

DEPARTMENT OF COMPUTER SCIENCE & IT

VISION

To become a prominent Department of Computer Science & IT in producing competent professionals with research and innovation skills, inculcating moral values and societal concerns to meet the challenges of both academia and industrial level.

MISSION

- Providing a strong theoretical and practical background across the computer science discipline with an emphasis on software development.
- Imparting the skills necessary to continue education to grow professionally
- Empowering the youth in rural communities with computer education
- Inculcating professional behavior, strong ethical values, innovative research capabilities and leadership abilities
- Create facilities and expertise in advanced computer technology thereby promotes research
- Establish connection and partnership with industries in different sectors
- To attract internationally recognized faculty to overcome challenges at both national and international level
- Promote scientific research culture to meet social, economic and industrial challenges

PROGRAMS OFFERED:

Bachelor of Science in Computer Science

Bachelor of Science in Software Engineering

Bachelor of Science in Artificial Intelligence

Bachelor of Science in Data Science

Bachelor of Science in Cyber Security

Bachelor of Science in Electronics

Bachelor of Science in Telecommunication

Bachelor of Science in Computer Engineering Technology

FACULTY MEMBERS, DEPARTMENT OF COMPUTER SCIENCE & IT

Dr. Jahangir Khan	Head / Associate Professor	PhD & Post-Doc (Information Technology), China Agricultural University, Beijing & Engineering Academy of Serbia, Serbia
Dr. Shahid Latif	Associate Professor	PhD Computer Science, University of Peshawar, Peshawar
Dr. Fasee Ullah	Associate Professor	PhD & Post-Doc Computer Sc., University of Technology, Malaysia, University of Macau, Macau
Engr. Dr. Asad Ullah	Assistant Professor / FYP Coordinator	PhD Information and Communication Engineering, Beijing Institute of Technology, Beijing, China
Dr. Muhammad Asif Khan	Assistant Professor / PG Coordinator	PhD Computer Science, FAST-National University of Computer & Emerging Sciences, Islamabad
Dr. Muhammad Kamran Khan	Assistant Professor	PhD Computer Science & Systems Engineering, University of Genova, Genova, Italy
Dr. Muhammad Ismail Mohmand	Assistant Professor	PhD Software Engineering, Lincoln University College, Malaysia
Dr. Asad Ali	Assistant Professor	PhD Computer Science and Information Engineering, University of Salerno, Italy
Dr. Saadat Khan	Assistant Professor	PhD Applied Physics, Gomal University, Pakistan
Engr. Hamid Jan	Assistant Professor	MS System Engineering, University of Engineering and Technology, Peshawar
Engr. Mudassir Aman	Assistant Professor / Coordinator	MS Electrical & Electronics Engineering, University of Engineering and Technology, Peshawar
Mr. Maddad Khan	Assistant Professor	MS Information Technology, Southampton SOLENT University, England
Mr. Abu Bakar Nauman	Assistant Professor	MS Computer Science, Sarhad University of Science & IT, Peshawar
Engr. Aiman Rashid	Assistant Professor	MS Computer Engineering, University of Engineering and Technology, Peshawar
Ms. Zanooby Nisar	Assistant Professor	MS Computer Science, Islamia College Peshawar
Ms. Ayman Atta	Assistant Professor	MS Management Science, Institute of Management Sciences, Peshawar
Mr. Asad Malook	Assistant Professor	MS Electronics, Department of Electronics, University of Peshawar
Dr. Rahat Ullah	Associate Professor (on leave)	PhD Optical Engineering, Beijing University of Posts & Telecommunications, Beijing -China
Dr. Muhammad Afaq	Assistant Professor (on leave)	PhD Computer Engineering, Jeju National University, South Korea
Dr. Irshad Khan	Assistant Professor (on leave)	PhD Computer Science, Kyungpook National University, South Korea
Mr. Sibghat Ullah	Lecturer	PhD Electronic Science and Technology (in progress), Beijing University of Posts & Telecommunications, Beijing China
Mr. Hasib Shamshad	Lecturer	MS Computer Science, National University of Sciences and Technology, Islamabad
Engr. Aamir Shahzad	Lecturer	MS Software Engineering, University of Bradford, England
Mr. Haroon Zafar	Lecturer	MS Software Engineering, COMSATS University, Islamabad
Mr. Imdad Ul Haq	Lecturer /Assistant Coordinator	MS Computer Science, Sarhad University of Science & IT, Peshawar

Bachelor of Science in Computer Science

Program Code	001
Number of Courses	42 Theory + 16 Lab + Project
Credit Hours	136
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 with Equivalency Certificate from IBCC Islamabad or an equivalent certificate from a recognized institution.

*Pre-Medical Students must pass deficiency mathematics courses of 6 credits hours within the first year of their regular studies.

The Associate Degree Program (ADP) in Computing (two years program passed after Intermediate as per the guidelines of HEC and will be under semester system) will be enrolled in the 5th Semester without bridge semester.

**For the candidate with B.Sc. (2 years) Degree in Computer Science, the admission will be offered in the 5th Semester for the Four years Bachelor of Science in Computing Program as per HEC guidelines. For the candidates with a deficiency of core courses, the Departmental Admission Committee will suggest a bridge semester (if required) to be completed before enrollment in the 5th Semester.

