Department of Computer Science & IT

Vision

To be a leading department in the field of Computer Science and Information Technology, recognized for its commitment to academic excellence, innovation, and research, producing graduates and scholars who drive technological advancements and address global challenges.

Mission

Our mission is to provide quality education and cutting-edge research opportunities in Computer Science and Information Technology, preparing students for successful careers and leadership roles in diverse fields. We are dedicated to fostering creativity, critical thinking, and ethical practices, while contributing to the advancement of knowledge and the development of solutions that address societal needs. Through collaboration, interdisciplinary approaches, and partnerships with industry and academia, we strive to make significant contributions to the field and to society at large.

Programs Offered:

Bachelor of Science in Computer Science

Bachelor of Science in Software Engineering

Bachelor of Science in Electronics

Bachelor of Science in Telecommunication

Bachelor of Science in Artificial Intelligence

Bachelor of Science in Data Science

Bachelor of Science in Cyber Security

Bachelor of Science in Computer Engineering Technology

Faculty Members, Department of Computer Science & IT

Prof. Dr. Saeed Mahfooz	Dean, Faculty of Sciences, Computer Science & IT	Ph.D Distributive Systems, Liverpool John Moores University, UK
Prof. Dr. Jahangir Khan	Head of Department	Ph.D Agriculture Information Technology, China Agricultural University, China
Dr. Shahid Latif	Associate Professor	Ph.D Computer Science, University of Peshawar
Dr. Haroon Ur Raheed	Associate Professor	Ph.D Mathematics, Abdul Wali Khan University, Mardan
Dr. Muhammad Asif Khan	Assistant Professor	Ph.D Computer Science, FAST-NUCES, Islamabad
Dr. Saadat Khan	Assistant Professor	Ph.D Physics, Gomal University, DI Khan
Dr. Muhammad Ismail Mohmand	Assistant Professor	Ph.D Engineering (Software Engineering), Lincoln University College, Malaysia
Dr. Asad Ali	Assistant Professor	Ph.D Computer Science and Information Technology, University of Salerno, Italy
Dr. Muhammad Sohail	Assistant Professor	Ph.D Computer Science, KUST, Kohat
Mr. Abu Bakar Nauman	Assistant Professor	MSc Computer Science, Bahauddin Zakariya University, Multan
Ms. Zanobia Nisar	Assistant Professor	MS Computer Science, Islamia College University, Peshawar
Mr. Maddad Khan	Assistant Professor	MS Business Information Technology, Southampton SOLENT University, UK
Engr. Mudassir Aman	Coordinator	MS Electrical Engg. (Communication & Electronics Engg., UET Peshawar
Mr. Muhammad Jebran Khan	Assistant Professor	MS Mathematics, Bacha Khan University, Charsadda
Engr. Aiman Rashid	Assistant Professor	MSc Computer System Engineering, UET, Peshawar
Mr. Asad Malook	Assistant Professor	MS Computer Science (Telecom), University of Peshawar
Mr. Adam Khan	Assistant Professor	MS Computer Science, Abasyn University, Peshawar
Mr. Kamran Khan Tatari	Assistant Professor	MS Software Engineering, Sweden
Engr. Aamir Shahzad	Lecturer	MS Software Engineering, University of Bradford, UK

Faculty Members, Department of Computer Science & IT

Mr. Raheem Ullah	Lecturer	MS Software Engineering, Abasyn University Peshawar
Engr. Altamash Khan Afridi	Lecturer	MSc Computer Systems Engineering, UET, Peshawar
Mr. Syed Rohan Ali Shah	Lecturer	MS Information Technology (Computer Networks), IM Sciences, Peshawar
Engr. Zia Ullah	Lecturer	MS Software Engineering, COMSATS University, Islamabad
Mr. Mudassir Shah	Lecturer	MS Computer Science, University of Peshawar
Engr. Muhammad Yasir	Asst. Coordinator	MS Computer Software Engineering, UET, Peshawar
Mr. Ishtiaq Ali	Lecturer	MS Software Engineering, COMSATS University, Islamabad
Mr. Asim Ali	Lecturer	MS Computer Science (Software Engineering), CECOS University Peshawar
Mr. Muhammad Danish Ali	Junior Lecturer	BS Computer Science, Agriculture University, Peshawar
Mr. Niamat Ullah	Junior Lecturer	MSc Computer Science, University of Peshawar
Engr. Ayub Ashraf	Junior Lecturer	BS Computer Systems Engineering, UET, Peshawar
Mr. Nasir Khan	Junior Lecturer	BS Computer Science, Agriculture University, Peshawar
Mr. Muhammad Asfandyar	Junior Lecturer	MS Software Engineering, Abasyn University, Peshawar
Mr. Muhmmad Fawad	Junior Lecturer	BS Software Engineering, Abasyn University Peshawar
Mr. Habib Ullah	Junior Lecturer	BS Computer Science, IM Sciences Peshawar

Bachelor of Science in
Computer Science

Program Code	001
Number of Courses	42 Theory + 17 Lab + FYP
Credit Hours	135

Minimum Duration	8 Semesters, 4 Years
Maximum Duration	14 Semesters, 7 Years
Minimum CGPA Required To Earn Degree	2.00

Eligibility:

Intermediate (Pre-Engineering/ Computer Science/ Pre-Medical) with at least 50% marks or A- Levels (22 Points) with Equivalency Certificate form IBCC Islamabad or an equivalent Certificate from a recognized institution.

Pre Medical Students must pass Deficiency courses of Mathematics of 6 Credit Hours with in the first year of their regular studies.

Candidates need to pass an Entry Test/ Aptitude interview conducted by the University.

Program Educational Objectives:

PEO 1   Computing Foundation: Graduates will possess a strong academic foundation and analytical skills to solve complex computing problems, leveraging comprehensive computer science knowledge.

PEO 2   Professional Growth: Graduates will excel in designing and developing innovative computing solutions using modern tools and technologies, while effectively working both independently and as part of diverse teams.

PEO 3   Societal Responsibility: Graduates will demonstrate effective communication skills, uphold ethical standards and professionalism, contribute positively to society, and engage in life-long learning to adapt to evolving technological advancements.

Graduate Attributes:

GA-1 Academic Education: Completion of an accredited program of study designed to prepare graduates as computing professionals.

GA-2 Knowledge for Solving Computing Problems: Apply knowledge of computing fundamentals, knowledge of a computing specialization, and mathematics, science, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.

GA-3 Problem Analysis: Identify and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.

GA-4 Design/Development of Solutions: Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs.

GA-5 Modern Tool Usage: Create, select, or adapt and then apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.

GA-6 Individual and Teamwork: Function effectively as an individual and as a member or leader of a team in multidisciplinary settings.

GA-7 Communication: Communicate effectively with the computing community about complex computing activities by being able to comprehend and write effective reports, design documentation, make and understand clear instructions. Effective presentations, and give

GA-8 Computing Professionalism and Society: Understand and assess societal, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice

GA-9 Ethics: Understand and commit to professional ethics, responsibilities, and norms of professional computing practice.

