Sarsenbayev and Bakhtiyor Ermetov			
39	EDUC 511	Advanced English for Education Professionals II	3	6				1 year GSE MA in Multil.Education			
40	EDUC 513	English for Thesis Writing II	3	6				2 year GSE MA in Multil.Education			

41	EDUC 531	Academic English 2	2	4				1 year GSE Educ.Leadership		
42	EDUC 571	Basic Kazakh	3	6				Education, Multilingual Education		
43	EDUC 581	Basic Kazakh (MSc)	2	4				Educational Leadership		
44	EDUC 585	Education in Kazakhstan for International Students	3	6				Only for GSE international students. Registration by School admin through Add Course form only.		
45	EDUC 600	Research Methods II	3	6				1 year GSE MA in Multil.Education		
46	EDUC 608	Research Methods 2	3	6				1 year GSE Educ.Leadership		
47	EDUC 618	Educational Leadership	3	6				1 year GSE Educ.Leadership		
MSc Educational Leadership IE										
48	EDIE 604	Thesis Seminar 4	0	0				2 year GSE Educ.Leadership		
49	EDIE 605	Thesis Submission and Defense	10.5	21				2 year GSE Educ.Leadership		
50	EDIE 626	Global Perspectives on Inclusive Education	3	6				1 year GSE Educ.Leadership		
51	EDIE 628	Inclusive Curriculum and Assessment	3	6				1 year GSE Educ.Leadership		
MSc Educational Leadership SE										
52	EDSE 604	Thesis Seminar 4	0	0				2 year GSE Educ.Leadership		
53	EDSE 605	Thesis Submission and Defense	10.5	21				2 year GSE Educ.Leadership		
54	EDSE 626	Curriculum Development and Implementation	3	6				1 year GSE Educ.Leadership		
55	EDSE 629	Teacher Development and Identity	3	6				1 year GSE Educ.Leadership		
56	EDSE 632	School Improvement and Effectiveness	3	6				1 year GSE Educ.Leadership		
57	EDSE 692	Thesis Seminar III	4.5	9				Registration available only for MSc Yr2 student Kassenova Albina		
58	EDSE 693	Thesis Seminar IV	9	18				2 year GSE Educ.Leadership		
SoM										
MMM										
59	MMMM 507	Critical Analysis of the Contemporary Concepts in Molecular Medicine	3	6				SoM		

60	MMMM 508	Molecular Immunology	3	6				SoM			
61	MMMM 509	From the Bench to the Bedside: Drug Development and Clinical Trials	3	6				SoM			
62	MMMM 511	Research Methods in Molecular Biomedicine	3	6				SoM			
63	MMMM 513	Molecular Basis of Neurological Disorders	3	6				SoM			
64	MMMM 690	Master Research Project	15	30				SoM			
MPTOX											
65	MPTX 504	Systemic Pharmacology I	3	6	MPTX 503 Principles of Pharmacology and Toxicology (5843) (C- and above)			SoM			
66	MPTX 507	Applied Toxicology	3	6	MPTX 503 Principles of Pharmacology and Toxicology (5843) (C- and above)			SoM			
67	MPTX 508	Research Methods in Pharmacology	3	6	MPTX 502 Cellular Communications (5842) (C- and above) OR MPTX 503 Principles of Pharmacology and Toxicology (5843) (C- and above)			SoM			
68	MPTX 509	Drug Discovery and Development II	3	6	MPTX 505 Drug Discovery I (5845) (C- and above)			SoM			
69	MPTX 511E	Environmental Toxicology	3	6				SoM			
70	MPTX 701	Research Project and Thesis	15	30	MPTX 601 Biostatistics and Critical Appraisal (6342) (C and above) AND MPTX 603 Introduction to Research Project (6344) (P)			SoM			
MSMR											
71	MSMR 502	Nutrition in Sports and Exercise	3	6				SoM			
72	MSMR 506	Seminar in Sports Medicine	3	6				SoM			
73	MSMR 509	Robots for Rehabilitation	3	6				SoM			
74	MSMR 511	Introduction to Research Project	3	6				SoM			