Candidates need to pass an Entry test/ aptitude interview conducted by the university.

Program Objectives:

- To identify problems and formulate the solution for organizations and systems while merging conflicting objectives and finding solutions
- To exhibit high ethical standards and professional values for the betterment of society
- To strive for excellence in the field of computer science education and research, which requires continuous improvement, innovation and integrity
- To pursue academic collaboration with other universities in the world
- To foster an aptitude and desire for endless learning
- To make graduates capable of adopting new emerging technologies for the new generations

Program Outcomes:

- An ability to apply knowledge of Computing and mathematics to the appropriate discipline
- An ability to analyze a problem and identify and define the computing requirements appropriate to its solutions
- An ability to design, implement and evaluate a computer-based system, process, component, or program, including software systems of varying complexity, to meet desired needs
- An understanding of professional, ethical, legal, security and social issues and responsibilities
- An ability to analyze and evaluate performance tradeoffs of algorithms, data structures and hardware solutions
- An ability to function effectively on teams to accomplish a common goal

Bachelor of Science in Computer Science

1st SEMESTER

Course Code	Course Title	Cr. Hrs.18
CS 111T	Introduction to ICT	2-0
CS 111L	Introduction to ICT Lab	0-1
MA 101	Calculus & Analytical Geometry (CS Supporting)	3-0
MA 213	Discrete Maths (CS Core)	3-0
ENG 111	Basic Communication Skills (GE)	3-0
CS 116T	Programming Fundamentals (CS Core)	3-0
CS 116L	Programming Fundamentals Lab	0-1
GS 123/240	Islamic Studies/Values Ethics (For Non Muslim)	2-0
MA 112	*Mathematics I	3-0

2nd SEMESTER

Course Code	Course Title	Cr. Hrs.18
MA 313	Probability & Statistics (CS Supporting)	3-0
CS 125T	Object Oriented Programming (Pre-Req CS 116T) (CS Core)	3-0
CS 125L	Object Oriented Programming Lab (Pre-Req CS 116L)	0-1
MGT 106	Principles of Management	3-0
ENG 316	Effective Communications Skills (GE)	3-0
GS 128	Pakistan Studies (GE)	2-0
GS 111T	Physics I (UE)	2-0
GS 111L	Physics I Lab	0-1
MA 113	*Mathematics II	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 242	Differential Equations (CS Supporting)	3-0
EE 223T	Digital Logic Design	2-0
EE 223L	Digital Logic Design Lab	0-1
IT 314T	Artificial Intelligence (CS Core)	3-0
IT 314L	Artificial Intelligence Lab	0-1
IT 212T	Database Systems (CS Core)	3-0
IT 212L	Database Systems Lab	0-1

4th SEMESTER

Course Code	Course Title	Cr. Hrs.16
MA 235	Applied Linear Algebra (CS Supporting)	3-0
SE 336	Software Engineering (CS Core)	3-0
COM 304T	Data Communication & Networks (CS Core)	3-0
COM 304L	Data Communication & Networks Lab	0-1
CS 323T	Microprocessor Architecture & Assembly Language (CS Core)	2-0
CS 323L	Microprocessor Architecture & Assembly Language Lab	0-1
CS 241T	Design and Analysis of Algorithms (Pre-Req CS 232T) (CS Core)	2-0
CS 241L	Design and Analysis of Algorithms (Pre-Req CS 232T) Lab	0-1

5th SEMESTER

Course Code	Course Title	Cr. Hrs.16
CS 252	Computer organization & Architecture (CS Core)	3-0
CS 321T	Introduction to Data Science	2-0
CS 321L	Introduction to Data Science Lab	0-1
IT 421T	Web Design & Development	2-0
IT 421L	Web Design & Development Lab	0-1
CS 222T	Operating Systems (CS Core)	3-0
CS 222L	Operating Systems Lab	0-1
CS 340	Automata Theory (CS Core)	3-0

6th SEMESTER

Course Code	Course Title	Cr. Hrs.18
CS 346	Information Security	3-0
CS 345	Compiler Concepts (CS Core)	3-0
CS 333T	Visual Programming Using .Net/ E I	2-0
CS 333L	Visual Programming Using .Net Lab/ E I	0-1
CS 430	Human Computer Interaction	3-0
SE 222	Software Construction	3-0
CS 407T	Mobile Application Development/E II	2-0
CS 407L	Mobile Application Development /E II	0-1

7th SEMESTER

Course Code	Course Title	Cr. Hrs.17
MA 306	Numerical Analysis (CS Supporting)	3-0
ENG 322	Technical Report Writing (GE)	2-0
	Elective III	3-0
	Elective IV	3-0
	Elective V	3-0
RES 491	Project Phase I	0-3

8th SEMESTER

Course Code	Course Title	Cr. Hrs.15
CS 423	Parallel and Distributed Computing	3-0
CS 444	Professional Practices (GE)	3-0
MGT 270	Entrepreneurship	3-0
SE 468	Software Project Management (UE)	3-0
RES 492	Project Phase II	0-3