GA-10 Life-long Learning: Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

1st Semester

Course Code	Course Title	Cr. Hrs. 17
IT 107T	Applications of ICT	2-0
IT 107L	Applications of ICT Lab	0-1
CS 116T	Programming Fundamentals	3-0
CS 116L	Programming Fundamentals Lab	0-1
GE 101	Functional English	3-0
GS 108T	Applied Physics	2-0
GS 108L	Applied Physics Lab	0-1
GE 105	Civics & Community Engagement	1-1
GS 123/141	Islamic Studies/	
	Values Ethics (For Non-Muslim)	2-0
QT 100	Quran-e-Majeed Teaching (Audit Basis)	2-0
MA 112	Mathematics I*	3-0
	*Mandatory course for Pre-Medical background, Non Credit	

2nd Semester

Course Code	Course Title	Cr. Hrs. 18
CS 125T	Object Oriented Programming Pre Req: CS 116	3-0
CS 125L	Object Oriented Programming Lab	0-1
EE 223T	Digital Logic Design	2-0
EE 223L	Digital Logic Design Lab	0-1
MA 313	Probability & Statistics	3-0
ENG 116	Expository Writing	3-0
GE 201	Ideology & Constitution of Pakistan	2-0
MA 213	Discrete Maths	3-0
MA 113	Mathematics II*	3-0
	*Mandatory course for Pre-Medical background, Non Credit Course.	

3rd Semester

Course Code	Course Title	Cr. Hrs. 17
CS 232T	Data Structures & Algorithms	3-0
CS 232L	Data Structures & Algorithms Lab	0-1
MA 101	Calculus & Analytical Geometry	3-0
CS 222T	Operating Systems (CS Core)	2-0
CS 222L	Operating Systems Lab	0-1
IT 212T	Database Systems (CS Core)	3-0
IT 212L	Database Systems Lab	0-1
	Elective I (Domain Elective)	3-0

4th Semester

Course Code	Course Title	Cr. Hrs. 18
CS 203T	Computer Networks	2-0
CS 203L	Computer Networks Lab	0-1
MA 105	Multivariable Calculus	3-0
IT 202T	Artificial Intelligence (Foundation)	2-0
IT 202L	Artificial Intelligence (Foundation) Lab	0-1
SE 201	Software Engineering	3-0
	Elective II (Domain Elective)	3-0
MKT 227	Principles of Marketing	3-0

5th Semester

Course Code	Course Title	Cr. Hrs. 17
CS 340	Theory of Automata	3-0
CS 346T	Information Security	2-0
CS 346L	Information Security Lab	0-1
CS 204T	Computer Organization & Assembly Language	3-0
CS 204L	Computer Organization & Assembly	
	Language Lab	0-1
CS 437T	HCI & Computer Graphics	2-0
CS 437L	HCI & Computer Graphics Lab	0-1
	Elective III (Domain Elective)	3-0
IT 390	Field Experience	0-1

6th Semester

Course Code	Course Title	Cr. Hrs. 18
MA 235	Applied Linear Algebra	3-0
CS 345	Compiler Concepts (Pre Req: CS 340)	3-0
CS 252	Computer Architecture	3-0
CS 300T	Advanced Database Management System	2-0
CS 300L	Advanced Database Management System Lab	0-1
CS 241T	Design and Analysis of Algorithms	
	Pre Req: CS 232T	2-0
CS 241L	Design and Analysis of Algorithms Lab	
	Pre Req: CS 232 L	0-1
	Elective IV (Domain Elective)	3-0

7th Semester

Course Code	Course Title	Cr. Hrs. 15
CS 425T	Parallel and Distributed Computing Pre Req: CS 222T	2-0
CS 425L	Parallel and Distributed Computing Lab Pre Req: CS 222L	0-1
ENG 440	Technical & Research Report Writing	3-0
	Elective V (Domain Elective)	3-0
SE 668	Software Project Management (UE)	3-0
RES 491	Project Phase I	0-3

8th Semester

Course Code	Course Title	Cr. Hrs. 15
CS 444	Professional Practices	3-0
MGT 270	Entrepreneurship	3-0
	Elective VI (Domain Elective)	3-0
	Elective VII (Domain Elective)	3-0
RES 492	Project Phase II	0-3

The facility for teaching of any of the elective course will be arranged only if reasonable number of students opt for.

Specialization with List of Electives

Software Engineering

Course Code	Course Title	Cr. Hrs.
SE 452	Object Oriented Software Engineering	3-0
SE 450	Software Metrices & Testing	3-0
SE 370	Applied Software Engineering	2-1
IT 240	User Interface Designing	2-1
SE 468	Software Project Management	2-1
SE 470	Agile Software Development	3-0
IT 477	DevOps Tools	2-1

Computer Science Electives

Course Code	Course Title	Cr. Hrs.
IT 302	Advanced Networking	2-1
IT 421	Web Design & Development	2-1
CS 417	Programming For AI in Python	2-1
CS 411	Embedded Systems	3-0
CS 236	Programming in Java	2-1
IE 332	Modeling & Simulation	2-1
IT 333	Information System development	2-1

Data Science

Course Code	Course Title	Cr. Hrs.
CS 321	Introduction to Data Science	2-1
CS 306	Data Mining	2-1
CS 308	Data Warehousing & Business Intel.3	2-1
CS 307	Data Visualization	2-1
CS 303	Big Data Analytics	2-1
IT 335	Database Programming	2-1
IT 465	Distributed Database	2-1

Web & Application Development

Course Code	Course Title	Cr. Hrs.
CS 334	Multimedia Design & Development	3-0
CS 406	Web Engineering	3-0
IT 275	Web Programming	2-1
CS 236	Programming in JAVA	2-1
CS 455	Mobile Application Development	2-1
CS 333	Visual Programming	2-1
CS 450	Server-Side Scripting	2-1

Cyber Security

Course Code	Course Title	Cr. Hrs
CS 206	Introduction to Cyber Security	2-1
CS 322	Network Security	2-1
CS 439	Penetration Testing	2-1
CS 431	Cyber Law & Cyber Crime (Cyber Warfare)	3-0
CS 329	Wireless and Mobile Security	2-1
CS 318	Malware Analysis	2-1
COM 204	Data Communication	3-0

Artificial Intelligence

Course Code	Course Title	Cr. Hrs.
CS 208	Programming For AI	2-1
CS 301	Artificial Neural Networks	2-1
CS 404	Machine Learning	2-1
CS 305	Computer Vision	2-1
CS 414	Robotics & IoT	2-1
CS 409	Deep Learning	2-1
CS 421	Natural Language Processing	3-0

Bachelor of Science in
Software Engineering

Program Code	002	Minimum Duration	8 Semesters, 4 Years
Number of Courses	42 Theory + 19 Lab + FYP	Maximum Duration	14 Semesters, 7 Years
Credit Hours	135	Minimum CGPA Required To Earn Degree 2.00	

Eligibility:

Intermediate (Pre-Engineering/ Computer Science/ Pre-Medical) with at least 50% marks or A- Levels (22 Points) with Equivalency Certificate form IBCC Islamabad or an equivalent Certificate from a recognized institution.

Pre Medical Students must pass Deficiency courses of Mathematics of 6 Credit Hours with in the first year of their regular studies.

Candidates need to pass an Entry Test/ Aptitude interview conducted by the University.

Program Educational Objectives:

PEO 1   Computing Foundation: Graduates will possess a comprehensive academic education coupled with in-depth knowledge for solving computing problems and proficient problem analysis skills.

PEO 2   Professional Growth: Graduates will proficiently design and develop software solutions by leveraging modern tools and technologies, demonstrating both individual expertise and collaborative teamwork

PEO 3   Societal Responsibility: Graduates will effectively communicate, demonstrate a commitment to computing professionalism by considering societal implications in software design and development, uphold ethical standards in all aspects of their work, , and actively pursue continuous learning opportunities to adapt to evolving technologies.

