UMT

Estd. 1990

RANKED # 1

THE World University Rankings 2023

PRIVATE SECTOR UNIVERSITY IN PAKISTAN

Get Ahead Faster with Industry Specific Minor

Pakistan's Premier General Research University

GREAT PLACE - GREAT LEARNING - GREAT FUTURE

Eligibility Criteria for Opting Minors

The Minor courses can be registered by the students of Undergraduate programs

A student may register for Minor after successful completion of 3 semesters

The minimum CGPA required for opting a Minor is 2.60 CGPA for Undergraduate Programs

Why Get A Minor Specialization?

- Career Flexibility
- Better Employability Options
- Interdisciplinary Understanding
- Acquisition of Diverse Skills and Knowledge
- Readiness for the Dynamic Job Market
- Personal Growth and Development

Key Points:

- All students having CGPA 2.60 & above can register up to 21 credit hours opting for minors
- Minor courses with their titles will be reflected on the student's transcript
- Minor courses CGPA will have no effect on SGPA/ CGPA
- Credit hours for minor courses will be in addition to the standard requirement of degree
- "W" and "F" grades in case of a Minor subject will not be reflected on the student's transcript
- The student has to complete a minimum of 12 CHs (4 courses) to earn a Minor
- In case the student does not clear the minimum required courses for minors, then the remaining courses with pass grades will be reflected in the transcript as 'Additional Courses"
- The tuition fee of each minor course is Rs 7500/- per semester only.
- Recognition (sash, certificates, medals etc.) for the students who complete requirements of Minor Courses in Rector Merit Ceremonies irrespective of their CGPA
- Once a student has selected a stream of minors, they will have to pursue that specific stream.

Knowledge Unit of Science (KUSC)

Chemistry

List of Minor Courses

	Course Code	Credit Hours
Principles of Chemistry	CH100	3
Environmental Chemistry	CH205	3
Applied Chemistry	CH208	3
Chemistry in Every day Life	CH210	3
Industrial Chemistry-I	CH311	3
Industrial Chemistry-II	CH315	3
Spectroscopy-Theory & Applications	CH417	3
Separation Techniques	CH419	3
Environmental Analytical Chemistry	CH428	3
Fundamentals of Computational Chemistry	CH435	3
Industrial Safety and Health	CH440	3

Mathematics

List of Minor Courses

	Course Code	Credit Hours
Calculus with Applications	MA100	3
Extensions of Set Theory	MA104	3
Ordinary Differential Equations	MA218	3
Computational Physics & Numerical Analysis	MA223	3
Group Theory	MA308	3
Real Analysis	MA312	3
Partial Differential Equations	MA321	3
Complex Analysis	MA324	3
Vector and Tensor Analysis	MA330	3
Mathematics Modeling	MA402	3
Introduction to Graph Theory	MA403	3
Fluid Mechanics	MA407	3

Physics

List of Minor Courses

	Course Code	Credit Hours
Mechanics	PH101	3
Electricity and Magnetism	PH102	3
Waves and Oscillations	PH103	3
Modern Physics	PH204	3
Heat and Thermodynamics	PH205	3
Optics	PH206	3
Mathematical Methods of Physics	PH307	3
Quantum Mechanics	PH308	3
Electronics	PH316	3
Nuclear Physics	PH417	3
Solid State Physics	PH421	3

Life Sciences (Biotechnology)

List of Minor Courses

	Course Code	Credit Hours
Cell Biology	BT101	3
Genetics	BT201	3
General Virology	MB202	3
Fundamentals of Microbiology	MB203	3
Industrial Microbiology	MB302	3
Clinical Bacteriology and Virology	MB311	3
Food Microbiology	MB401	3
Epidemiology and Public Health	MB402	3

Life Sciences (Biochemistry)