** BRIDGE SEMESTER

Course Code	Course Title	Cr. Hrs.12
GS 111T	Physics I	2-0
GS 111L	Physics I Lab	0-1
MA 313	Probability & Statistics	3-0
SE 336	Software Engineering	3-0
CS 323T	Microprocessor Architecture & Assembly Language	2-0
CS 323L	Microprocessor Architecture & Assembly Language Lab	0-1
CS 241T	Design and Analysis of Algorithms	2-0
CS 241L	Design and Analysis of Algorithms Lab	0-1

Electives

Database Development

Course Code	Course Title	Cr. Hrs.
CS 424	Database Security	3-0
IT 465T	Distributed Database	2-0
IT 465L	Distributed Database Lab	0-1
IT 422	Data Warehousing	3-0
IT 335T	Database Programming	2-0
IT 335L	Database Programming Lab	0-1
CS 412	Big Data Analytical	3-0
CS 413	Enterprise System	3-0

Software Engineering

Course Code	Course Title	Cr. Hrs.
SE 450	Software Metrics & Testing	3-0
SE 452	OOP-Software Engineering	3-0
SE 312	Formal Methods in SE	3-0
SE 412	Design Pattern	3-0
SE 222	Software Constructions	3-0
SE 311	Software Requirement Specification	3-0
SE 323	Software Verification & Validation	3-0

Web Design and Development

Course Code	Course Title	Cr. Hrs.
CS 334	Multimedia Design & Development	3-0
CS 406	Web Engineering	3-0
IT 275T	Web Programming	2-0
IT 275L	Web Programming Lab	0-1
CS 421	Semantic Web	3-0
CS 414	Cyber Security	3-0
CS 417	Internet of Things	3-0

Electives

Artificial Intelligence

Course Code	Course Title	Cr. Hrs.
CS 334T	Machine Learning	2-0
CS 334L	Machine Learning Lab	0-1
CS 406T	Computer Vision & Pattern Recognition	2-0
CS 406L	Computer Vision & Pattern Recognition Lab	0-1
CS 409	Deep Learning	3-0
CS 421	Natural Language Processing	3-0
CS 414T	Robotics & IoT	2-0
CS 414L	Robotics & IoT Lab	0-1
CS 417T	Programming For AI in Python	2-0
CS 417L	Programming For AI in Python lab	0-1

System Development

Course Code	Course Title	Cr. Hrs.
CS 332T	Visual Programming Using C++	2-0
CS 332L	Visual Programming Using C++ Lab	0-1
CS 403	Systems Programming	3-0
CS 415	Open Source Operating System	3-0

University Electives

Course Code	Course Title	Cr. Hrs.
GS 322	Sociology	3-0
MGT 106	Principles of Management	3-0
GS 302	Critical Logic & Thinking	3-0
HR 332	Human Resource Management	3-0

System Administration and Networking

Course Code	Course Title	Cr. Hrs.
CS 402T	Distributed Systems	2-0
CS 402L	Distributed Systems Lab	0-1
CS 411T	Embedded Systems	2-0
CS 411L	Embedded Systems Lab	0-1
IT 450T	Voice & Data Integration	2-0
IT 450L	Voice & Data Integration Lab	0-1
COM 401T	Wireless Application Protocols	2-0
COM 401L	Wireless Application Protocols Lab	0-1
IT 302T	Advanced Networking	2-0
IT 302L	Advanced Networking Lab	0-1
CS 310	Network Security	3-0
COM 375	Next Generation Networks	3-0
COM 422T	Routing & Switching	2-0
COM 422L	Routing & Switching Lab	0-1

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

NOTE: Students are required to study The Holy Quran as per the directive of the Government of Pakistan. See section 5 (a) e (i and ii).

Bachelor of Science in Software Engineering

Eligibility :

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

*Pre-Medical students must pass deficiency mathematics courses of 6 credit hours within the first year of their regular studies.

Candidates need to pass an Entry test/ aptitude interview conducted by the university.

Program Objectives:

- To produce graduates who have solid fundamental knowledge in the field of Software engineering
- To identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- To demonstrate professional advancement through technical achievements and leadership responsibility
- To produce graduates who will professionally and ethically recognize engineering solutions and make an informed judgment, which must consider the impact of engineering solutions in an economic, environmental global and societal context
- To utilize strong interpersonal skills and professional ethics when operating as leaders and members of multi-disciplinary teams
- After graduating, students will be able to implement the theoretic knowledge into practical field

Program Outcomes:

- To apply knowledge of mathematics, science, and engineering
- To analyze, design, verify, validate, implement and maintain software systems
- To design and conduct experiments, as well as to analyze and interpret data
- To design a system, component, or process to meet desired needs within realistic constraints
- To function on multi-disciplinary teams
- To identify and solve engineering problems

Program Code	002
Number of Courses	43 Theory + 17 Lab + Project
Credit Hours	136
Minimum Duration	8 Semesters, 4 Years
Maximum Duration	14 Semesters, 7 Years
Minimum CGPA Required To Earn Degree	2.00