Graduate Attributes:

GA-1 Academic Education: Completion of an accredited program of study designed to prepare graduates as computing professionals.

GA-2 Knowledge for Solving Computing Problems: Apply knowledge of computing fundamentals, knowledge of a computing specialization, and mathematics, science, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.

GA-3 Problem Analysis: Identify and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.

GA-4 Design/Development of Solutions: Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs.

GA-5 Modern Tool Usage: Create, select, or adapt and then apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.

GA-6 Individual and Teamwork: Function effectively as an individual and as a member or leader of a team in multidisciplinary settings.

GA-7 Communication: Communicate effectively with the computing community about complex computing activities by being able to comprehend and write effective reports, design documentation, make and understand clear instructions. Effective presentations, and give

GA-8 Computing Professionalism and Society: Understand and assess societal, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice

GA-9 Ethics: Understand and commit to professional ethics, responsibilities, and norms of professional computing practice.

GA-10 Life-long Learning: Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

Scheme of Studies

1st Semester

Course Code	Course Title	Cr. Hrs. 17
IT 107T	Applications of ICT	2-0
IT 107L	Applications of ICT Lab	0-1
CS 116T	Programming Fundamentals	3-0
CS 116L	Programming Fundamentals Lab	0-1
GE 101	Functional English	3-0
MA 213	Discrete Maths	3-0
GE 105	Civics & Community Engagement	1-1
GS 123/141	Islamic Studies / Values Ethics (For Non-Muslim)	2-0
QT 100	Quran-e-Majeed Teaching (Audit Basis)	2-0
MA 112	*Mathematics I	3-0

*Mandatory course for Pre-Medical background, Non Credit Course.

2nd Semester

Course Code	Course Title	Cr. Hrs. 18
CS 125T	Object Oriented Programming Pre Req: CS 116	3-0
CS 125L	Object Oriented Programming Lab	0-1
EE 223T	Digital Logic Design	2-0
EE 223L	Digital Logic Design Lab	0-1
MA 313	Probability & Statistics	3-0
ENG 116	Expository Writing	3-0
GE 201	Ideology & Constitution of Pakistan	2-0
GS 108T	Applied Physics	2-0
GS 108L	Applied Physics Lab	0-1
MA 113	*Mathematics II	3-0

*Mandatory course for Pre-Medical background, Non Credit Course.

3rd Semester

Course Code	Course Title	Cr. Hrs. 17
CS 232T	Data Structures & Algorithms	3-0
CS 232L	Data Structures & Algorithms Lab	0-1
MA 101	Calculus & Analytical Geometry	3-0
CS 222T	Operating Systems	2-0
CS 222L	Operating Systems Lab	0-1
IT 212T	Database Systems	3-0
IT 212L	Database Systems Lab	0-1
SE 201	Software Engineering	3-0

4th Semester

Course Code	Course Title	Cr. Hrs. 18
CS 203T	Computer Networks	2-0
CS 203L	Computer Networks Lab	0-1
MA 105	Multivariable Calculus	3-0
IT 202T	Artificial Intelligence (Foundation)	2-0
IT 202L	Artificial Intelligence (Foundation) Lab	0-1
SE 222T	Software Construction	2-0
SE 222L	Software Construction Lab	0-1
	Elective I (Domain Elective)	3-0
MKT 227	Principles of Marketing	3-0

5th Semester

Course Code	Course Title	Cr. Hrs. 17
SE 313T	Software Requirement Specification	2-0
SE 313L	Software Requirement Specification Lab	0-1
CS 346T	Information Security	2-0
CS 346L	Information Security Lab	0-1
CS 204T	Computer Organization & Assembly Language	3-0
CS 204L	Computer Organization & Assembly Language Lab	0-1
	Elective II (Domain Elective)	3-0
IT 350	E-Commerce	3-0
IT 390	Field Experience	0-1

6th Semester

Course Code	Course Title	Cr. Hrs. 18
MA 235	Applied Linear Algebra	3-0
SE 414	Software Design & Architecture	3-0
CS 241T	Design and Analysis of Algorithms Pre Req: CS 232T	2-0
CS 241L	Design and Analysis of Algorithms Lab Pre Req: CS 232L	0-1
SE 323T	Software Quality Engineering	2-0
SE 323L	Software Quality Engineering Lab	0-1
	Elective III (Domain Elective)	3-0
	Elective IV (Domain Elective)	3-0

7th Semester

Course Code	Course Title	Cr. Hrs. 15
CS 423T	Parallel and Distributed Computing Pre Req: CS 222T	2-0
CS 423L	Parallel and Distributed Computing Lab Pre Req: CS 222L	0-1
ENG 440	Technical & Research Report Writing	3-0
	Elective VI (Domain Elective)	3-0
SE 468T	Software Project Management	2-0
SE 468L	Software Project Management Lab	0-1
RES 491	Project Phase I	0-3

8th Semester

Course Code	Course Title	Cr. Hrs. 15
CS 444	Professional Practices	3-0
MGT 270	Entrepreneurship	3-0
	Elective VI (Domain Elective)	3-0
	Elective VII (Domain Elective)	3-0
RES 492	Project Phase II	0-3

Specialization with List of Electives

Full Stack Developer

Course Code	Course Title	Cr. Hrs.
IT 240	User Interface Designing	2-1
CS 450	Server-Side Scripting	2-1
IT 477	DevOps Tools	2-1
CS 406	Web Engineering	2-1
IT 275	Web Programming	2-1
CS 333	Visual Programming	2-1
CS 455	Mobile Application Development	2-1
CS 334	Multimedia Design & Development	2-1
CS 421	Semantic Web	2-1
CS 403	Systems Programming	2-1

Systems Engineering

Course Code	Course Title	Cr. Hrs.
SE 312	Formal Methods in SE	3-0
SE 470	Agile Software Development	3-0
SE 450	Software Metrics & Testing	3-0
SE 412	Design Patterns	3-0
SE 472	Automated Software Testing	2-1
SE 512	Software Re Engineering	3-0
SE 370	Applied Software Engineering	2-1
CS 304	Business Process Analysis	3-0
IE 332	Modeling & Simulation	2-1
SE 452	Object Oriented Software Engineering	2-1

The facility for teaching of any of the elective course will be arranged only if reasonable number of students opt for.

Bachelor of Science in
Electronics

Program Code	008
Number of Courses	41 Theory + 18 Lab-based + FYP
Credit Hours	136

Minimum Duration	8 Semesters, 4 Years
Maximum Duration	16 Semesters, 8 Years
Minimum CGPA Required To Earn Degree	2.00

Eligibility:

Intermediate (Pre-Engineering/ Computer Science/ Pre-Medical) with at least 45% marks or A- Levels (22 Points) with Equivalency Certificate form IBCC Islamabad or an equivalent Certificate from a recognized institution.

Pre Medical Students must pass Deficiency courses of Mathematics of 6 Credit Hours with in the first year of their regular studies.

Candidates need to pass an Entry Test/ Aptitude interview conducted by the University.

Program Educational Objectives:

The BS Electronics program has been designed to equip our graduates with the necessary tools, teaching techniques and knowledge of the field. These graduates can prove their worth in industrial concerns, businesses, teaching or research. Owing to their knowledge and expertise, they can help the local industry in reaping the benefits of industrial automation in the real sense.

