

University of Management and Technology
List of Minor Courses

Minors offered in HSM		
Accounting and Finance		
Course Code	Minor Courses List	Pre-Requisites
ACT130	Financial Accounting	
FN340	Business Finance	
IB380	Introduction to Islamic Banking and Finance	
AC230	Cost Accounting	Financial Accounting AC130
MG221	Accountant in Business	
FN440	Financial Management	Business Finance FN340
Economics		
Course Code	Minor Courses List	Pre-Requisites
EC111	Principles of Microeconomics	
EC121	Principles of Macroeconomics	
EC270	Issues in Pakistan's Economy	
EC355	Theory of Development Economics	
EC345	Islamic Economics	
EC360	Managerial Economics	
Information Systems		
Course Code	Minor Courses List	Pre-Requisites
IS250	Database Management Systems	Computer Applications IS125
IS371	Introduction to Data Science	
IS412	IT Project Management	
IS495	Enterprise Resource Planning	
IS351	Datawarehousing and Data Mining	
IS391	Business Analytics	
Human Resource Management		
Course Code	Minor Courses List	Pre-Requisites
MG330	Organizational Behavior	Principles of Management MG120
MG465	Managing Development in Organization	
MG470	Managing Knowledge in Organization	
MG490	International Business	
MG475	Managing Alliance and Partnership	
Marketing		
Course Code	Minor Courses List	Pre-Requisites
MK210	Principles of Marketing	Principles of Marketing MK210
MK450	Consumer Behaviour	
MK477	Digital Marketing	
MK401	Retail Marketing	
MK470	Selling Skills	
Operations and Supply Chain		
Course Code	Minor Courses List	Pre-Requisites
OM345	Production Operations Management	
OM460	Total Quality Management	
OM470	Project Management	
SM476	Supply Chain Design	
SM473	Supply Chain Performance	

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Minors offered in SST		
Computer Science		
Course Code	Minor Courses List	Pre-Requisites
CC1021	Programming Fundamentals	
CC1022	Object Oriented Programming	Programming Fundamentals
CC2042	Data Structures and Algorithms	Object Oriented Programming
CC 2141	Database Systems	Data Structures and Algorithms
CC3071	Computer Networks	
CS3044	Analysis of Algorithms	Data Structures and Algorithms
CC3121	Information Security '	Computer Networks
CS444	Bioinformatics	
CS4176	Internet of Things	
Software Engineering		
Course Code	Minor Courses List	Pre-Requisites
CC2101	Software Engineering	
SE2102	Software Requirement Engineering	Software Engineering
SE3103	Software Design and Architecture	
SE3162	Web Engineering	
SE4114	Human Computer Interaction	
SE4112	Software Quality Engineering	Software Engineering
SE4192	Software Project Management	
CS458	Data Mining	
Information Technology		
Course Code	Minor Courses List	Pre-Requisites
CC2101	Software Engineering	
IT2231	IT Infrastructure	
CC3071	Computer Networks	
CC3121	Information Security	Computer Networks
IT3161	Web Technologies	
IT3171	Virtual Systems and Sendeeds	
IT2231	IT Infrastructure	
IT4191	IT Project Management	
HU4092	Professional Practices	
CS439	Cloud Computing	
Artificial Intelligence		
Course Code	Minor Courses List	Pre-Requisites
AI2101	Programming for Artificial Intelligence	
CC2101	Machine Learning	Programming for Artificial Intelligence
GDD2251	Game Design and Development -1	
CS3227	Knowledge Representation & Reasoning	Programming for Artificial Intelligence
GDD3255	Artificial Intelligence for Games	
AI4152	Deep Learning and Neural Networks	Programming for Artificial Intelligence
CS438	Natural Language Processing	Deep Learning and Neural Networks
CS456	Computer Vision	
Data Science		
Course Code	Minor Courses List	Pre-Requisites
DS2136	Introduction to Data Science	
CC2141	Database Systems	