1st SEMESTER

Course Code	Course Title	Cr. Hrs.18
CS 111T	Intro to ICT	2-0
CS 111L	Intro to ICT Lab	0-1
MA 101	Calculus & Analytical Geometry (CS Supporting)	3-0
MA 213	Discrete Maths (CS Core)	3-0
ENG 111	Basic Communication Skills (GE)	3-0
CS 116T	Programming Fundamentals (CS Core)	3-0
CS 116L	Programming Fundamentals Lab	0-1
GS 123/240	Islamic Studies/Values Ethics (For Non Muslim)	2-0
MA 112	*Mathematics I	3-0

2nd SEMESTER

Course Code	Course Title	Cr. Hrs.18
MA 313	Probability & Statistics (CS Supporting)	3-0
CS 125T	Object Oriented Programming (Pre-Req CS 116T) (CS Core)	3-0
CS 125L	Object Oriented Programming Lab (Pre-Req CS 116L)	0-1
MGT 106	Principles of Management (UE)	3-0
ENG 316	Effective Communications Skills (GE)	3-0
GS 128	Pakistan Studies (GE)	2-0
GS 111T	Physics I (UE)	2-0
GS 111L	Physics I Lab	0-1
MA 113	*Mathematics II	3-0

Bachelor of Science in Software Engineering

3rd SEMESTER

Course Code	Course Title	Cr. Hrs.	18
CS 232T	Data Structures and Algorithm (CS Core)	3-0	
CS 232L	Data Structures and Algorithm Lab	0-1	
MA 242	Software Engineering (CS Core)	3-0	
EE 223T	Digital Logic Design (CS Core)	2-0	
EE 223L	Digital Logic Design Lab	0-1	
IT 314T	Artificial Intelligence	3-0	
IT 314L	Artificial Intelligence Lab	0-1	
IT 212T	Database Systems (CS Core)	3-0	
IT 212L	Database Systems (CS Core)	0-1	

4th SEMESTER

Course Code	Course Title	Cr. Hrs.	16
MA 235	Applied Linear Algebra (CS Supporting)	3-0	
SE 313	Software Requirement Specification (SE Core)	3-0	
COM 304T	Data Communication & Networks (CS Core)	3-0	
COM 304L	Data Communication & Networks Lab	0-1	
CS 323T	Microprocessor Architecture & Assembly Language	2-0	
CS 323L	Microprocessor Architecture & Assembly Language 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	

5th SEMESTER

Course Code	Course Title	Cr. Hrs.	16
CS 321T	Introduction To Data Science	2-0	
CS 321L	Introduction To Data Science Lab	0-1	
IT 421T	Web Design and Development	2-0	
IT 421L	Web Design and Development Lab	0-1	
CS 222T	Operating Systems (CS Core)	3-0	
CS 222L	Operating Systems Lab	0-1	
SE 414	Software Design & Architecture	3-0	
	Supporting Elective I	3-0	

6th SEMESTER

Course Code	Course Title	Cr. Hrs.	18
CS 346	Information Security	3-0	
SE 222	Software Construction	3-0	
CS 408T	Mobile Application Development / Elective 1	2-0	
CS 408L	Mobile Application Development Lab / Elective 1	0-1	
CS 333T	Visual Programming Using .Net/Elective 2	2-0	
CS 333L	Visual Programming Using .Net Lab/Elective 2	0-1	
CS 438	Human Computer Interaction	3-0	
	Supporting Elective II	3-0	

7th SEMESTER

Course Code	Course Title	Cr. Hrs.	17
SE 312	Formal Method in SE	3-0	
ENG 322	Technical Report Writing (GE)	2-0	
SE 323	Software Quality Engineering	3-0	
	Elective III	3-0	
	Elective IV	2-0	
	Elective IV Lab	0-1	
RES 491	Project Phase I	0-3	

8th SEMESTER

Course Code	Course Title	Cr. Hrs.	15
SE 468	Software Project Management	3-0	
CS 444	Professional Practices	3-0	
RES 492	Project Phase II	0-3	
SE 512	Software Re Engineering	3-0	
MGT 270	Entrepreneurship	3-0	

Electives

Database Development

Course Code	Course Title	Cr. Hrs.
CS 424	Database Security	3-0
IT 465T	Distributed Database	2-0
IT 465L	Distributed Database Lab	0-1
IT 422	Data Warehousing	3-0
IT 335T	Database Programming	2-0
IT 335L	Database Programming Lab	0-1
CS 412	Big Data Analytical	3-0
CS 413	Enterprise System	3-0

Artificial Intelligence

Course Code	Course Title	Cr. Hrs.
CS 334T	Machine Learning	2-0
CS 334L	Machine Learning Lab	0-1
CS 406T	Computer Vision & Pattern Recognition	2-0
CS 406L	Computer Vision & Pattern Recognition Lab	0-1
CS 409	Deep Learning	3-0
CS 421	Natural Language Processing	3-0
CS 414T	Robotics & IOT	2-0
CS 414L	Robotics & IOT Lab	0-1
CS 417T	Programming For AI in Python	2-0
CS 417L	Programming For AI in Python Lab	0-1