Program Outcomes

➤ An ability to select and apply the knowledge, techniques, skills and modern tools of the discipline to broadly-defined engineering technology activities.

➤ An ability to function effectively as a member or leader on a technical team.

➤ An ability to identify, analyze and solve broadly-defined engineering technology problems.

➤ An ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature.

➤ An understanding of the need for and an ability to engage in self-directed continuing professional development.

➤ An understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity.

➤ An ability to use current techniques, skills and tools necessary for computing practice, including the ability of expressing algorithms in at least two of the most important computer languages.

Scheme of Studies:

1st Semester

Course Code	Course Title	Cr. Hrs. 17
IT 107T	Applications of ICT	2-0
IT 107L	Applications of ICT Lab	0-1
CS 116T	Programming Fundamentals	3-0
CS 116L	Programming Fundamentals Lab	0-1
GE 101	Functional English	3-0
GS 108T	Applied Physics	2-0
GS 108L	Applied Physics Lab	0-1
GE 105	Civics & Community Engagement	1-1
GS 123/141	Islamic Studies/Values Ethics (For Non-Muslim)	2-0
QT 100	Quran Majeed Teaching (Audit Basis)	2-0

2nd Semester

Course Code	Course Title	Cr. Hrs. 18
CS 125T	Object Oriented Programming Pre Req: CS 116	3-0
CS 125L	Object Oriented Programming Lab	0-1
EE 223T	Digital Logic Design	2-0
EE 223L	Digital Logic Design Lab	0-1
MA 105	Multivariable Calculus	3-0
ENG 116	Expository Writing	3-0
GE 201	Ideology & Constitution of Pakistan	2-0
MA 213	Discrete Maths	3-0

3rd Semester

Course Code	Course Title	Cr. Hrs. 17
CS 232T	Data Structures & Algorithms	3-0
CS 232L	Data Structures & Algorithms Lab	0-1
MA 101	Calculus & Analytical Geometry	3-0
EE 111T	Linear Circuit Analysis	3-0
EE 111L	Linear Circuit Analysis Lab	0-1
COM 323T	Micro Processor Architecture & AL	2-0
COM 323L	Micro Processor Architecture & AL Lab	0-1
ELC 229	Solid State Electronics	3-0

4th Semester

Course Code	Course Title	Cr. Hrs. 17
CS 203T	Computer Networks	2-0
CS 203L	Computer Networks Lab	0-1
MA 313	Probability & Statistics	3-0
EE 217T	Circuit Analysis	3-0
EE 217L	Circuit Analysis Lab	0-1
EE 367	Electronic Communication	3-0
ELC 216T	Electronics I	3-0
ELC 216L	Electronics I Lab	0-1

5th Semester

Course Code	Course Title	Cr. Hrs. 18
ELL 320	Electronic Circuit Design	3-0
CS 346T	Information Security	2-0
CS 346L	Information Security Lab	0-1
EE 338T	Microprocessor Interfacing Technolies	3-0
EE 338L	Microprocessor Interfacing Technolies Lab	0-1
EE 315	Electromagnetic Field Theory	3-0
ELC 370	Integrated Circuits	3-0
RES 351	Field Experience	0-2

6th Semester

Course Code	Course Title	Cr. Hrs. 18
MA 235	Applied Linear Algebra	3-0
ELC 221T	Instrumentation and Measurements	3-0
ELC 221L	Instrumentation and Measurements Lab	0-1
ELC 330T	Power Electronics	3-0
ELC 330L	Power Electronics Lab	0-1
COM 232T	Signals & Systems	2-0
COM 232L	Signals & Systems Lab	0-1
ELC 321T	Control Systems	3-0
ELC 321L	Control Systems Lab	0-1

7th Semester

Course Code	Course Title	Cr. Hrs. 16
ELC 475	VLSI Design	3-1
ENG 440	Technical & Research Report Writing	3-0
MG 106	Principles of Management	3-0
RES 491	Project Phase I	0-3
EE 411T	Digital Signal Processing	3-0
EE 411L	Digital Signal Processing Lab	0-1

8th Semester

Course Code	Course Title	Cr. Hrs. 15
CS 444	Professional Practices	3-0
MGT 270	Entrepreneurship	3-0
ELC 450	Microwave Electronics	3-0
COM 408	Fiber Optic Communications	3-0
RES 492	Project Phase II	0-3

The facility for teaching of any of the elective course will be arranged only if reasonable number of students opt for.

Bachelor of Science in
Telecommunication

Program Code	003
Number of Courses	42 Theory + 14 Lab-based + FYP
Credit Hours	138

Minimum Duration	8 Semesters, 4 Years
Maximum Duration	16 Semesters, 8 Years
Minimum CGPA Required To Earn Degree	2.00

Eligibility:

Intermediate (Pre-Engineering/ Computer Science/ Pre-Medical) with at least 45% marks or A- Levels (22 Points) with Equivalency Certificate form IBCC Islamabad or an equivalent Certificate from a recognized institution.

Pre Medical Students must pass Deficiency courses of Mathematics of 6 Credit Hours with in the first year of their regular studies.

Candidates need to pass an Entry Test/ Aptitude interview conducted by the University.

Program Educational Objectives:

The BS Telecommunication program is designed to provide students with the skills and knowledge needed to meet the requirements of a rapidly advancing and challenging field that is in great demand in Pakistan and abroad. Emphasis is placed on providing students with the broadband telecommunications background skills required to adapt to the dynamic field of telecommunications. A number of mathematics courses have been included to give the direly needed strength to our graduates in modeling the real world problems. The syllabus is designed so as to keep our students abreast with the latest technologies. The program also aims at providing students with a firm base for undertaking higher studies in Telecommunication Systems.

Program Outcomes

➤ An ability to apply knowledge of mathematics, science, and engineering.

➤ An ability to function on multi-disciplinary teams.

➤ An understanding of professional and ethical responsibility.

➤ An ability to communicate effectively.

➤ An ability to design and conduct scientific and engineering experiments, as well as to analyze and interpret data.

Scheme of Studies:

1st Semester

Course Code	Course Title	Cr. Hrs. 17
IT 107T	Applications of ICT	2-0
IT 107L	Applications of ICT Lab	0-1
CS 116T	Programming Fundamentals	3-0
CS 116L	Programming Fundamentals Lab	0-1
GE 101	Functional English	3-0
GS 108T	Applied Physics	2-0
GS 108L	Applied Physics Lab	0-1
GE 105	Civics & Community Engagement	1-1
GS 123/141	Islamic Studies/Values Ethics (For Non-Muslim)	2-0
QT 100	Quran Majeed Teaching (Audit Basis)	2-0

2nd Semester

Course Code	Course Title	Cr. Hrs. 18
CS 125T	Object Oriented Programming Pre Req: CS 116	3-0
CS 125L	Object Oriented Programming Lab	0-1
EE 223T	Digital Logic Design	2-0
EE 223L	Digital Logic Design Lab	0-1
MA 313	Probability & Statistics	3-0
ENG 116	Expository Writing	3-0
GE 201	Ideology & Constitution of Pakistan	2-0
MA 213	Discrete Maths	3-0

3rd Semester

Course Code	Course Title	Cr. Hrs. 18
CS 232T	Data Structures & Algorithms	3-0
CS 232L	Data Structures & Algorithms Lab	0-1
MA 101	Calculus & Analytical Geometry	3-0
EE 111T	Linear Circuit Analysis	3-0
EE 111L	Linear Circuit Analysis Lab	0-1
ELC 216T	Electronics I	3-0
ELC 216L	Electronics I Lab	0-1
COM 301	Intro to Telecom	3-0

