

Course Requirements and Registration Priorities (Master), Spring 2021

#	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 512	Principles of Finance	2.5	5							
2	GSBF 513	Financial Data Analytics II	2.5	5							
3	GSBF 515a	Investments I	2.5	5							
4	GSBF 515b	Investments II	2.5	5	GSBF 515a Investments I (4106) (C- and above)						
5	GSBF 542	Global Finance Experience Residency (II)	3	6							
6	GSBF 550A	Master's Thesis	5	10							
7	MBA 05	Business Communication	2	4							
8	MBA 09	Marketing Management	2	4							
9	MBA 11	Managerial Accounting	2	4							
10	MBA 12	Operations Management	2	4							
11	MBA 13	Macroeconomics	2	4							
12	MBA 15	Corporate Finance	2	4							
13	MBA 16	Entrepreneurship	2	4							
14	MBA 17	Negotiations	2	4							
15	MBA 19	Distinguished Speaker Series	0	1							
16	MSF 01	Financial Modeling	2.5	5							
GSPP											
Master in Public Administration											
17	MPA 608	Strategic Management and Leadership	4	8				1 year GSPP Public Administration			
18	MPA 699	Master's Project with Overseas Component	0	0				1 year GSPP Public Administration			
19	MPE 609	Organizational Behavior in the Public Sector	4	8				Public Administration, Public Policy	GSB, GSE, SEDS, SMG, SSH, SoM		
20	MPE 610	National Identity and Public Policy	4	8				Public Administration, Public Policy	GSB, GSE, SEDS, SMG, SSH, SoM		
21	MPE 611	Benefit Cost Analysis	4	8				Public Administration, Public Policy	GSB, GSE, SEDS, SMG, SSH, SoM		

22	MPE 623	Law and Development	4	8				Public Administration, Public Policy	GSB, GSE, SEDS, SMG, SSH, SoM		
23	MPE 624	Public Management Reforms in Transitional Countries	4	8				Public Administration, Public Policy	GSB, GSE, SEDS, SMG, SSH, SoM		
24	MPE 630	Finance and Economic Development	4	8				Public Administration, Public Policy	GSB, GSE, SEDS, SMG, SSH, SoM		
25	MPE 638	Contemporary Security Challenges in Central Asia and Beyond	4	8				Public Administration, Public Policy	GSB, GSE, SEDS, SMG, SSH, SoM		
26	MPE 644	The Media and Public Policy	4	8				Public Administration, Public Policy	GSB, GSE, SEDS, SMG, SSH, SoM		
27	MPE 647	Macroeconomic Development and Human Capital	4	8				Public Administration, Public Policy	GSB, GSE, SEDS, SMG, SSH, SoM		
28	MPE 648	Environmental Economics and Public Policy	4	8				Public Administration, Public Policy	GSB, GSE, SEDS, SMG, SSH, SoM		
29	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)			Public Administration, Public Policy	GSB, GSE, SEDS, SMG, SSH, SoM		
30	MPE 682	Sustainable Development and Environmental Governance	4	8				Public Administration, Public Policy	GSB, GSE, SEDS, SMG, SSH, SoM		
31	MPE 688	New Technologies and Public Policy	4	8				Public Administration, Public Policy	GSB, GSE, SEDS, SMG, SSH, SoM		
32	MPE 689	Data Analytics for Public Policy	4	8				Public Administration, Public Policy	GSB, GSE, SEDS, SMG, SSH, SoM		
Master in Public Policy											
33	MPP 602	Macroeconomics and Public Policy	4	8				1 year GSPP Public Policy			
34	MPP 613	Policy Research Design and Methods	4	8				1 year GSPP Public Policy			
35	MPP 641	Public Management and Leadership	4	8				1 year GSPP Public Policy			