Web Design and Development

Course Code	Course Title	Cr. Hrs.
CS 334	Multimedia Design & Development	3-0
CS 406	Web Engineering	3-0
IT 275T	Web Programming	2-0
IT 275L	Web Programming Lab	0-1
CS 421	Semantic Web	3-0
CS 414	Cyber Security	3-0
CS 417	Internet of Things	3-0
CS 346	Information Security	3-0

System Development

Course Code	Course Title	Cr. Hrs.
CS 332T	Visual Programming	2-0
CS 332L	Visual Programming Lab	0-1
CS 403	Systems Programming	3-0
CS 415	Open Source Operating System	3-0
CS 407T	Mobile Application Development (for Android)	2-0
CS 407L	Mobile Application Development (for Android) Lab	0-1
CS 408T	Mobile Application Development (for IOS)	2-0
CS 408L	Mobile Application Development (for IOS) Lab-0-1	

Software Engineering

Course Code	Course Title	Cr. Hrs.
SE 450	Software Metrics & Testing	3-0
SE 452	OOP-Software Engineering	3-0
SE 312	Formal Methods in SE	3-0
SE 412	Design Pattern	3-0
SE 222	Software Constructions	3-0
SE 311	Software Requirement Specification	3-0
SE 323	Software Verification & Validation	3-0

Electives

System Administration and Networking

Course Code	Course Title	Cr. Hrs.
CS 402T	Distributed Systems	2-0
CS 402L	Distributed Systems Lab	0-1
CS 411T	Embedded Systems	2-0
CS 411L	Embedded Systems Lab	0-1
IT 450T	Voice & Data Integration	2-0
IT 450L	Voice & Data Integration Lab	0-1
COM 401T	Wireless Application Protocols	2-0
COM 401L	Wireless Application Protocols Lab	0-1
IT 302T	Advanced Networking	2-0
IT 302L	Advanced Networking Lab	0-1
CS 310	Network Security	3-0
COM 375	Next Generation Networks	3-0
COM 422T	Routing & Switching	2-0
COM 422L	Routing & Switching Lab	0-1

University Electives

Course Code	Course Title	Cr. Hrs.
GS 322	Sociology	3-0
MGT 106	Principles of Management	3-0
GS 302	Critical Logic & Thinking	3-0
HR 332	Human Resource Management	3-0

Mubeen Khan Akhunzada
GD-IT
Co-munication
& Works Department KP



"Keep working hard with dedication." I chose SUIT because it is well known for its software engineering major. My teachers motivated and helped me a lot to finish my major and encouraged me to make my own identity and utilize my skills.

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

NOTE: Students are required to study The Holy Quran as per the directive of the Government of Pakistan. See section 5 (a) e (i and ii).

Bachelor of Science in Artificial Intelligence

Eligibility :

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

*Pre-Medical Students must pass deficiency mathematics courses of 6 credits hours within the first year of their regular studies.

Candidates need to pass an Entry test/ aptitude interview conducted by the university.

Program Objectives:

- Cultivating basic and novel knowledge of concepts with theories and applications is required in the professional field of artificial intelligence
- Familiarizing the students with current tools and technologies while learning new methodologies, leading to the development of systems related to Artificial Intelligence
- Design and create machine learning systems using best practices and patterns
- To identify when it is appropriate to use different AI algorithms for different problems
- Assess the impact of the ethical, social and legal issues regarding developing Artificial Intelligence Systems

Program Outcomes:

- To design and develop symbiotic Human-AI systems that balance the information processing power of computational systems with human intelligence and decision making
- To develop systems that process structured and unstructured data automatically using artificial intelligence frameworks and platforms
- Analyze datasets with the resulting supervised learning methods: for functional approximation, multiple linear regression, splines, and local regression; for classification, logistic regression, linear discriminant analysis, decision trees, bagging, random forests, and boosting, and support vector machines

Program Code	227
Number of Courses	40 Theory + 17 Lab + Project
Credit Hours	131
Minimum Duration	8 Semesters, 4 Years
Maximum Duration	14 Semesters, 7 Years
Minimum CGPA Required To Earn Degree	2.00

- To solve real-world problems in organizational processes and workflows by applying critical thinking, problem-solving, and cognitive computing skills

1st SEMESTER

Course Code	Course Title	Cr. Hrs.18
CS 111T	Introduction to ICT	2-0
CS 111L	Introduction to ICT Lab	0-1
MA 145	Discrete Structures	3-0
MA 101	Calculus and Analytical Geometry (CS supporting)	3-0
ENG 111	Basic Communication Skills (GE)	3-0
CS 116	Programming Fundamentals	3-0
CS 116L	Programming Fundamentals Lab	0-1
GS 123/240	Islamic Studies/Values Ethics (For Non Muslim)	2-0
MA 112	*Mathematics I	3-0

2nd SEMESTER

Course Code	Course Title	Cr. Hrs.18
CS 125T	Object Oriented Programming (Core) (Pre-Req CS 116T)	3-0
CS 125L	Object Oriented Programming-Lab (Pre-Req CS 116L)	0-1
ENG 316	Effective Communications Skills (GE)	3-0
MA 235	Applied Linear Algebra (CS Supporting)	3-0
GS 128	Pakistan Studies	2-0
MA 313	Probability & Statistics	3-0
	University Elective I	3-0
MA 113	*Mathematics II	3-0