List of Minor Courses

	Course Code	Credit Hours
■ Industrial Biochemistry	BC404	3
■ Clinical Biochemistry	BC314	3
■ Nutritional Biochemistry	BC402	3
■ Metabolism and Bioenergetics	BC313	3
■ Cell Biology	BT101	3
■ Amino Acids, Proteins and Nucleic Acids	BC211	3
■ Carbohydrates and Lipids	BC202	3
■ Analytical Techniques in Biochemistry	BC311	3

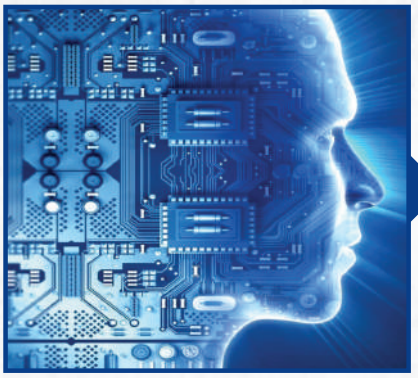
Knowledge Unit of Bussiness Ecnomics Accountancy and Commerce (KUBEAC)

Accounting and Finance

List of Minor Courses

	Course Code	Credit Hours
■ Financial Accounting	ACT130	3
■ Accountant in Business	MG221	3
■ Cost Accounting	AC230	3
■ Business Finance	FN340	3
■ Financial Management	FN440	3

Information Systems



List of Minor Courses

	Course Code	Credit Hours
■ Database Management Systems	IS250	3
■ Datawarehousing and Data Mining	IS351	3
■ Introduction to Data Science	IS371	3
■ Business Analytics	IS391	3
■ IT Project Management	IS412	3
■ Enterprise Resource Planning	IS495	3

Marketing

List of Minor Courses

	Course Code	Credit Hours
■ Principles of Marketing	MK210	3
■ Retail Marketing	MK401	3
■ Consumer Behaviour	MK450	3
■ Selling Skills	MK470	3
■ Digital Marketing	MK477	3

Knowledge Unit of Systems and Technology (KUST)

Data Science (KUST Students)

Core: Core courses must be passed before taking any elective. Every SST student enrolled in Minor must pass the following two (2) core courses:

	Course Code	Credit Hours
■ Advanced Statistics	DS3052	3
■ Introduction to Data Science (pre-req DS3052)	DS2136	3

Electives: Must pass any two (2) courses from the following list of electives but cannot take both Machine Learning and Deep Learning:

	Course Code	Credit Hours
■ Big Data Analytics	DS3136	3
■ Data Warehousing and Business Intelligence	DS3137	3
■ Data Visualization	DS3139	3
■ Deep Learning	CS4152	3
■ Cloud Computing	CS439	3
■ Machine Learning	CS446	3
■ Data Mining	CS458	3

Data Science (Non-KUST Students)

Eligibility Criteria: Student has studied the following course or its equivalent in their undergraduate or they have to enroll in the following course in order to be eligible to enroll in this Minor along with core courses.

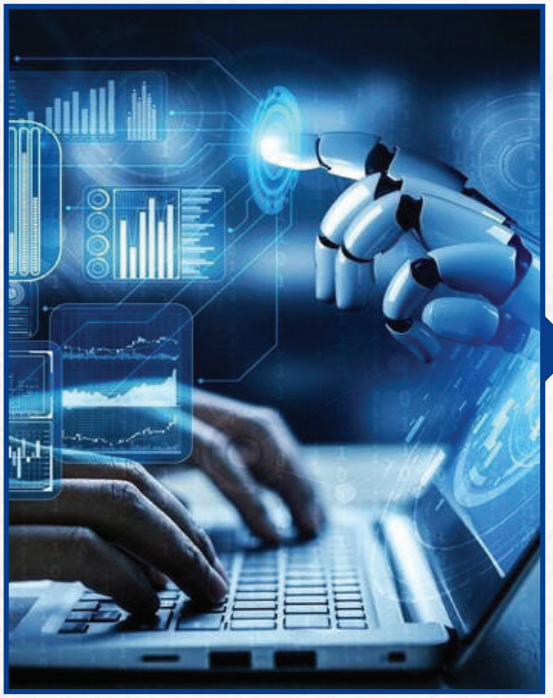
	Course Code	Credit Hours
■ Probability & Statistics	MA150	3