36	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			
37	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											
38	EDML 612	Multilingual Society	3	6				1 year GSE MA in Multil.Education			
39	EDML 620	Language and Literacy Development	3	6				2 year GSE MA in Multil.Education			
40	EDML 630	Language Policy and Education Reform Across Contexts	3	6				1 year GSE MA in Multil.Education			
41	EDML 691	Thesis Research II	6	12				2 year GSE MA in Multil.Education			
MSc Educational Leadership HE											
42	EDHE 692	Thesis Seminar III	4.5	9				2 year GSE Educ.Leadership			
43	EDHE 693	Thesis Seminar IV	9	18				2 year GSE Educ.Leadership			
44	EDUC 506	Academic English II	1.5	3				1 year GSE Educ.Leadership			
45	EDUC 508	Academic English IV	1.5	3				2 year GSE Educ.Leadership			
46	EDUC 511	Advanced English for Education Professionals II	3	6				1 year GSE MA in Multil.Education			
47	EDUC 513	English for Thesis Writing II	3	6				2 year GSE MA in Multil.Education			

48	EDUC 572	Kazakh for Professional Purposes	3	6				1 year GSE MA in Multil.Education, 1 year GSE PhD Education, 2 year GSE MA in Multil.Education, 2 year GSE PhD Education, 3 year GSE PhD Education, 4 year GSE PhD Education, Educational Leadership			
49	EDUC 600	Research Methods II	3	6				1 year GSE Educ.Leadership, 1 year GSE MA in Multil.Education			
50	EDUC 670	Internship Project	6	12				1 year GSE Educ.Leadership			
51	EDUC 671	Work-based project	6	12				1 year GSE Educ.Leadership			
52	EDUC 675	Learning to Work	4.5	9				2 year GSE Educ.Leadership			
MSc Educational Leadership IE											
53	EDIE 692	Thesis Seminar III	4.5	9				2 year GSE Educ.Leadership			
54	EDIE 693	Thesis Seminar IV	9	18				2 year GSE Educ.Leadership			
MSc Educational Leadership SE											
55	EDSE 692	Thesis Seminar III	4.5	9				2 year GSE Educ.Leadership			
56	EDSE 693	Thesis Seminar IV	9	18				2 year GSE Educ.Leadership			
Other											
Other											
57	T-MOA 106	Developing and Marketing Innovations	3	6							
58	T-OFF 510	Operations and Maintenance Management	1.5	3							
59	T-OFF 540	Condition Monitoring and Management	1.5	3							
SoM											
MMM											
60	MMMM 506	Biocomputing	1	2				1 year Gr SOM Molecular Medicine			
61	MMMM 507	Critical Analysis of the Contemporary Concepts in Molecular Medicine	3	6				1 year Gr SOM Molecular Medicine			
62	MMMM 508	Molecular Immunology	3	6				1 year Gr SOM Molecular Medicine			

63	MMMM 509	From the Bench to the Bedside: Drug Development and Clinical Trials	3	6				1 year Gr SOM Molecular Medicine			
64	MMMM 510	Natural Medicine	3	6				1 year Gr SOM Molecular Medicine			
65	MMMM 511	Research Methods in Molecular Biomedicine	3	6				1 year Gr SOM Molecular Medicine			
66	MMMM 512	Molecular Basis of Chronic Inflammation	1	2				1 year Gr SOM Molecular Medicine			
67	MMMM 690	Master Research Project	15	30				2 year Gr SOM Molecular Medicine			
MPTOX											
68	MPTX 504	Systemic Pharmacology I	3	6	MPTX 503 Principles of Pharmacology and Toxicology (5843) (C- and above)			1 year Gr SOM Pharmacology and Toxicology			
69	MPTX 507	Applied Toxicology	3	6	MPTX 503 Principles of Pharmacology and Toxicology (5843) (C- and above)			1 year Gr SOM Pharmacology and Toxicology			
70	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)			1 year Gr SOM Pharmacology and Toxicology			
71	MPTX 509	Drug Discovery and Development II	3	6	MPTX 505 Drug Discovery I (5845) (C- and above)			1 year Gr SOM Pharmacology and Toxicology			
72	MPTX 511E	Environmental Toxicology	3	6				1 year Gr SOM Pharmacology and Toxicology			
MSMR											
73	MSMR 502	Nutrition in Sports and Exercise	3	6				1 year Gr SOM Sports Medicine and Rehabilitation			
74	MSMR 506	Seminar in Sports Medicine	3	6				1 year Gr SOM Sports Medicine and Rehabilitation			
75	MSMR 509	Robots for Rehabilitation	3	6				1 year Gr SOM Sports Medicine and Rehabilitation			