4th Semester

Course Code	Course Title	Cr. Hrs. 16
CS 203T	Computer Networks	2-0
CS 203L	Computer Networks Lab	0-1
MA 105	Multivariable Calculus	3-0
EE 217T	Circuit Analysis	3-0
EE 217L	Circuit Analysis Lab	0-1
EE 367	Electronic Communication	3-0
COM 337	Digital Communication	3-0

5th Semester

Course Code	Course Title	Cr. Hrs. 18
COM 422	Telecom Switching	3-0
CS 346T	Information Security	2-0
CS 346L	Information Security Lab	0-1
EE 338T	Microprocessor Interfacing Technolies	3-0
EE 338L	Microprocessor Interfacing Technolies Lab	0-1
EE 315	Electromagnetic Field Theory	3-0
IT 340	Network Management	3-0
RES 351	Field Experience	0-2

6th Semester

Course Code	Course Title	Cr. Hrs. 18
MA 235	Applied Linear Algebra	3-0
COM 311	Antenna & Wave Propagation	3-0
COM 340	Telecom Standards	3-0
COM 232T	Signals & Systems	2-0
COM 232L	Signals & Systems Lab	0-1
	Elective I (Domain Elective)	3-0
	Elective II (Domain Elective)	3-0

7th Semester

Course Code	Course Title	Cr. Hrs. 18
ENG 440	Technical & Research Report Writing	3-0
MG 106	Principles of Management	3-0
RES 491	Project Phase I	0-3
COM 313	Mobile Communication I	3-0
	Elective III (Domain Elective)	3-0
	Elective IV (Domain Elective)	3-0

8th Semester

Course Code	Course Title	Cr. Hrs. 15
CS 444	Professional Practices	3-0
MGT 270	Entrepreneurship	3-0
COM 350	Mobile Communication II	3-0
COM 408	Fiber Optic Communications	3-0
RES 492	Project Phase II	0-3

Electives

University Electives

Course Code	Course Title	Cr. Hrs.
COM 408	Optical & Wireless System	3-0
COM 440	Telecom Traffic Engineering	3-0
COM 375	Next Generation Networks	2-1
COM 422	Routing & Switching	3-0
COM 462	Advance Signaling Systems	2-1
EE 455	Microwave & Satellite System	3-0

Bachelor of Science in Telecommunication

The facility for teaching of any of the elective course will be arranged only if reasonable number of students opt for.

Bachelor of Science in
Artificial Intelligence

Program Code	227
Number of Courses	42 Theory + 21 Lab + FYP
Credit Hours	135

Minimum Duration	8 Semesters, 4 Years
Maximum Duration	14 Semesters, 7 Years
Minimum CGPA Required To Earn Degree	2.00

Eligibility:

Intermediate (Pre-Engineering/ Computer Science/ Pre-Medical) with at least 50% marks or A- Levels (22 Points) with Equivalency Certificate form IBCC Islamabad or an equivalent Certificate from a recognized institution.

Pre Medical Students must pass Deficiency courses of Mathematics of 6 Credit Hours with in the first year of their regular studies.

Candidates need to pass an Entry Test/ Aptitude interview conducted by the University.

Program Educational Objectives:

PEO 1 Academic Foundation: To equip graduates with a solid academic foundation for effectively addressing computing challenges and proficient problem analysis.

PEO 2 Professional Growth: To empower graduates with expertise in designing and developing solutions, adept utilization of modern tools, and proficient both individually and in teams.

PEO 3 Societal Responsibility: Demonstrate professionalism and effective communication while upholding ethical and societal standards, and to foster a commitment to continuous learning throughout their professional journey.

Graduate Attributes:

GA-1 Academic Education: Completion of an accredited program of study designed to prepare graduates as computing professionals.

GA-2 Knowledge for Solving Computing Problems: Apply knowledge of computing fundamentals, knowledge of a computing specialization, and mathematics, science, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.

GA-3 Problem Analysis: Identify and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.

GA-4 Design/Development of Solutions: Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs.

GA-5 Modern Tool Usage: Create, select, or adapt and then apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.

GA-6 Individual and Teamwork: Function effectively as an individual and as a member or leader of a team in multidisciplinary settings.

GA-7 Communication: Communicate effectively with the computing community about complex computing activities by being able to comprehend and write effective reports, design documentation, make and understand clear instructions. Effective presentations, and give

GA-8 Computing Professionalism and Society: Understand and assess societal, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice

GA-9 Ethics: Understand and commit to professional ethics, responsibilities, and norms of professional computing practice.

GA-10 Life-long Learning: Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

1st Semester

Course Code	Course Title	Cr. Hrs. 17
IT 107T	Applications of ICT	2-0
IT 107L	Applications of ICT Lab	0-1
CS 116T	Programming Fundamentals	3-0
CS 116L	Programming Fundamentals Lab	0-1
GE 101	Functional English	3-0
GS 108T	Applied Physics	2-0
GS 108L	Applied Physics Lab	0-1
GE 105	Civics & Community Engagement	1-1
GS 123/141	Islamic Studies/Values Ethics (For Non-Muslim)	2-0
QT 100	Quran-e-Majeed Teaching (Audit Basis)	2-0
MA 112	*Mathematics I	3-0

*Mandatory course for Pre-Medical background, Non Credit Course.

2nd Semester

Course Code	Course Title	Cr. Hrs. 18
CS 125T	Object Oriented Programming Pre Req: CS 116	3-0
CS 125L	Object Oriented Programming Lab	0-1
EE 223T	Digital Logic Design	2-0
EE 223L	Digital Logic Design Lab	0-1
MA 313	Probability & Statistics	3-0
ENG 116	Expository Writing	3-0
GE 201	Ideology & Constitution of Pakistan	2-0
MA 213	Discrete Maths	3-0
MA 113	*Mathematics II	3-0

*Mandatory course for Pre-Medical background, Non Credit Course.

3rd Semester

Course Code	Course Title	Cr. Hrs. 17
CS 232T	Data Structures & Algorithms	3-0
CS 232L	Data Structures & Algorithms Lab	0-1
MA 101	Calculus & Analytical Geometry	3-0
CS 222T	Operating Systems	2-0
CS 222L	Operating Systems Lab	0-1
IT 212T	Database Systems	3-0
IT 212L	Database Systems Lab	0-1
CS 208T	Programming For AI	2-0
CS 208L	Programming For AI Lab	0-1

4th Semester

Course Code	Course Title	Cr. Hrs. 18
CS 203T	Computer Networks	2-0
CS 203L	Computer Networks Lab	0-1
MA 105	Multivariable Calculus	3-0
IT 202T	Artificial Intelligence (Foundation)	2-0
IT 202L	Artificial Intelligence (Foundation) Lab	0-1
SE 201	Software Engineering	3-0
	Elective I (Domain Elective)	3-0
MGT 107	Principles of Management	3-0

5th Semester

Course Code	Course Title	Cr. Hrs. 17
CS 336T	Knowledge Representation & Reasoning	2-0
CS 336L	Knowledge Representation & Reasoning Lab	0-1
CS 346T	Information Security	2-0
CS 346L	Information Security Lab	0-1
CS 204T	Computer Organization & Assembly Language	3-0
CS 204L	Computer Organization & Assembly Language Lab	0-1
	Elective II (Domain Elective)	3-0
MKT 227	Principles of Marketing	3-0
IT 390	Field Experience	0-1