75	MSMR 514	Adaptive Physical Activity	3	6				SoM			
76	MSMR 515	Nutrition for Life	3	6				SoM			
77	MSMR 601	Psychology of Sports and Rehabilitation	3	6				SoM			
78	MSMR 602	Advances in Sports and Rehabilitation	4	8				SoM			
79	MSMR 702	Master Research Project Thesis	12	24				SoM			
Public Health											
80	PUBH 512	Biostatistical Modeling and Sampling	3	6				SoM			
81	PUBH 522	Advanced Analytical Epidemiology	3	6				SoM			
82	PUBH 551	Health Services Management, Health Economic and Health Policy	3	6				SoM			
83	PUBH 631	Social and Behavioral Sciences in Public Health	3	6				SoM			
84	PUBH 641	Problem Investigations in Environmental Health	3	6				SoM			
85	PUBH 651	Risk Management in Health Care	3	6				SoM			
86	PUBH 652	Applied Methods in Health Services Research	3	6				SoM			
87	PUBH 682	Master's Project Implementation	12	24				SoM			
SMG											
Mining Engineering											
88	MINE 507	Rock Excavation Methods	3	6				1 year Gr SMG Mining Engineering			
89	MINE 508	Advanced Rock Mechanics	3	6				1 year Gr SMG Mining Engineering			
90	MINE 509	Advanced Surface Mine Design	3	6				1 year Gr SMG Mining Engineering			
91	MINE 510	Advanced Underground Mine Design	3	6				1 year Gr SMG Mining Engineering			

92	MINE 607	Geometallurgy	3	6				2 year Gr SMG Mining Engineering	Biomedical Engineering, Chemical Engineering, Chemical and Materials Engineering, Civil Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Electrical and Electronic Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical Engineering, Mechanical and Aerospace Engineering, Robotics		
93	MINE 691	Thesis II	15	30	MINE 690 Thesis I (4531) (P)			2 year Gr SMG Mining Engineering			
Petroleum Engineering											
94	PETE 506	Advanced Reservoir Simulation	3	6				Petroleum Engineering			
95	PETE 507	Advanced Reservoir Engineering	3	6				Petroleum Engineering			
96	PETE 508	Advanced Production Engineering	3	6				Petroleum Engineering			
97	PETE 606	Advanced Enhanced Oil Recovery	3	6				Petroleum Engineering			
98	PETE 620	Thesis II	12	24				Petroleum Engineering			
SSH											
Area Studies											
99	EAS 502	Disciplinary Methodology	4	8				Eurasian Studies			

100	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)			Eurasian Studies			
101	EAS 511	Independent Study in Eurasian Studies	4	8				Eurasian Studies			
102	EAS 512	Topics in Eurasian Studies	4	8				Instructor's Permission Required. Registration through Add Course form only!			
103	EAS 513	Critical Issues in Eurasian Studies	4	8				Eurasian Studies			
104	EAS 514	Topics in Eurasian Social Sciences	4	8				Eurasian Studies			
Biological Science											
105	BIOL 502	Research Methods and Bioethics	3	6				Biological Sciences	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	
106	BIOL 570	Advanced Biotechnology	3	6				Biological Sciences	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	
107	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	
108	BIOL 590	Research Design and Project Planning	3	6				Biological Sciences	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	
109	BIOL 591	Cellular Biophysics	3	6				Biological Sciences	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	
110	BIOL 599	Master's Thesis Research	0	0				1 year Gr SSH Biological Sciences and Technologies			
111	BIOL 630	Advanced Neuroscience	3	6				Biological Sciences	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	
112	BIOL 637	Fundamentals of Advanced Microscopy	3	6				Biological Sciences	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	

113	BIOL 692	Master's Thesis	15	30	BIOL 691 Master's Thesis Research Proposal (5676) (B- and above)			Biological Sciences			
Chemistry											
114	CHEM 511	Theoretical Chemistry	3	6	CHEM 510 Principles of Physical Chemistry (5266) (C and above)			Chemistry	SSH	SEDS, SMG, SoM	
115	CHEM 540	Organic Reactions and Mechanisms	3	6				Chemistry	SSH	SEDS, SMG, SoM	
116	CHEM 550	Selected Topics in Chemistry	3	6				Chemistry	SSH	SEDS, SMG, SoM	
117	CHEM 560	Directed research in chemistry	0	0				Instructor's Permission Required. Registration through Add Course form only!			
118	CHEM 592	Chemistry Seminar	3	6				Chemistry	SSH	SEDS, SMG, SoM	
119	CHEM 692	MSc Thesis in Chemistry	18	36	CHEM 691 Thesis Proposal (5858) (C- and above)			Chemistry			
Communication and Composition											
120	WCS 501	Science Communication	3	6				SSH	SMG, SoM		
Economics											
121	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	SSH		
122	ECON 522	Macroeconomics II	4	8	ECON 502 Macroeconomics I (2186) (C- and above) AND ECON 512 Mathematical Economics (2154) (C- and above)			Economics	SSH		
123	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	SSH		