Bachelor of Science in Artificial Intelligence

3rd SEMESTER

Course Code	Course Title	Cr. Hrs.	18
CS 232T	Data Structures & Algorithms (Pre-Req CS 125T)	3-0	
CS 232L	Data Structures & Algorithms Lab (Pre-Req CS 125L)	0-1	
IT 212T	Database Systems (Core)	3-0	
IT 212L	Database Systems Lab	0-1	
IT 314T	Artificial Intelligence	3-0	
IT 314L	Artificial Intelligence Lab	0-1	
EE 223T	Digital Logic Design	2-0	
EE 223L	Digital Logic Design Lab	0-1	
MA 242	Differential Equations (CS Supporting)	3-0	

4th SEMESTER

Course Code	Course Title	Cr. Hrs.	17
CS 203T	Computer Networks	3-0	
CS 203L	Computer Networks lab	0-1	
CS 204T	Computer Organization & Assembly Language	3-0	
CS 204L	Computer Organization & Assembly Language Lab	0-1	
CS 201T	Analysis of Algorithms (Pre-Req CS 232T)	2-0	
CS 201L	Analysis of Algorithms Lab (Pre-Req CS 232L)	0-1	
CS 208T	Programming For Artificial Intelligence	2-0	
CS 208L	Programming For Artificial Intelligence Lab	0-1	
SE 336	Software Engineering (CS Core)	3-0	

5th SEMESTER

Course Code	Course Title	Cr. Hrs.	18
CS 324T	Operating Systems (CS Core)	2-0	
CS 324L	Operating Systems Lab	0-1	
CS 301T	Artificial Neural Networks	2-0	
CS 301L	Artificial Neural Networks Lab	0-1	
CS 404T	Machine Learning	2-0	
CS 404L	Machine Learning Lab	0-1	
CS 336	Knowledge Representation & Reasoning Artificial Intelligence Elective I	3-0	
CS 346	Information Security	3-0	

6th SEMESTER

Course Code	Course Title	Cr. Hrs.	18
CS325T	Parallel and Distributed Computing	2-0	
CS325L	Parallel and Distributed Computing Lab	0-1	
CS305T	Computer Vision	2-0	
CS305L	Computer Vision lab	0-1	
CS 421	Natural Language Processing Artificial Intelligence Elective II	3-0	
	Artificial Intelligence Elective II Lab	0-1	
	Artificial Intelligence Elective III	3-0	
	University Elective II	3-0	

7th SEMESTER

Course Code	Course Title	Cr. Hrs.
ENG440	Technical & Business Writing	3-0
	Artificial Intelligence Elective IV	3-0
	Artificial Intelligence Elective V	3-0
	University Elective III	3-0
RES 491	Project Phase I	0-2

8th SEMESTER

Course Code	Course Title	Cr. Hrs.
	University Elective IV	3-0
CS 444	Professional Practices	3-0
RES 492	Project Phase II (Pre-Req FYP-I)	0-4

Electives

Artificial Intelligence

Course Code	Course Title	Cr. Hrs.
CS 306T	Data Mining	2-0
CS 306L	Data Mining Lab	0-1
CS 420T	Computer Vision and Pattern Recognition	2-0
CS 420L	Computer Vision and Pattern Recognition Lab	0-1
CS 409	Deep Learning	3-0
CS 425	Agent-Based Modeling	3-0
CS 427	Knowledge-Based Systems	3-0
CS 426	Fuzzy Systems	3-0
CS 410T	Robotics and IoT	2-0
CS 410L	Robotics and IoT Lab	0-1
CS 416T	Programming for AI in Python	2-0
CS 416L	Programming for AI in Python Lab	0-1
CS 435	Swarm Intelligence	3-0
CS 432	Reinforcement Learning	3-0
CS 433	Speech Processing	3-0

University Electives

Course Code	Course Title	Cr. Hrs.
GS 322	Sociology	3-0
MGT 106	Principles of Management	3-0
GS 302	Critical Logic & Thinking	3-0
HR 332	Human Resource Management	3-0

NOTE: Students are required to study The Holy Quran as per the directive of the Government of Pakistan. See section 5 (a) e (i and ii).

Bachelor of Science in Data Science

Eligibility :

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

*Pre-Medical Students must pass deficiency mathematics courses of 6 credits hours within the first year of their regular studies.

Candidates need to pass an Entry test/ aptitude interview conducted by the university.