Core: Core courses must be passed before taking any elective. Every student enrolled in this minor must pass the following two (2) core courses:

	Course Code	Credit Hours
■ Programming Fundamentals	CC1021	3+1
■ Introduction to Data Science (pre-req CC1021)	DS2136	3

Electives: Must pass any two (2) courses from the following list of electives but cannot take both Machine Learning and Deep Learning:

	Course Code	Credit Hours
■ Data Mining	CS458	3
■ Machine Learning	CS446	3
■ Big Data Analytics	DS3136	3
■ Data Visualization	DS3139	3
■ Data Warehousing and Business Intelligence	CS474	3
■ Deep Learning	CS4152	3



Computer Science

Core: Core courses must be passed before taking any elective. Every student enrolled in this minor must pass the following three (3) core courses:

	Course Code	Credit Hours
■ Programming Fundamentals	CC1021	3+1
■ Object Oriented Programming (pre-req CC1021)	CC1022	3+1
■ Data Structures & Algorithms (pre-req CC1022)	CC2042	3+1

Electives: Must pass any one (1) course from the following list of electives:

	Course Code	Credit Hours
■ Database Systems	CC230	3+1
■ Computer Networks	CC251	2+1
■ Operating Systems	CC323	3
■ Analysis of Algorithms	CC342	3

Data Science (Non-KUST Students)

Eligibility Criteria: Student has studied the following course or its equivalent in their undergraduate or they have to enroll in the following course in order to be eligible to enroll in this Minor along with core courses.

	Course Code	Credit Hours
■ Probability & Statistics	MA150	3

Core: Core courses must be passed before taking any elective. Every student enrolled in this minor must pass the following two (2) core courses:

	Course Code	Credit Hours
■ Programming Fundamentals	CC1021	3+1
■ Introduction to Data Science (pre-req CC1021)	DS2136	3

Electives: Must pass any two (2) courses from the following list of electives but cannot take both Machine Learning and Deep Learning:

	Course Code	Credit Hours
■ Data Mining	CS458	3
■ Machine Learning	CS446	3
■ Big Data Analytics	DS3136	3
■ Data Visualization	DS3139	3
■ Data Warehousing and Business Intelligence	CS474	3
■ Deep Learning	CS4152	3

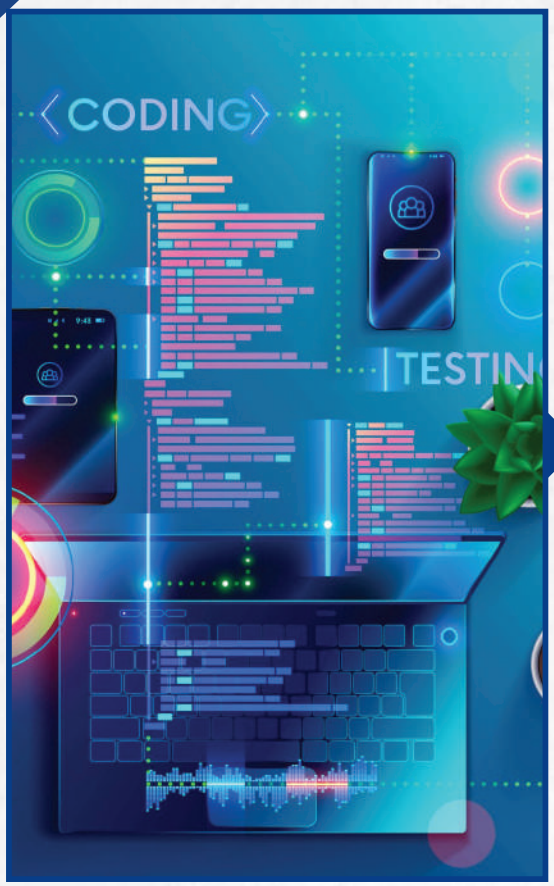
Computer Science

Core: Core courses must be passed before taking any elective. Every student enrolled in this minor must pass the following three (3) core courses:

	Course Code	Credit Hours
■ Programming Fundamentals	CC1021	3+1
■ Object Oriented Programming (pre-req CC1021)	CC1022	3+1
■ Data Structures & Algorithms (pre-req CC1022)	CC2042	3+1

Electives: Must pass any one (1) course from the following list of electives:

	Course Code	Credit Hours
■ Database Systems	CC230	3+1
■ Computer Networks	CC251	2+1
■ Operating Systems	CC323	3
■ Analysis of Algorithms	CC342	3



Software Application Development (Non-KUST Students)

Core: Core courses must be passed before taking any elective. Every student enrolled in this minor must pass the following three (3) core courses:

	Course Code	Credit Hours
■ Programming Fundamentals	CC1021	3+1
■ Object Oriented Programming (pre-req CC1021)	CC1022	3+1
■ Database Systems (pre-req CC1022)	CC2141	3+1

Electives: Must pass any one (1) course from the following list of electives:

	Course Code	Credit Hours
■ Web Application Development	IT310	3
■ Mobile Application Development	CS436	3
■ Game Design and Development	CS443	3
■ iPhone Application Development	CS465	3
■ Advanced Web Technologies	CS554	3

Internet of Things (Non-KUST Students)

Core: Core courses must be passed before taking any elective. Every student enrolled in this minor must pass the following three (3) core courses:

	Course Code	Credit Hours
■ Programming Fundamentals	CC1021	3+1
■ Digital Logic Design	CS2031	3+1
■ Internet of Things (pre-req CC1021 and CS2031)	CS4176	3

Electives: Must pass any one (1) course from the following list of electives:

	Course Code	Credit Hours
■ Embedded Systems	CS4033	3
■ Cloud Computing	CS439	3
■ Computer Vision	CS456	3
■ Robotics	CS5113W	3

Artificial Intelligence (Non-KUST Students)

Core: Core courses must be passed before taking any elective. Every student enrolled in this minor must pass the following three (3) core courses:

	Course Code	Credit Hours
■ Programming Fundamentals	CC1021	3+1
■ Programming for AI (pre-req CC1021)	AI2101	3+1
■ Machine Learning (pre-req AI2101)	CS446	3

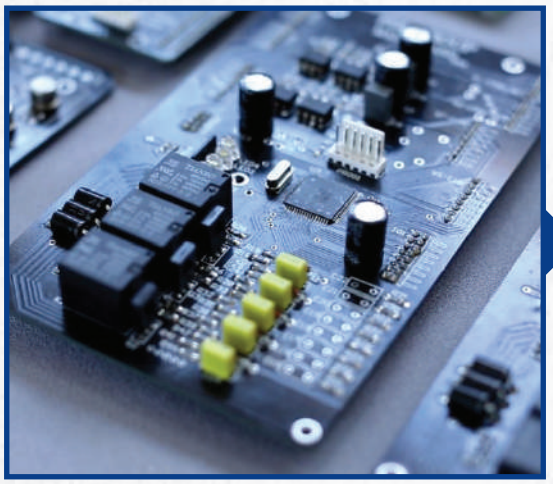
Electives: Must pass any one (1) course from the following list of electives:

	Course Code	Credit Hours
■ Artificial Intelligence	CS3151	3
■ Data Visualization	DS3139	3
■ Deep Learning and Neural Networks	AI4152	3
■ Natural Language Processing	CS438	3

Knowledge Unit of Engineering (KUEN)