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AI3159	Introduction to Data Analytics	
DS3052	Advanced Statistics	
DS3137	Data Warehousing and Business Intelligence	Introduction to Data Science
DS3139	Data Visualization	Data Warehousing and Business Intelligence
CS4134	Big Data Analytics	Introduction to Data Science
CS444	Bioinformatics	
CS453	Big Data Programming	Big Data Analytics
Cyber Security		
Course Code	Minor Courses List	Pre-Requisites
CC3121	Information Security	
CYS2001	Introduction to Cyber Security	Information Security
CC2141	Database Systems	
CYS3021	Digital Forensics	Introduction to Cyber Security
CYS3022	Network Security	
CYS3025	Information Assurance	
CC3071	Computer Networks	
CYS3117	Cyber Laws & Cyber Crime (Cyber Warfare)	
CYS4115	Infrastructure Security	
CYS4116	Ethical Hacking	
Minors offered in SSC		
Chemistry		
Course Code	Minor Courses List	Pre-Requisites
CH-100	Principles of Chemistry	
CH-205	Environmental Chemistry	
CH-208	Applied Chemistry	
CH-210	Chemistry in Every day Life	
CH-311	Industrial Chemistry-I	
CH-315	Industrial Chemistry-II	
CH-417	Spectroscopy-Theory & Applications	
CH-419	Separation Techniques	
CH-440	Industrial Safety and Health	
CH-428	Environmental Analytical Chemistry	
CH-435	Fundamentals of Computational Chemistry	
Physics		
Course Code	Minor Courses List	Pre-Requisites
PH-101	Mechanics	
PH-102	Electricity and Magnetism	
PH-103	Waves and Oscillations	
PH-204	Modern Physics	
PH-307	Mathematical Methods of Physics	
PH-308	Quantum Mechanics	
PH-205	Heat and Thermodynamics	
PH-206	Optics	
PH-316	Electronics	
PH-417	Nuclear Physics	
PH-421	Solid State Physics	

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Life Sciences (Biotechnology)		
Course Code	Minor Courses List	Pre-Requisites
BT402	Agricultural Biotechnology	
MB312	Genetic Engineering	
BT314	Health Biotechnology	
BT404	Industrial Biotechnology	
BT101	Cell Biology	
BT111	Classical Genetics	
BT213	Microbiology	
BT311	Analytical Techniques in Biotechnology	
Life Sciences (Biochemistry)		
Course Code	Minor Courses List	Pre-Requisites
BC404	Industrial Biochemistry	
BC314	Clinical Biochemistry	
BC402	Nutritional Biochemistry	
BC313	Metabolism and Bioenergetics	
BT101	Cell Biology	
BC211	Amino Acids, Proteins and Nucleic Acids	
BC202	Carbohydrates and Lipids	
BC311	Analytical Techniques in Biochemistry	
Life Sciences (Microbiology)		
Course Code	Minor Courses List	Pre-Requisites
MB203	Fundamentals of Microbiology	
MB401	Food Microbiology	
MB311	Clinical Bacteriology and Virology	
MB302	Industrial Microbiology	
BT101	Cell Biology	
BT201	Genetics	
MB202	General Virology	
MB402	Epidemiology and Public Health	
Life Sciences (Zoology)		
Course Code	Minor Courses List	Pre-Requisites
ZL312	Animal Form and Function	
ZL403	Developmental Biology	
ZL402	Wildlife	
ZL420	Fisheries and Aquaculture	
BT101	Cell Biology	
BT201	Genetics	
ZL112	Biodiversity of Animals	
ZL302	Animal Behavior	