76	MSMR 511	Introduction to Research Project	3	6				1 year Gr SOM Sports Medicine and Rehabilitation			
77	MSMR 601	Psychology of Sports and Rehabilitation	3	6				1 year Gr SOM Sports Medicine and Rehabilitation			
Public Health											
78	PUBH 512	Biostatistical Modeling and Sampling	3	6				1 year Gr SOM Public Health	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
79	PUBH 522	Advanced Analytical Epidemiology	3	6				1 year Gr SOM Public Health	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
80	PUBH 551	Health Services Management, Health Economic and Health Policy	3	6				1 year Gr SOM Public Health	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
81	PUBH 631	Social and Behavioral Sciences in Public Health	3	6				1 year Gr SOM Public Health	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
82	PUBH 641	Problem Investigations in Environmental Health	3	6				1 year Gr SOM Public Health	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
83	PUBH 651	Risk Management in Health Care	3	6				2 year Gr SOM Public Health			
84	PUBH 652	Applied Methods in Health Services Research	3	6				2 year Gr SOM Public Health			
85	PUBH 682	Master's Project Implementation	12	24				2 year Gr SOM Public Health			
SMG											
Mining Engineering											
86	MINE 507	Rock Excavation Methods	3	6				Mining Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Electrical and Electronic Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Robotics		

87	MINE 508	Advanced Rock Mechanics	3	6				Mining Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Electrical and Electronic Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Robotics		
88	MINE 509	Advanced Surface Mine Design	3	6				Mining Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Electrical and Electronic Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Robotics		
89	MINE 510	Advanced Underground Mine Design	3	6				Mining Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Electrical and Electronic Engineering, Engineering Management, Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Robotics		
90	MINE 691	Thesis II	15	30	MINE 690 Thesis I (4531) (P)			Mining Engineering			
Petroleum Engineering											
91	PETE 506	Advanced Reservoir Simulation	3	6				1 year Gr SMG Petroleum Engineering			
92	PETE 507	Advanced Reservoir Engineering	3	6				1 year Gr SMG Petroleum Engineering			
93	PETE 508	Advanced Production Engineering	3	6				1 year Gr SMG Petroleum Engineering			
94	PETE 600	Thesis I	6	12				2 year Gr SMG Petroleum Engineering			

95	PETE 606	Advanced Enhanced Oil Recovery	3	6				Petroleum Engineering			
96	PETE 613	Unconventional resources drilling	3	6				Petroleum Engineering			
97	PETE 614	Introduction to Geospatial, Earth Observation and Surveying Technologies for Onshore and Marine Petroleum and Mining Industry	3	6				Petroleum Engineering			
School of Mining and Geosciences											
98	SMG 520	Research Methods	3	6				1 year Gr SMG Mining Engineering, 1 year Gr SMG Petroleum Engineering			
SSH											
Area Studies											
99	EAS 502	Disciplinary Methodology	4	8				SSH	GSB, GSE, GSPP, SEDS, SMG, SoM		
100	EAS 503	Thesis I	7.5	15	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)						
101	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)			SSH			
102	EAS 511	Independent Study in Eurasian Studies	4	8							
Biological Science											
103	BIOL 502	Research Methods and Bioethics	3	6				Biological Sciences	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	