124	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	SSH		
125	ECON 531	Econometrics	4	8	ECON 511 Statistics (2188) (C- and above) AND ECON 512 Mathematical Economics (2154) (C- and above)			Economics	SSH		
126	ECON 590	Thesis II	8	16	ECON 589 Thesis I (3714) (P)			Economics	SSH		
History, Philosophy and Religious Studies, History, Philosophy and Religious Studies											
127	HST 562/REL 562	History of Islam under Russian Rule	4	8				SSH	GSB, GSE, GSPP, SEDS, SMG, SoM		
History, Philosophy and Religious Studies, Sociology and Anthropology											
128	ANT 535/REL 535	The Archaeology of Ritual	4	8				Eurasian Studies			
Kazakh Language and Turkic Studies											
129	TUR 575	Advanced Topics in Turkic Studies	4	8				Eurasian Studies			
Mathematics											
130	MATH 514	Operations Research	3	6				Applied Mathematics	SEDS, SSH	GSB, GSE, GSPP, SMG, SoM	
131	MATH 541	Data Analysis and Statistical Learning	3	6	MATH 540 Statistical Learning (2340) (B- and above)			Applied Mathematics	SEDS, SSH	GSB, GSE, GSPP, SMG, SoM	
132	MATH 571	Advanced Nonlinear Differential Equations	3	6				Applied Mathematics	SEDS, SSH	GSB, GSE, GSPP, SMG, SoM	
133	MATH 582	Mathematical Biology	3	6				Applied Mathematics	SEDS, SSH	GSB, GSE, GSPP, SMG, SoM	
134	MATH 682	Applied Functional Analysis	3	6				Applied Mathematics	SEDS, SSH	GSB, GSE, GSPP, SMG, SoM	
135	MATH 691	Thesis Proposal	3	6	MATH 592 Research Seminar (5760) (C- and above)			Instructor's Permission Required. Registration through Add Course form only!			
136	MATH 692	Thesis	15	30	MATH 691 Thesis Proposal (5769) (P)			Instructor's Permission Required. Registration through Add Course form only!			

Physics

137	PHYS 510	Quantum Mechanics	3	6				Physics			
138	PHYS 520	Statistical Physics	3	6				Physics			
139	PHYS 565	Advanced Physics Laboratory	4	8				Physics			
140	PHYS 570	Introduction to Optoelectronics	4	8				Physics			
141	PHYS 692	Thesis	21	42				Instructor's Permission Required. Registration through Add Course form only!			

Political Science and International Relations

142	PLS 510	Advanced Research I	4	8				Political Science and International Relations	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
143	PLS 522	Just War Theory	4	8				Political Science and International Relations	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
144	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	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
145	PLS 534	Text Analysis and Political Communication in the Information Age	4	8			PLS 510 Advanced Research I (1946) (C- and above) AND PLS 511 Advanced Research I (1631) (C- and above)	Political Science and International Relations	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
146	PLS 541	Advanced Topics in Comparative Politics	4	8				Political Science and International Relations	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
147	PLS 551	Advanced Topics in International Relations	4	8				Political Science and International Relations	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
148	PLS 565	Politics of International Finance	4	8				Political Science and International Relations	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
149	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)	1 year Gr SSH Political Science and International Relations			

150	PLS 599	MA Thesis II	10	20				2 year Gr SSH Political Science and International Relations			
Sociology and Anthropology											
151	SOC 511	Citizenship in Eurasia: Political Sociology of Civic Belonging	4	8				4 year UG SSH Sociology, Economics, Eurasian Studies, Political Science and International Relations			
152	SOC 515	Social Problems and Issues in Eurasia	4	8				4 year UG SSH Sociology, Economics, Eurasian Studies, Political Science and International Relations			
SEDS											
Chemical and Materials Engineering											
153	MBME 600	Research Seminar	3	6				Biomedical Engineering	SEDS		
154	MBME 602	Master Thesis II	12	24	MBME 601 Master Thesis I (5953) (P)			Biomedical Engineering	SEDS		
155	MBME 607	Advanced Tissue Engineering	3	6				Biomedical Engineering	SEDS		
156	MBME 700	Strategies for Controlled Topical Delivery of Drugs	3	6				Biomedical Engineering	SEDS		
157	MBME 708	Biomedical Imaging	3	6				Biomedical Engineering	SEDS		
158	MCHME 600	Research Seminar	3	6				Chemical and Materials Engineering	SEDS		
159	MCHME 602	MSc Thesis II	12	24				Chemical and Materials Engineering	SEDS		
160	MCHME 606	Advanced Heat and Mass Transfer	3	6				Chemical and Materials Engineering	SEDS		
161	MCHME 701	Advanced Chemical Thermodynamics	3	6				Chemical and Materials Engineering	SEDS		
162	MCHME 707	Polymer Melt Fluid Mechanics and Processing	3	6				Chemical and Materials Engineering	SEDS		
163	MCHME 713	Advanced Energy Materials and their Applications	3	6				Chemical and Materials Engineering	SEDS		
Civil Engineering											