Program Objectives:

- To gain hands-on experience with data-centric tools for statistical analysis and data visualization
- To equip students to transform data into actionable insights to make complex business decisions
- Pursue graduate studies or gain employment that requires expertise in data science and analytical reasoning
- To effectively communicate the results of data analysis in various formats to the target audience
- To prepare students to stand out in one of the world's fastest-growing careers

Program Outcomes:

- To apply the computing theory, languages, and algorithms, as well as mathematical and statistical models, and the principles of optimization to appropriately formulate and use data analyses
- To acquire, clean/process, and transform data as well as analyze & interpret data using an ethically responsible approach
- To use appropriate models of analysis, assess the quality of input, derive insight from results, and investigate potential issues
- Formulate and use appropriate models of data analysis to solve hidden solutions to business-related challenges

Program Code	228
Number of Courses	40 Theory + 18 Lab + Project
Credit Hours	131
Minimum Duration	8 Semesters, 4 Years
Maximum Duration	14 Semesters, 7 Years
Minimum CGPA Required To Earn Degree	2.00

1st SEMESTER

Course Code	Course Title	Cr. Hrs.18
CS 111T	Introduction to ICT	2-0
CS 111L	Introduction to ICT Lab	0-1
Ma145	Discrete Structures	3-0
MA 101	Calculus and Analytical Geometry (CS supporting)	3-0
ENG 111	Basic Communication Skills (GE)	3-0
CS 116T	Programming Fundamentals	3-0
CS 116L	Programming Fundamentals Lab	0-1
GS 123/240	Islamic Studies/Values Ethics (For Non Muslim)	2-0
MA 112	*Mathematics I	3-0

2nd SEMESTER

Course Code	Course Title	Cr. Hrs.18
CS 125T	Object Oriented Programming (Core) (Pre-Req CS 116T)	3-0
CS 125L	Object Oriented Programming-Lab (Core) (Pre-Req CS 116L)	0-1
	University Elective I	3-0
ENG 316	Effective Communications Skills (GE)	3-0
MA 235	Applied Linear Algebra	3-0
GS 128	Pakistan Studies	2-0
MA 313	Probability & Statistics	3-0
MA 113	*Mathematics II	3-0

3rd SEMESTER

Course Code	Course Title	Cr. Hrs.	18
CS 232T	Data Structures & Algorithms (Pre-Req CS 116T)	3-0	
CS 232L	Data Structures & Algorithms Lab (Pre-Req CS 116L)	0-1	
IT 212T	Database Systems (Core) (Pre-Req CS 125T)	3-0	
IT 212L	Database Systems Lab (Pre-Req CS 125L)	0-1	
IT 214T	Artificial Intelligence	3-0	
IT 214L	Artificial Intelligence Lab	0-1	
EE 223T	Digital Logic Design (Pre-Req MA 101)	2-0	
EE 223L	Digital Logic Design Lab (Pre-Req MA 101)	0-1	
MA 242	Differential Equations (CS Supporting)	3-0	

4th SEMESTER

Course Code	Course Title	Cr. Hrs.	17
CS 203T	Computer Networks	3-0	
CS 203L	Computer Networks Lab	0-1	
CS 204T	Computer Organization & Assembly Language (Pre-Req EE 223T)	3-0	
CS 204L	Computer Organization & Assembly Language Lab (Pre-Req EE 223L)	0-1	
CS 201T	Analysis of Algorithms (Pre-Req CS 232T)	2-0	
CS 201L	Analysis of Algorithms Lab (Pre-Req CS 232L)	0-1	
CS 321T	Introduction to Data Science (Pre-Req IT 214T)	2-0	
CS 321L	Introduction to Data Science Lab (Pre-Req EE 214L)	0-1	
MA 314	Advanced Statistics (Pre-Req MA 313)	3-0	

5th SEMESTER

Course Code	Course Title	Cr. Hrs.	18
CS 324T	Operating Systems (CS Core) (Pre-Req CS 232T)	2-0	
CS 324L	Operating Systems Lab (Pre-Req CS 232L)	0-1	
CS 306T	Data Mining (Pre-Req MA 314T, CS 321T)	2-0	
CS 306L	Data Mining Lab (Pre-Req MA 314L, CS 321L)	0-1	
CS 308T	Data Warehousing & Business Intel. (Pre-Req CS 321T)	2-0	
CS 308L	Data Warehousing & Business Intel. Lab (Pre-Req CS 321T)	0-1	
	Data Science Elective I	3-0	
	Data Science Elective II	2-0	
	Data Science Elective II Lab	0-1	
CS 346	Information Security	3-0	

6th SEMESTER

Course Code	Course Title	Cr. Hrs.	18
CS 325T	Parallel and Distributed Computing (Pre-Req CS 324T)	2-0	
CS 423L	Parallel and Distributed Computing Lab (Pre-Req CS 324L)	0-1	
CS 303T	Big Data Analytics (Pre-Req CS 321T)	2-0	
CS 303L	Big Data Analytics Lab (Pre-Req CS 321L)	0-1	
	Data Science Elective III	3-0	
CS 307T	Data Visualization	2-0	
CS 307L	Data Visualization Lab	0-1	
	Data Science Elective IV	3-0	
	University Elective II	3-0	

7th SEMESTER

Course Code	Course Title	Cr. Hrs.
SE 336	Software Engineering (CS Core)	3-0
	University Elective III	3-0
ENG 440	Technical & Business Writing	3-0
	Data Science Elective V	3-0
RES 491	Project Phase I	0-2

8th SEMESTER

Course Code	Course Title	Cr. Hrs.
	University Elective IV	3-0
CS 444	Professional Practices	3-0
RES 492	Project Phase II (Pre-Req FYP-I)	0-4