104	BIOL 570	Advanced Biotechnology	3	6				Biological Sciences	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	
105	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	
106	BIOL 590	Research Design and Project Planning	3	6				1 year Gr SSH Biological Sciences and Technologies			
107	BIOL 591	Cellular Biophysics	3	6				Biological Sciences	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	
108	BIOL 599	Master's Thesis Research	0	0				Biological Sciences			
109	BIOL 630	Advanced Neuroscience	3	6				Biological Sciences	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	
110	BIOL 637	Fundamentals of Advanced Microscopy	3	6				Biological Sciences	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	
111	BIOL 692	Master's Thesis	15	30	BIOL 691 Master's Thesis Research Proposal (5676) (B- and above)			Biological Sciences			
Chemistry											
112	CHEM 511	Theoretical Chemistry	3	6	CHEM 510 Principles of Physical Chemistry (5266) (C and above)			Chemistry	Biological Sciences	SEDS, SMG, SSH, SoM	
113	CHEM 515	Applied Colloid and Surfactant Science	3	6				Chemistry	Biological Sciences	SEDS, SMG, SSH, SoM	
114	CHEM 540	Organic Reactions and Mechanisms	3	6				Chemistry	Biological Sciences	SEDS, SMG, SSH, SoM	
115	CHEM 550	Selected Topics in Chemistry	3	6				Chemistry	Biological Sciences	SEDS, SMG, SSH, SoM	
116	CHEM 560	Directed research in chemistry	0	0				Chemistry	Biological Sciences	SEDS, SMG, SSH, SoM	
117	CHEM 592	Chemistry Seminar	3	6				Chemistry	Biological Sciences	SEDS, SMG, SSH, SoM	
118	CHEM 692	MSc Thesis in Chemistry	18	36	CHEM 691 Thesis Proposal (5858) (C- and above)			Chemistry			
Communication and Composition											
119	WCS 501	Science Communication	3	6				SSH	GSB, GSE, GSPP, SEDS, SMG, SoM		
Economics											

120	ECON 516	Empirical Industrial Organization	4	8	ECON 501 Microeconomics I (2187) (C- and above) AND ECON 531 Econometrics (2505) (C- and above)			Economics	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM
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	GSB, GSE, GSPP, SEDS, SMG, SoM
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	GSB, GSE, GSPP, SEDS, SMG, SoM
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	GSB, GSE, GSPP, SEDS, SMG, SoM
124	ECON 531	Econometrics	4	8	ECON 511 Statistics (2188) (C- and above) AND ECON 512 Mathematical Economics (2154) (C- and above)			Economics	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM
125	ECON 543	Topics in Macroeconomic Theory	4	8	ECON 502 Macroeconomics I (2186) (C- and above)			Economics	SSH	GSB, GSE, GSPP, SEDS, SMG, SoM
126	ECON 590	Thesis II	8	16	ECON 589 Thesis I (3714) (P)					
History, Philosophy and Religious Studies										
127	HST 533	Empire, Nation and Identity in Nineteenth-Century Eurasia	4	8				SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	
128	HST 590	History of Sexuality	4	8				SSH	GSB, GSE, GSPP, SEDS, SMG, SoM	
History, Philosophy and Religious Studies, History, Philosophy and Religious Studies										

129	HST 562/REL 562	History of Islam under Russian Rule	4	8				SSH	GSB, GSE, GSPP, SEDS, SMG, SoM		
130	REL 572/HST 572	History of Sufism in the Middle East and Central Asia	4	8				SSH	GSB, GSE, GSPP, SEDS, SMG, SoM		
Kazakh Language and Turkic Studies											
131	TUR 555	Eurasian Environments	4	8				GSB, GSE, GSPP, SEDS, SMG, SSH, SoM			
Languages, Literature and Linguistics											
132	LING 572	Language Ideologies	4	8				SSH	GSB, GSE, GSPP, SEDS, SMG, SoM		
Mathematics											
133	MATH 512	Optimization Methods and Techniques	3	6				Applied Mathematics	SEDS, SSH	GSB, GSE, GSPP, SMG, SoM	
134	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	
135	MATH 582	Mathematical Biology	3	6				Applied Mathematics	SEDS, SSH	GSB, GSE, GSPP, SMG, SoM	
136	MATH 601	Analytic Number Theory	3	6				Applied Mathematics	SEDS, SSH	GSB, GSE, GSPP, SMG, SoM	
137	MATH 691	Thesis Proposal	3	6	MATH 592 Research Seminar (5760) (C- and above)			Applied Mathematics	SEDS, SSH	GSB, GSE, GSPP, SMG, SoM	
138	MATH 692	Thesis	15	30	MATH 691 Thesis Proposal (5769) (P)						
Physics											
139	PHYS 510	Quantum Mechanics	3	6				Physics	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
140	PHYS 520	Statistical Physics	3	6				Physics	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
141	PHYS 574	Lasers and Photonics	3	6				Physics	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
142	PHYS 692	Thesis	21	42							
Political Science and International Relations											
143	PLS 510	Advanced Research I	4	8				Political Science and International Relations	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
144	PLS 516	Experimental Political Science	4	8	PLS 511 Advanced Research I (1631) (C- and above)			Political Science and International Relations	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		