6th Semester

Course Code	Course Title	Cr. Hrs. 18
MA 235	Applied Linear Algebra	3-0
CS 305T	Computer Vision	2-0
CS 305L	Computer Vision Lab	0-1
CS 241T	Design and Analysis of Algorithms Pre Req: CS 232T	2-0
CS 241L	Design and Analysis of Algorithms Lab Pre Req: CS 232L	0-1
CS 404T	Machine Learning	2-0
CS 404L	Machine Learning Lab	0-1
	Elective III (Domain Elective)	3-0
	Elective IV (Domain Elective)	3-0

Bachelor of Science in Artificial Intelligence

7th Semester

Course Code	Course Title	Cr. Hrs. 15
CS 423T	Parallel and Distributed Computing Pre Req: CS 222T	2-0
CS 423L	Parallel and Distributed Computing Lab Pre Req: CS 222L	0-1
ENG 440	Technical & Research Report Writing	3-0
CS 302T	Artificial Neural Networks & Deep Learning	2-0
CS 302L	Artificial Neural Networks & Deep Learning Lab	0-1
	Elective V (Domain Elective)	3-0
RES 491	Project Phase I	0-3

8th Semester

Course Code	Course Title	Cr. Hrs. 15
CS 444	Professional Practices	3-0
MGT 270	Entrepreneurship	3-0
	Elective VI (Domain Elective)	3-0
	Elective VII (Domain Elective)	3-0
RES 492	Project Phase II	0-3

Specialization with List of Electives

Artificial Intelligence

Course Code	Course Title	Cr. Hrs.
COM 406	Digital Image Processing	2-1
CS 426	Fuzzy Systems	2-1
CS 432	Reinforcement Learning	2-1
CS 409	Deep Learning	2-1
CS 435	Swarm Intelligence	2-1
CS 425	Agent Based Modeling	2-1
CS 427	Knowledge Based Systems	2-1
CS 460	AI for Games	2-1
CS 461	Virtual Reality	2-1
CS 462	Prompt Engineering	2-1
CS 414T	Robotics & IoT	2-1
CS 421	Natural Language Processing	3-0

The facility for teaching of any of the elective course will be arranged only if reasonable number of students opt for it.

Bachelor of Science in
Data Science

Program Code	228
Number of Courses	42 Theory + 19 Lab + FYP
Credit Hours	135

Minimum Duration	8 Semesters, 4 Years
Maximum Duration	14 Semesters, 7 Years
Minimum CGPA Required To Earn Degree	2.00

Eligibility:

Intermediate (Pre-Engineering/ Computer Science/ Pre-Medical) with at least 50% marks or A- Levels (22 Points) with Equivalency Certificate form IBCC Islamabad or an equivalent Certificate from a recognized institution.

Pre Medical Students must pass Deficiency courses of Mathematics of 6 Credit Hours with in the first year of their regular studies.

Candidates need to pass an Entry Test/ Aptitude interview conducted by the University.

Program Educational Objectives:

PEO 1 Computing Foundation: To produce graduates with a deep understanding of both the theory and practice of data science, empowering them to effectively solve and analyze complex problems in the field.

PEO 2 Professional Growth: To ensure proficiency in designing and developing solutions to diverse problems, utilizing the latest tools and technologies, while demonstrating expertise both individually and as effective team members.

PEO 3 Societal Responsibility: To produce graduates who exhibit effective communication, uphold professional and ethical standards, and possess the capability for independent learning throughout their personal and professional endeavors.

Graduate Attributes:

GA-1 Academic Education: Completion of an accredited program of study designed to prepare graduates as computing professionals.

GA-2 Knowledge for Solving Computing Problems: Apply knowledge of computing fundamentals, knowledge of a computing specialization, and mathematics, science, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.

GA-3 Problem Analysis: Identify and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.

GA-4 Design/Development of Solutions: Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs.

GA-5 Modern Tool Usage: Create, select, or adapt and then apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.

GA-6 Individual and Teamwork: Function effectively as an individual and as a member or leader of a team in multidisciplinary settings.

GA-7 Communication: Communicate effectively with the computing community about complex computing activities by being able to comprehend and write effective reports, design documentation, make and understand clear instructions. Effective presentations, and give

GA-8 Computing Professionalism and Society: Understand and assess societal, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice

GA-9 Ethics: Understand and commit to professional ethics, responsibilities, and norms of professional computing practice.

GA-10 Life-long Learning: Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

Scheme of Studies

1st Semester

Course Code	Course Title	Cr. Hrs. 17
IT 107T	Applications of ICT	2-0
IT 107L	Applications of ICT Lab	0-1
CS 116T	Programming Fundamentals	3-0
CS 116L	Programming Fundamentals Lab	0-1
GE 101	Functional English	3-0
MA 213	Discrete Maths	3-0
GE 105	Civics & Community Engagement	1-1
GS 123/141	Islamic Studies/Values Ethics (For Non-Muslim)	2-0
QT 100	Quran-e-Majeed Teaching (Audit Basis)	2-0
MA 112	*Mathematics I	3-0

*Mandatory course for Pre-Medical background, Non Credit Course.

2nd Semester

Course Code	Course Title	Cr. Hrs. 18
CS 125T	Object Oriented Programming Pre Req: CS 116	3-0
CS 125L	Object Oriented Programming Lab	0-1
EE 223T	Digital Logic Design	2-0
EE 223L	Digital Logic Design Lab	0-1
MA 313	Probability & Statistics	3-0
ENG 116	Expository Writing	3-0
GE 201	Ideology & Constitution of Pakistan	2-0
GS 108T	Applied Physics	2-0
GS108L	Applied Physics Lab	0-1
MA 113	*Mathematics II	3-0

*Mandatory course for Pre-Medical background, Non Credit Course.

3rd Semester

Course Code	Course Title	Cr. Hrs. 17
CS 232T	Data Structures & Algorithms	3-0
CS 232L	Data Structures & Algorithms Lab	0-1
MA 101	Calculus & Analytical Geometry	3-0
CS 222T	Operating Systems	2-0
CS 222L	Operating Systems Lab	0-1
IT 212T	Database Systems	3-0
IT 212L	Database Systems Lab	0-1
CS 321T	Introduction to Data Science	2-0
CS 321L	Introduction to Data Science Lab	0-1

4th Semester

Course Code	Course Title	Cr. Hrs. 18
CS 203T	Computer Networks	2-0
CS 203L	Computer Networks Lab	0-1
MA 105	Multivariable Calculus	3-0
IT 202T	Artificial Intelligence (Foundation)	2-0
IT 202L	Artificial Intelligence (Foundation) Lab	0-1
SE 201	Software Engineering	3-0
MA 314	Advanced Statistics	3-0
	Elective I (Domain Elective)	3-0

5th Semester

Course Code	Course Title	Cr. Hrs. 16
CS 307T	Data Visualization	2-0
CS307L	Data Visualization Lab	0-1
CS 346T	Information Security	2-0
CS 346L	Information Security Lab	0-1
CS 204T	Computer Organization & Assembly Language	2-0
CS 204L	Computer Organization & Assembly Language Lab	0-1
	Elective II (Domain Elective)	3-0
MGT 107	Principles of Management	3-0
IT 390	Field Experience	0-1