164	MSC 600	Research Methods and Ethics	3	6				1 year Gr SEDS Biomedical Engineering, 1 year Gr SEDS Chemical and Materials Engineering, 1 year Gr SEDS Civil and Environmental Engineering, 1 year Gr SEDS Electrical and Computer Engineering, 1 year Gr SEDS Mechanical and Aerospace Engineering	2 year Gr SEDS Biomedical Engineering, 2 year Gr SEDS Chemical and Materials Engineering, 2 year Gr SEDS Civil and Environmental Engineering, 2 year Gr SEDS Mechanical and Aerospace Engineering	SMG	
165	MSC 601	Technical Communication	3	6				Civil and Environmental Engineering, Electrical and Computer Engineering, Mechanical and Aerospace Engineering	SEDS	SMG	
Civil and Environmental Engineering											
166	EMEM 510	Managerial Accounting	2	4				Engineering Management			
167	EMEM 511	Business Strategy	2	4				Engineering Management			
168	EMEM 513	Entrepreneurship	2	4				Engineering Management			
169	EMEM 514	Finance	2	4				Engineering Management			
170	EMEM 516	Management of Organizations	2	4				Engineering Management			
171	EMEM 517	Marketing	2	4				Engineering Management			
172	EMEM 527	Globalization and Engineering	3	6				Engineering Management			
173	EMEM 542	Production and Service Operations Management	3	6				Engineering Management			
174	EMEM 545	Business Communication	2	4				Engineering Management			
175	EMEM 548	Understanding and Predicting Consumer Behavior	2	4				Engineering Management			
176	EMEM 549	Capstone Project I	3	6				Instructor's Permission Required. Registration through Add Course form only!			
177	EMEM 550	Capstone Project II	5	10				2 year Gr SEDS Engineering Management			

178	MCEE 600	Research Seminar	3	6				1 year Gr SEDS Civil and Environmental Engineering	2 year Gr SEDS Civil and Environmental Engineering		
179	MCEE 602	MSc Thesis II	12	24				2 year Gr SEDS Civil and Environmental Engineering			
180	MCEE 606	Advanced Project Management	3	6				1 year Gr SEDS Civil and Environmental Engineering			
181	MCEE 700	Structural Dynamics and Earthquake Engineering	3	6				1 year Gr SEDS Civil and Environmental Engineering	2 year Gr SEDS Civil and Environmental Engineering		
182	MCEE 701	Advanced Concrete Technology	3	6				1 year Gr SEDS Civil and Environmental Engineering	2 year Gr SEDS Civil and Environmental Engineering		
183	MCEE 704	Contaminated Site Management and Soil Treatment Technologies	3	6				1 year Gr SEDS Civil and Environmental Engineering	2 year Gr SEDS Civil and Environmental Engineering		
184	MCEE 711	Soil Improvement and Stabilization	3	6				1 year Gr SEDS Civil and Environmental Engineering	2 year Gr SEDS Civil and Environmental Engineering		
Computer Science											
185	CSCI 502	Hardware Software Co-Design	3	6	CSCI 501 Software Principles and Practice (2408) (C- and above)			Computer Science, Robotics			
186	CSCI 545	Big Data Analytics	3	6				Data Science	Computer Science	Robotics	
187	CSCI 575	Formal Methods and Applications	3	6				Computer Science, Data Science		Robotics	
188	CSCI 581	Acquisition and Analysis of Biomedical Data	3	6				Computer Science, Data Science		Robotics	
189	CSCI 585	Computer Vision	3	6				Computer Science, Data Science		Robotics	
190	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, Data Science		Robotics	
191	CSCI 694	Thesis	15	30				2 year Gr SEDS Computer Science			
192	DS 504	Data Mining and Decision Support	3	6				Data Science	Computer Science		