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Mathematics		
Course Code	Minor Courses List	Pre-Requisites
MA-218	Ordinary Differential Equations	
MA-308	Group Theory	
MA-330	Vector and Tensor Analysis	
MA-324	Complex Analysis	
MA-100	Calculus with Applications	
MA-321	Partial Differential Equations	
MA104	Extensions of Set Theory	
MA-312	Real Analysis	
MA-223	Computational Physics & Numerical Analysis	
MA-407	Fluid Mechanics	
MA-402	Mathematics Modeling	
MA-403	Introduction to Graph Theory	
Minors offered in SSS&H		
Sociology		
Course Code	Minor Courses List	Pre-Requisites
SOC 101	Sociological Theories (Contemporary)	
SOC 308	Sociological Research Methods	
SOC 411	Sociology of Health and Illness	
SOC 440	Criminology	
SOC 302	Cultural Anthropology	
SOC 333	Population Studies and Social Demographics	
SOC 451	Sociology of Human Rights	
SOC 305	NGO Management	
Minors offered in ILA		
Linguistics and Communication		
Course Code	Minor Courses List	Pre-Requisites
EN-301	Presentation skills	
LL-117	Creative writing	
TDS-104	Critical Thinking	
English and Literary Studies		
Course Code	Minor Courses List	Pre-Requisites
LR-411	Visual Arts	
LR-417	Theatre studies	
LR-329	Social and cultural History of thr Subcontinent	
Minors offered in SPP		
Linguistics and Communication		
Course Code	Minor Courses List	Pre-Requisites
CP-203	Brain, Bio chemistry & Behavior	
CP-403	Social Psychology	
PSY-209	Perspective Psychology	
PSY-206	Personality Theories	
PSY-315	Cognitive Psychology	
PSY-306	Developmental Psychology	
PSY-310	Gender Psychology	
Psy-496	Cross-Cultural Psychology	

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Minors offered in SFAS		
BS Food Science and Technology		
Course Code	Minor Courses List	Pre-Requisites
FST1102	Introduction to Food Science and Technology	
FST1107	Food Safety and Hygiene	
FST1106	Food Processing and Preservation	
FQ-203	Introduction to Food Supply Chain	
FT205	Basic Agriculture	
BS Human Nutrition and Dietetics		
Course Code	Minor Courses List	Pre-Requisites
HND101	Fundamentals of Human Nutrition	
HND102	Macronutrients in Human Nutrition	
HND203	Micronutrients in Human Nutrition	
FST 2105	Community Nutrition	
HND305	Functional Foods and Nutraceuticals	
HND209	Public Health	
HND-306	Global Hunger and Food Security	
Minors offered in IAS		
BS Aviation Professional Pilot		
Course Code	Minor Courses List	Pre-Requisites
PT101	Principles of Flights	
PT123	Radio Telephony	
PT231	Meteorology	
PT312	Practical Flight Training-I	
PT223	Aircraft General Knowledge	Principles of Flights
PT313	Practical Flight Training-II	Practical Flight Training-I
AS101	Introduction to Aviation	
PT122	Air Law	
AS220	Aviation English	
BS Aviation Management		
Course Code	Minor Courses List	Pre-Requisites
AS101	Introduction to Aviation	
AM114	Aviation Sciences	
AM161	Aviation Law	
AM124	Airport Fundamentals	Introduction to Aviation
AM201	Airspace and Air Traffic Management	
AS220	Aviation English	Composition and Communication EN125
AM212	A/C Performance and Flight Simulations	Airspace and Air Traffic Management
AM212L	A/C Performance and Flight Simulations (Lab)	
AM221	Aviation Safety Management	
AM417	Environmental Factors in Aviation	
AM411	Aviation Security	