6th Semester

Course Code	Course Title	Cr. Hrs. 18
MA 235	Applied Linear Algebra	3-0
CS 306T	Data Mining	2-0
CS 306L	Data Mining Lab	0-1
CS 308T	Data Warehousing & Business Intel.	2-0
CS 308L	Data Warehousing & Business Intel. Lab	0-1
CS 241T	Design and Analysis of Algorithms Pre Req: CS 232T	2-0
CS 241L	Design and Analysis of Algorithms Lab Pre Req: CS 232L	0-1
	Elective III (Domain Elective)	3-0
	Elective IV (Domain Elective)	3-0

7th Semester

Course Code	Course Title	Cr. Hrs. 15
CS 423T	Parallel and Distributed Computing	
	Pre Req: CS 222T	2-0
CS 423L	Parallel and Distributed Computing Lab	
	Pre Req: CS 222L	0-1
ENG 440	Technical & Research Report Writing	3-0
	Elective V (Domain Elective)	3-0
MKT 227	Principles of Marketing	3-0
RES 491	Project Phase I	0-3

8th Semester

Course Code	Course Title	Cr. Hrs. 15
CS 444	Professional Practices	3-0
MGT 270	Entrepreneurship	3-0
	Elective VI (Domain Elective)	3-0
	Elective VII (Domain Elective)	3-0
RES 492	Project Phase II	0-3

Specialization with List of Electives

Data Science

Course Code	Course Title	Cr. Hrs.
CS 303T	Big Data Analytics	2-1
IE 332	Modeling & Simulation	2-1
CS 304T	Business Process Analysis	2-1
CS 428T	Platforms & Architectures for Data Science	2-1
CS 341	Cloud Computing Fundamentals	2-1
CS 429T	Topics in Data Science	2-1
CS 421	Semantic Web	3-0
CS 413	Enterprise System	3-0
IT 465T	Distributed Database	2-1
IT 335T	Database Programming	2-1

The facility for teaching of any of the elective course will be arranged only if reasonable number of students opt for.

Bachelor of Science in
Cyber Security

Program Code	229
Number of Courses	42 Theory+19 Lab+Project
Credit Hours	135

Minimum Duration	8 Semesters, 4 Years
Maximum Duration	14 Semesters, 7 Years
Minimum CGPA Required To Earn Degree	2.00

Eligibility:

Intermediate (Pre-Engineering/ Computer Science/ Pre-Medical) with at least 50% marks or A- Levels (22 Points) with Equivalency Certificate form IBCC Islamabad or an equivalent Certificate from a recognized institution.

Pre Medical Students must pass Deficiency courses of Mathematics of 6 Credit Hours with in the first year of their regular studies.

Candidates need to pass an Entry Test/ Aptitude interview conducted by the University.

Program Educational Objectives:

PEO 1 Computing Foundation: Graduates will demonstrate advanced expertise in Cyber Security, possessing in-depth knowledge of cyber security principles, technologies, and best practices.

PEO 2 Professional Growth: Graduates will exhibit proficiency in practical skills related to threat detection, incident response, and secure systems development.

PEO 3 Societal Responsibility: Graduates will embody ethical principles and values essential for responsible cyber security practice and global cyber security initiatives.

Graduate Attributes:

GA-1 Academic Education: Completion of an accredited program of study designed to prepare graduates as computing professionals.

GA-2 Knowledge for Solving Computing Problems: Apply knowledge of computing fundamentals, knowledge of a computing specialization, and mathematics, science, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.

GA-3 Problem Analysis: Identify and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.

GA-4 Design/Development of Solutions: Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs.

GA-5 Modern Tool Usage: Create, select, or adapt and then apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.

GA-6 Individual and Teamwork: Function effectively as an individual and as a member or leader of a team in multidisciplinary settings.

GA-7 Communication: Communicate effectively with the computing community about complex computing activities by being able to comprehend and write effective reports, design documentation, make and understand clear instructions. Effective presentations, and give

GA-8 Computing Professionalism and Society: Understand and assess societal, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice

GA-9 Ethics: Understand and commit to professional ethics, responsibilities, and norms of professional computing practice.

GA-10 Life-long Learning: Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

Scheme of Studies

1st Semester

Course Code	Course Title	Cr. Hrs. 17
IT 107T	Applications of ICT	2-0
IT 107L	Applications of ICT Lab	0-1
CS 116T	Programming Fundamentals	3-0
CS 116L	Programming Fundamentals Lab	0-1
GE 101	Functional English	3-0
GS 108T	Applied Physics	2-0
GS 108L	Applied Physics Lab	0-1
GE 105	Civics & Community Engagement	1-1
GS 123/141	Islamic Studies/Values Ethics (For Non-Muslim)	2-0
QT 100	Quran-e-Majeed Teaching (Audit Basis)	2-0
MA 112	*Mathematics I	3-0

*Mandatory course for Pre-Medical background, Non Credit Course.

2nd Semester

Course Code	Course Title	Cr. Hrs. 18
CS 125T	Object Oriented Programming Pre Req: CS 116	3-0
CS 125L	Object Oriented Programming Lab	0-1
EE 223T	Digital Logic Design	2-0
EE 223L	Digital Logic Design Lab	0-1
MA 313	Probability & Statistics	3-0
ENG 116	Expository Writing	3-0
GE 201	Ideology & Constitution of Pakistan	2-0
MA 213	Discrete Maths	3-0
MA 113	*Mathematics II	3-0

*Mandatory course for Pre-Medical background, Non Credit Course.

3rd Semester

Course Code	Course Title	Cr. Hrs. 17
CS 232T	Data Structures & Algorithms	3-0
CS 232L	Data Structures & Algorithms Lab	0-1
MA 101	Calculus & Analytical Geometry	3-0
CS 222T	Operating Systems	2-0
CS 222L	Operating Systems Lab	0-1
IT 212T	Database Systems	3-0
IT 212L	Database Systems Lab	0-1
	Elective I (Domain Elective)	3-0

4th Semester

Course Code	Course Title	Cr. Hrs. 18
CS 203T	Computer Networks	2-0
CS 203L	Computer Networks Lab	0-1
MA 105	Multivariable Calculus	3-0
IT 202T	Artificial Intelligence (Foundation)	2-0
IT 202L	Artificial Intelligence (Foundation) Lab	0-1
SE 201	Software Engineering	3-0
CS 346T	Information Security	2-0
CS 346L	Information Security Lab	0-1
MKT 227	Principles of Marketing	3-0

5th Semester

Course Code	Course Title	Cr. Hrs. 17
CS 316	Information Assurance	3-0
CS 206T	Introduction to Cyber Security	2-0
CS 206L	Introduction to Cyber Security	0-1
CS 204T	Computer Organization & Assembly Language	3-0
CS 204L	Computer Organization & Assembly Language Lab	0-1
	Elective II (Domain Elective)	3-0
MGT 107	Principles of Management	3-0
IT 390	Field Experience	0-1

6th Semester

Course Code	Course Title	Cr. Hrs. 18
MA 235	Applied Linear Algebra	3-0
CS 314T	Digital Forensics	3-0
CS 314L	Digital Forensics Lab	
CS322T	Network Security	2-0
CS322L	Network Security Lab	0-1
CS 241T	Design and Analysis of Algorithms Pre Req: CS 232T	2-0
CS 241L	Design and Analysis of Algorithms Lab Pre Req: CS 232L	0-1
	Elective III (Domain Elective)	3-0
	Elective IV (Domain Elective)	3-0