145	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		
146	PLS 531	Politics and Governance of the Russian Federation	4	8				Political Science and International Relations	GSB, GSE, GSPP, SEDS, SMG, SSH, SoM		
147	PLS 557	International Security and Conflict	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)			Political Science and International Relations			
150	PLS 598	MA Thesis I	6	12							
151	PLS 599	MA Thesis II	10	20							
Sociology and Anthropology											
152	SOC 525	COVID-19: The sociocultural aspects of a pandemic	4	8				SSH	GSB, GSE, GSPP, SEDS, SMG, SoM		
SEDS											
Chemical and Materials Engineering											
153	MBME 600	Research Seminar	3	6				Biomedical Engineering	Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
154	MBME 602	Master Thesis II	12	24	MBME 601 Master Thesis I (5953) (P)			Biomedical Engineering	Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		

155	MBME 607	Advanced Tissue Engineering	3	6				Biomedical Engineering	Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
156	MBME 700	Strategies for Controlled Topical Delivery of Drugs	3	6				Biomedical Engineering	Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
157	MBME 705	Infectious Diseases and Antimicrobial Strategies	3	6				Biomedical Engineering	Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
158	MBME 708	Biomedical Imaging	3	6				Biomedical Engineering	Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
159	MCHME 600	Research Seminar	3	6				Chemical and Materials Engineering	Biomedical Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		

160	MCHME 602	MSc Thesis II	12	24				Chemical and Materials Engineering	Biomedical Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
161	MCHME 606	Advanced Heat and Mass Transfer	3	6				Chemical and Materials Engineering	Biomedical Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
162	MCHME 701	Advanced Chemical Thermodynamics	3	6				Chemical and Materials Engineering	Biomedical Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
163	MCHME 704	Advanced Safety, Reliability and Risk Engineering in Process Industries	3	6				Chemical and Materials Engineering	Biomedical Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
164	MCHME 707	Polymer Melt Fluid Mechanics and Processing	3	6				Chemical and Materials Engineering	Biomedical Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		

165	MCHME 713	Advanced Energy Materials and their Applications	3	6				Chemical and Materials Engineering	Biomedical Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
Civil Engineering											
166	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	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Mechanical and Aerospace Engineering		
167	MSC 601	Technical Communication	3	6				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 Computer Science, 2 year Gr SEDS Electrical and Computer Engineering, 2 year Gr SEDS Mechanical and Aerospace Engineering, 2 year Gr SEDS Robotics and Mechatronics	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 Computer Science, 1 year Gr SEDS Electrical and Computer Engineering, 1 year Gr SEDS Mechanical and Aerospace Engineering, 1 year Gr SEDS Robotics and Mechatronics		
Civil and Environmental Engineering											
168	EMEM 510	Managerial Accounting	2	4				Engineering Management			
169	EMEM 511	Business Strategy	2	4				Engineering Management			
170	EMEM 513	Entrepreneurship	2	4				Engineering Management			
171	EMEM 514	Finance	2	4				Engineering Management			
172	EMEM 516	Management of Organizations	2	4				Engineering Management			