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Minors offered in SEN		
Electical Engineering (Electronic Systems)		
Course Code	Minor Courses List	Pre-Requisites
EE110	Circuit Analysis	
EE212	Electrical Network Analysis	
EE323	Electronic System Design	
EE445	Digital Electronics	
EE446	Power Electronics	
EE455	Industrial Electronics	
Electical Engineering (Integrated Circuit Design)		
Course Code	Minor Courses List	Pre-Requisites
EE110	Circuit Analysis	
EE208	Electronic Devices and Circuits	
EE449	CMOS Analog Integrated Circuits	
EE450	CMOS Digital Integrated Circuits	
EE458	VLSI Circuit Design	
Electical Engineering (Network and Communication Technologies)		
Course Code	Minor Courses List	Pre-Requisites
EE330	Computer Networks	
EE410	Communication Systems	
EE420	Digital Communications	
EE480	Wireless Communications	
EE461	Network and Protocols	
Electical Engineering (Renewable Energy Technologies)		
Course Code	Minor Courses List	Pre-Requisites
EE407	Renewable Electrical Energy Resources	
EE422	Power Distribution and Utilization	
EE424	Electrical Machine Design	
EE446	Power Electronics	
Electical Engineering (Electrical Power and Energy Conversion)		
Course Code	Minor Courses List	Pre-Requisites
EE340	Electrical Machines	
EE360	Control Systems	
EE424	Electrical Machine Design	
EE446	Power Electronics	
Civil Engineering (Structural Engineering)		
Course Code	Minor Courses List	Pre-Requisites
CE 102	Engineering Mechanics	
CE 203	Mechanics of Solids	
CE 204	Structural Analysis -I	
CE 306	Structural Analysis - II	
CE 363	Plain and Reinforced Concrete -I	
CE 461	Steel Structures	

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Civil Engineering (Geotechnical Engineering)		
Course Code	Minor Courses List	Pre-Requisites
CE 102	Engineering Mechanics	
CE 203	Mechanics of Solids	
CE 242	Geotechnical Engineering -I	
CE 343	Geotechnical Engineering - II	
CE 445	Foundation Engineering	
CE 474	Pavement Engineering	
Civil Engineering (Hydraulics Engineering)		
Course Code	Minor Courses List	Pre-Requisites
CE 102	Engineering Mechanics	
CE 251	Fluid Mechanics	
CE 352	Advanced Fluid Mechanics	
MS 303	Hydrology and Water Resources Management	
CE 457	Hydraulics Engineering	
CE 459	Irrigation Engineering	
Mechanical Engineering (Mechanical Engineering Design)		
Course Code	Minor Courses List	Pre-Requisites
ME 122	Engineering Mechanics-I: Statics	
ME 123	Engineering Mechanics-II: Dynamics	
ME 221	Mechanics of Materials-I	
ME 222	Mechanics of Machines	
ME 223	Machine Design & CAD-I	
ME 323	Mechanics of Materials-II	
ME 321	Machine Design & CAD-II	
ME 421	Mechanical Vibrations	
ME 422	Finite Element Analysis	
Mechanical Engineering (Thermofluids)		
Course Code	Minor Courses List	Pre-Requisites
ME 131	Thermodynamics-I	
ME 232	Thermodynamics-II	
ME 231	Fluid Mechanics-I	
ME 331	Fluid Mechanics-II	
ME 332	Heat & Mass Transfer	
ME 333	Refrigeration & Air Conditioning	
ME 431	Internal Combustion Engines	
ME 432	Power Plants	
ME 434	Computational Fluid Dynamics (CFD)	
Industrial Engineering (Engineering Management)		
Course Code	Minor Courses List	Pre-Requisites
EF 202	Operations Research	
CS 312	Computer Simulations	
MS 301	Project Management	
IE 324	Production Planning and Control	
EF 431	Industrial Facility Design	
IE 412	Supply Chain Management	
IE 422	Industrial Maintenance	

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Industrial Engineering (Quality Management)		
Course Code	Minor Courses List	Pre-Requisites
EF 242	Mechanical Measurement and Metrology	
EF 243	Statistical Quality Control	
IE 324	Production planning and control	
IE 401	Total Quality Management	
IE 408	Six Sigma	
IE 413	Health Safety and Environment	