193	DS 509	Information Retrieval	3	6	DS 501 Fundamentals of Data Science (5218) (C- and above) OR CSCI 501 Software Principles and Practice (2408) (C- and above)			SEDS, SMG, SSH, SoM			
194	DS 694	Thesis	15	30	DS 693 Thesis Proposal (5915) (P)			2 year Gr SEDS Data Science			
195	SEDS 502	Teaching Practicum	3	6					Computer Science, Data Science, Robotics		
196	SEDS 592	Research Seminar	3	6					Computer Science, Data Science, Robotics		
Electrical and Computer Engineering											
197	MECE 600	Research Seminar	3	6				1 year Gr SEDS Electrical and Computer Engineering	2 year Gr SEDS Electrical and Computer Engineering	SEDS	
198	MECE 602	Master Thesis II	12	24				1 year Gr SEDS Electrical and Computer Engineering	2 year Gr SEDS Electrical and Computer Engineering	SEDS	
199	MECE 608	Energy Systems Operations and Planning	3	6				2 year Gr SEDS Electrical and Computer Engineering	1 year Gr SEDS Electrical and Computer Engineering	Electrical and Computer Engineering	
200	MECE 704	Fundamentals of Signal Processing	3	6				2 year Gr SEDS Electrical and Computer Engineering	1 year Gr SEDS Electrical and Computer Engineering	Electrical and Computer Engineering	
201	MECE 707	Advanced Electronic Circuits	3	6				2 year Gr SEDS Electrical and Computer Engineering	1 year Gr SEDS Electrical and Computer Engineering	Electrical and Computer Engineering	
202	MECE 716	Adaptive Signal Processing	3	6				2 year Gr SEDS Electrical and Computer Engineering	1 year Gr SEDS Electrical and Computer Engineering	Electrical and Computer Engineering	
203	MECE 717	Pattern Recognition and Machine Learning	3	6				2 year Gr SEDS Electrical and Computer Engineering	1 year Gr SEDS Electrical and Computer Engineering	Electrical and Computer Engineering	
Mechanical and Aerospace Engineering											

204	MAE 500	Unmanned Aerial Vehicle Design	3	6	MMAE 603 Modern Control Engineering (4500) (C- and above)				1 year Gr SEDS Mechanical and Aerospace Engineering, 2 year Gr SEDS Mechanical and Aerospace Engineering		
205	MMAE 602	Master Thesis II	12	24	MMAE 601 Master Thesis I (5014) (P)			1 year Gr SEDS Mechanical and Aerospace Engineering, 2 year Gr SEDS Mechanical and Aerospace Engineering			
206	MMAE 604	Advanced Computational Fluid Dynamics and Heat Transfer in Mechanical Engineering	3	6				1 year Gr SEDS Mechanical and Aerospace Engineering	2 year Gr SEDS Mechanical and Aerospace Engineering		
207	MMAE 700	Advanced Statistics and Probability	3	6				1 year Gr SEDS Mechanical and Aerospace Engineering	2 year Gr SEDS Mechanical and Aerospace Engineering		
208	MMAE 701	Numerical Techniques for Engineers	3	6				1 year Gr SEDS Mechanical and Aerospace Engineering	2 year Gr SEDS Mechanical and Aerospace Engineering		
209	MMAE 704	Design and Manufacturing with Environmental Concern	3	6				1 year Gr SEDS Mechanical and Aerospace Engineering	2 year Gr SEDS Mechanical and Aerospace Engineering		
210	MMAE 710	Space Structures Design	3	6				1 year Gr SEDS Mechanical and Aerospace Engineering	2 year Gr SEDS Mechanical and Aerospace Engineering		
211	MMAE 716	Digital Transformation Concepts	3	6				2 year Gr SEDS Engineering Management	2 year Gr SEDS Mechanical and Aerospace Engineering	1 year Gr SEDS Mechanical and Aerospace Engineering	
Robotics and Mechatronics											
212	ROBT 502	Robot Perception & Vision	3	6	ROBT 501 Robot Manipulation and Mobility (2263) (C- and above)			Robotics	SEDS		

213	ROBT 692	Thesis	15	30	ROBT 691 Thesis Proposal (5930) (P)				Biomedical Engineering, Chemical Engineering, Chemical and Materials Engineering, Civil Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Electrical and Electronic Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical Engineering, Mechanical and Aerospace Engineering, Robotics		
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