173	EMEM 517	Marketing	2	4				Engineering Management			
174	EMEM 527	Globalization and Engineering	3	6				Engineering Management			
175	EMEM 529	Capstone Project	8	16				Engineering Management			
176	EMEM 535	Managing Product and Service Development	3	6				Engineering Management			
177	EMEM 545	Business Communication	2	4				Engineering Management			
178	EMEM 548	Understanding and Predicting Consumer Behavior	2	4				Engineering Management			
179	MCEE 600	Research Seminar	3	6				Civil and Environmental Engineering	Biomedical Engineering, Chemical and Materials Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
180	MCEE 602	MSc Thesis II	12	24				Civil and Environmental Engineering	Biomedical Engineering, Chemical and Materials Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
181	MCEE 606	Advanced Project Management	3	6				Civil and Environmental Engineering	Biomedical Engineering, Chemical and Materials Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
182	MCEE 701	Advanced Concrete Technology	3	6				Civil and Environmental Engineering	Biomedical Engineering, Chemical and Materials Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		

183	MCEE 704	Contaminated Site Management and Soil Treatment Technologies	3	6				Civil and Environmental Engineering	Biomedical Engineering, Chemical and Materials Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
184	MCEE 706	Concrete Repair and Maintenance	3	6				Civil and Environmental Engineering	Biomedical Engineering, Chemical and Materials Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
185	MCEE 710	Green Building - Concept, Design, Construction, and Operation	3	6				Civil and Environmental Engineering	Biomedical Engineering, Chemical and Materials Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
186	MCEE 711	Soil Improvement and Stabilization	3	6				Civil and Environmental Engineering	Biomedical Engineering, Chemical and Materials Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
Computer Science											
187	CSCI 502	Hardware Software Co- Design	3	6	CSCI 501 Software Principles and Practice (2408) (C- and above)			Computer Science, Robotics	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering		

188	CSCI 545	Big Data Analytics	3	6				Data Science	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
189	CSCI 547	Algorithmic Trading	3	6				Computer Science, Data Science	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
190	CSCI 581	Acquisition and Analysis of Biomedical Data	3	6				Computer Science, Data Science	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
191	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	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
192	CSCI 694	Thesis	15	30				Computer Science			
193	DS 504	Data Mining and Decision Support	3	6				Data Science	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
194	DS 694	Thesis	15	30	DS 693 Thesis Proposal (5915) (P)			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 602	Master Thesis II	12	24				Electrical and Computer Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
198	MECE 606	Embedded Systems and Applications	3	6				Electrical and Computer Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
199	MECE 700	Industrial and Commercial Power System	3	6				Electrical and Computer Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
200	MECE 701	Internet of Things	3	6				Electrical and Computer Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
201	MECE 704	Fundamentals of Signal Processing	3	6				Electrical and Computer Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Engineering Management, Mechanical and Aerospace Engineering, Robotics		

202	MECE 707	Advanced Electronic Circuits	3	6				Electrical and Computer Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
203	MECE 717	Pattern Recognition and Machine Learning	3	6				Electrical and Computer Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Engineering Management, Mechanical and Aerospace Engineering, Robotics		
Mechanical and Aerospace Engineering											
204	MMAE 600	Research Seminar	3	6				Mechanical and Aerospace Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Robotics		
205	MMAE 602	Master Thesis II	12	24	MMAE 601 Master Thesis I (5014) (P)			Mechanical and Aerospace Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Robotics		
206	MMAE 604	Advanced Computational Fluid Dynamics and Heat Transfer in Mechanical Engineering	3	6				Mechanical and Aerospace Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Robotics		

207	MMAE 700	Advanced Statistics and Probability	3	6				Mechanical and Aerospace Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Robotics		
208	MMAE 701	Numerical Techniques for Engineers	3	6				Mechanical and Aerospace Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Robotics		
209	MMAE 704	Design and Manufacturing with Environmental Concern	3	6				Mechanical and Aerospace Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Robotics		
210	MMAE 705	Design Optimization	3	6				Mechanical and Aerospace Engineering	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Robotics		
211	MMAE 716	Digital Transformation Concepts	3	6				Engineering Management, 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	Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Computer Science, Data Science, Electrical and Computer Engineering, Engineering Management, Mechanical and Aerospace Engineering		

213	ROBT 692	Thesis	15	30	ROBT 691 Thesis Proposal (5930) (P)			Robotics			
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