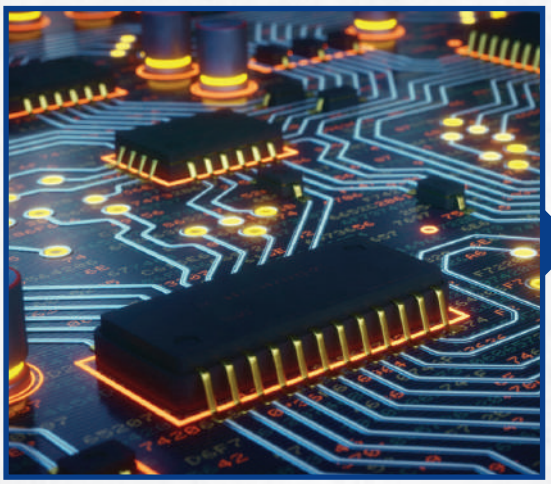
Electrical Engineering

(Electronic Systems)



List of Minor Courses

	Course Code	Credit Hours
■ Circuit Analysis	EE110	3
■ Electrical Network Analysis	EE212	3
■ Electronic System Design	EE323	3
■ Digital Electronics	EE445	3
■ Power Electronics	EE446	3
■ Industrial Electronics	EE455	3



Electrical Engineering

(Integrated Circuit Design)

List of Minor Courses

	Course Code	Credit Hours
Circuit Analysis	EE110	3
Electronic Devices and Circuits	EE208	3
CMOS Analog Integrated Circuits	EE449	3
CMOS Digital Integrated Circuits	EE450	3
VLSI Circuit Design	EE458	3

Electrical Engineering

(Network and Communication Technologies)

List of Minor Courses

	Course Code	Credit Hours
Computer Networks	EE330	3
Communication Systems	EE410	3
Digital Communications	EE420	3
Network and Protocols	EE461	3
Wireless Communications	EE480	3

Electrical Engineering

(Renewable Energy Technologies)

List of Minor Courses

	Course Code	Credit Hours
Renewable Electrical Energy Resources	EE407	3
Power Distribution and Utilization	EE422	3
Electrical Machine Design	EE424	3
Power Electronics	EE446	3

Mechanical Engineering

(Thermofluids)

List of Minor Courses

	Course Code	Credit Hours
■ Thermodynamics-I	ME131	3
■ Thermodynamics-II	ME232	3
■ Fluid Mechanics-I	ME231	3
■ Fluid Mechanics-II	ME331	3
■ Heat & Mass Transfer	ME332	3
■ Refrigeration & Air Conditioning	ME333	3
■ Internal Combustion Engines	ME431	3
■ Power Plants	ME432	3
■ Computational Fluid Dynamics (CFD)	ME434	3

Knowledge Unit of Design and Textiles (KUDT)

Visual Communication Design

List of Minor Courses

	Course Code	Credit Hours
Digital communication - I	DC101	0+2
Design Fundamentals	GD207	1+2
Graphic Illustration	GD209	0+2
Corporate Design	GD324	1+2
Interactive Media	GD316	1+2
Motion Graphics	GD321	0+2
Concept Art	GD325	0+2

Textile Design

List of Minor Courses

	Course Code	Credit Hours
Digital communication - I	DC101	0+2
Color Theory and Application	CT107	1+2
Textile Drawing	TD218	0+2
Design Foundation	TD212	1+2
Surface Design	TD319	1+2
Textile Printing Techniques	TD304	1+2

Fashion Design

List of Minor Courses

	Course Code	Credit Hours
Color Theory and Application	CT107	1+2
Fundamentals of Flat Pattern	FD222	0+2
Basics of Draping	FD223	0+2
Digital Fashion and Forecasting	FD227	0+2
Fashion Illustration	FD315	0+2
Surface Design	TD319	1+2

Textile and Clothing

List of Minor Courses

	Course Code	Credit Hours
Intro. to Textile and Clothing	TL105	3+0
Fabric Manufacturing	TL206	3+1
Textile Wet Processing	TL214	2+1
Garment Manufacturing	TL208	3+1
Garment Illustration	TL315	1+2
Anthropometry and Clothing Construction	TL313	1+2

UMT
MY FIRST
CHOICE

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