7th Semester

Course Code	Course Title	Cr. Hrs. 15
CS 423T	Parallel and Distributed Computing Pre Req: CS 222T	2-0
CS 423L	Parallel and Distributed Computing Lab Pre Req: CS 222L	0-1
ENG 440	Technical & Research Report Writing	3-0
CS 326T	Secure Software Design & Development	2-0
CS 326L	Secure Software Design & Development Lab	0-1
	Elective V (Domain Elective)	3-0
RES 491	Project Phase I	0-3

8th Semester

Course Code	Course Title	Cr. Hrs. 15
CS 444	Professional Practices	3-0
MGT 270	Entrepreneurship	3-0
	Elective VI (Domain Elective)	3-0
	Elective VII (Domain Elective)	3-0
RES 492	Project Phase II	0-3

Specialization with List of Electives

Cyber Security

Course Code	Course Title	Cr. Hrs.
CS 439T	Penetration Testing	2-1
CS 431T	Cyber Law & Cyber Crime (Cyber Warfare)	2-1
COM 204	Data Communication	3-0
CS 424	Database Security	3-0
CS 415	Open Source Operating System	3-0
CS 411T	Embedded Systems	2-1
IT 302T	Advanced Netwroking	2-1
COM 375	Next Generation Networks	3-0
COM 422T	Routing & Switching	2-1
CS 430T	Advanced Digital Logic Design	2-1
CS436T	Computer Architecture	2-1
CS 329T	Wireless and Mobile Security	2-1
CS 318T	Malware Analysis	2-1

The facility for teaching of any of the elective course will be arranged only if reasonable number of students opt for.

Bachelor of Science in
Computer Engineering Technology

Program Code	180	Minimum Duration	8 Semesters, 4 Years
Number of Courses	33 + Research Project	Maximum Duration	16 Semesters, 8 Years
Credit Hours	134	Minimum CGPA Required To Earn Degree	2.00

Eligibility:

Intermediate (Pre-Engineering/Computer Science/DAE in relevant Field) with at least 50% Marks or any equivalent certificate from a recognized institution are eligible to apply.

Candidates need to pass an entry test and an aptitude interview conducted by the University.

Program Educational Objectives:

PEO-1: Engage in applications oriented work and management of computer systems, including software, hardware, computer networking and network management.

PEO-2: Use appropriate theory, mathematics and computational technology to analyze and solve problems encountered in the applications of computer systems.

PEO-3: Communicate, using oral, written and computer based communication technology, as well as function effectively as an individual and a team member in processional environment.

PEO-4: Pursue lifelong learning and continuous improvement of their knowledge and skills in the design, development, and application of computer systems in diverse industries with the highest professional and ethical standards.

PEO-5: Understand the local, national and global issues related to the development and applications of computer systems and to be considerate of the impact of this issue on different cultures.

Scheme of Studies:

1st Semester

Course Code	Course Title	Cr. Hrs. 18
CET 100	Introduction to Computing Technology	0-1
CET 102	Programming Fundamentals	2-1
ENG 111	Communication Skills	3-0
GH 101	Islamic Studies	2-0
GS 101	Applied Physics	2-1
MA 101	Calculus and Analytic Geometry	3-0
MGT 106	Principles of Management	3-0
QT 100	Quran-e-Majeed Teaching (Audit Basis)	2-0

2nd Semester

Course Code	Course Title	Cr. Hrs. 19
CET 103	Discrete Maths	3-0
CET 107	Digital Logic Design	2-1
CET 105	Circuit Analysis	2-1
CET 109	Engineering Drawing in AUTOCAD	0-1
CET 111	Object Oriented Programming	2-1
ENG 220	Effective Communication Skills	3-0
MA 203	Probability and Statistics	3-0

3rd Semester

Course Code	Course Title	Cr. Hrs. 18
CET 211	Computer Architecture	2-1
CET 213	Data Communication & Networks	2-1
CET 215	Database Systems	2-1
CET 217	Data Structures & Algorithms	2-1
CET 219	Electronics Devices & Circuits	2-1
MA 242	Differential Equations	3-0

4th Semester

Course Code	Course Title	Cr. Hrs. 18
CET 220	Assembly Language Programming	2-1
CET 222	Digital System Design	2-1
CET 224	Operating System	2-1
CET 226	System Programming	2-1
MA 235	Linear Algebra	3-0
MKT 225	Principles of Marketing	3-0

5th Semester

Course Code	Course Title	Cr. Hrs. 18
CET 310	Microprocessors Interfacing Technologies	2-1
CET 311	Signals & Systems	2-1
CET 314	Embedded Systems	2-1
CET 316	Mobile App Development	2-1
CET 318	Network Security & Cryptography	2-1
CET 320	Real-time Operating Systems	2-1

6th Semester

Course Code	Course Title	Cr. Hrs. 17
CET 322	Digital Signal Processing	2-1
CET 324	Software Engineering	2-1
CET 390	Technology Project	0-6
GH 103	Pakistan Studies	2-0
ENG 322	Technical Report Writing	3-0

7th Semester

Course Code	Course Title	Cr. Hrs. 16
CET 401	Supervised Industrial Training-I	0-16

8th Semester

Course Code	Course Title	Cr. Hrs. 16
CET 401	Supervised Industrial Training-I	0-16

Program Learning Outcomes (PLO's)

PLO-01: Technology Knowledge: To Apply knowledge of computer technology and the implementation of the technology to solve the technical problems and to find solution of complex technical scenarios.

PLO-02: Problem Analysis: To identify, analyze and understand the technical problems and to formulate appropriate solutions for them.

PLO-03: Implementation of Design of Solution: To Develop the ability of implementing the formulated solution for technical problems.

PLO-04: Investigation: To investigate the technical problem in a step-wise manner including a thorough survey of the problem, understanding its design, formulating numerous solutions and experimenting with various solutions to finalize one according to the design.

PLO-05: Modern Tool Usage: To analyze all the updated tools and to utilize most updated IT tools for designing of a solution for a technical problem including prediction and modeling of technical activities with an understanding of limitations.

PLO-06: The Technology and Society: To conduct a survey for the use of technology in the most professional and ethical manner

PLO-07: Environment and Sustainability: To understand the impact of technical tools on the environment and to make sure the technological solutions demonstrate a safe environment along with the sustainable development of society

PLO-08: Ethics: To conduct ethical principles for the fulfillment of all the ethical norms of the technical practices

PLO-09: Individual and Team Work: To be able to work individually if needed and give an effective output as well as to be able to produce best in team work

PLO-10: Communication: To communicate effectively with the engineering community and deliver the best of one's knowledge through effective communication skills and to give/receive clear instructions

PLO-11: Project Management: To be able to demonstrate the impact of technical solutions of one's own work and to manage projects in a multi-disciplinary environment

PLO-12: Life-Long Learning: To be able to recognize the importance of being always indulged in a learning environment and to pursue life-long learning for every new development in technical environment

Hierarchical Model of Outcomes at SUIT

Vision and Mission Statements of SUIT/Faculty/Department

↓ ↑

Program Educational Objectives (PEOs)

↓ ↑

Program Learning Outcomes (PLOs)

↓ ↑

Course Learning Outcomes (CLOs)

Abdur Rahman Khan
Team leads at Saudi Arabia
CCS China
Saudi Communications

SUIT is really the best educational organization. CDC is one of the great platforms for the SUIT alumni which provides a great employment opportunity. I am glad to be a beneficiary of this platform personally.