Electives

Data Science

Course Code	Course Title	Cr. Hrs.
CS 303T	Big Data Analytics	2-0
CS 303L	Big Data Analytics Lab	0-1
CS 304T	Business Process Analysis	2-0
CS 304L	Business Process Analysis Lab	0-1
CS 429T	Topics in Data Science	2-0
CS 429L	Topics in Data Science Lab	0-1
CS 300T	Advanced Database Management System	2-0
CS 300L	Advanced Database Management System Lab	0-1
CS 404T	Machine Learning	2-0
CS 404L	Machine Learning Lab	0-1
CS 302T	Artificial Neural Networks & Deep Learning	2-0
CS 302L	Artificial Neural Networks & Deep Learning Lab	0-1
CS 428T	Platforms & Architectures for Data Science	2-0
CS 428L	Platforms & Architectures for Data Science Lab	0-1
CS 437T	HCI & Computer Graphics	2-0
CS 437L	HCI & Computer Graphics Lab	0-1

University Electives

Course Code	Course Title	Cr. Hrs.
GS 322	Sociology	3-0
MGT 106	Principles of Management	3-0
GS 302	Critical Logic & Thinking	3-0
HR 332	Human Resource Management	3-0

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

NOTE: Students are required to study The Holy Quran as per the directive of the Government of Pakistan. See section 5 (a) e (i and ii).

Bachelor of Science in Cyber Security

Program Code	229
Number of Courses	40 Theory + 17 Lab + Project
Credit Hours	131
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 with Equivalency Certificate from IBCC Islamabad or an equivalent certificate from a recognized institution.

*Pre-Medical Students must pass deficiency mathematics courses of 6 credits hours within the first year of their regular studies.

Candidates need to pass an Entry test/ aptitude interview conducted by the university.

Program Objectives:

- To have the required knowledge and skills in cyber security and contribute to solving real-world cyber security challenges
- Be able to creatively apply theoretical and practical knowledge of cyber security to identify, assess, and manage cyber threats
- Work effectively, as an individual or as a member of a team, while communicating effectively with diverse audiences
- Design and evaluate cyber security systems, components, or processes that meet specified needs with consideration for public safety as well as social and cultural considerations
- To engage in lifelong professional development, contribute to ethical cyber security practices and cybersecurity-related industries, or pursue advanced study

Program Outcomes:

- To apply the design and development principles in the construction of secure software systems of varying complexity to demonstrate comprehension of the tradeoffs involved in the application of security
- Gather evidence and plan an appropriate response to a cybersecurity attack on a system or organization and apply current techniques, skills, and tools necessary for cyber defence within an organization
- Secure a computer-based system, process and component or program to meet business needs to identify, analyze, and

define the problem and the security risks and requirements to appropriate solutions

- Apply mathematical foundations, algorithmic principles, cryptography, and computing theory in the modelling and design of security solutions for software or system architecture

1st SEMESTER

Course Code	Course Title	Cr. Hrs.18
CS 111T	Introduction to ICT	2-0
CS 111L	Introduction to ICT Lab	0-1
MA145	Discrete Structures	3-0
MA 101	Calculus and Analytical Geometry (CS supporting)	3-0
ENG 111	Basic Communication Skills (GE)	3-0
CS 116T	Programming Fundamentals	3-0
CS 116L	Programming Fundamentals Lab	0-1
GS 123/240	Islamic Studies/Values Ethics (For Non Muslim)	2-0
MA 112	*Mathematics I	3-0

2nd SEMESTER

Course Code	Course Title	Cr. Hrs.18
CS 125T	Object Oriented Programming (Core) (Pre-Req CS 116T)	3-0
CS 125L	Object Oriented Programming-Lab (Core) (Pre-Req CS 116L)	0-1
	University Elective I	3-0
ENG 316	Effective Communications Skills (GE)	3-0
MA 235	Applied Linear Algebra (CS Supporting)	3-0
GS 128	Pakistan Studies	2-0
MA 313	Probability & Statistics	3-0
MA 113	*Mathematics II	3-0

Bachelor of Science in Cyber Security

3rd SEMESTER

Course Code	Course Title	Cr. Hrs.	18
CS 232T	Data Structures & Algorithms (Pre-Req CS 116T)	3-0	
CS 232L	Data Structures & Algorithms Lab (Pre-Req CS 116L)	0-1	
IT 212T	Database Systems (Core) (Pre-Req CS 125T)	3-0	
IT 212L	Database Systems Lab (Pre-Req CS 125L)	0-1	
IT 214T	Artificial Intelligence	3-0	
IT 214L	Artificial Intelligence Lab	0-1	
EE 223T	Digital Logic Design	2-0	
EE 223L	Digital Logic Design Lab	0-1	
CS 346	Information Security	3-0	

4th SEMESTER

Course Code	Course Title	Cr. Hrs.	17
CS 203T	Computer Networks	3-0	
CS 203L	Computer Networks Lab	0-1	
CS 204T	Computer Organization & Assembly Language (Pre-Req EE 223T)	3-0	
CS 204L	Computer Organization & Assembly Language Lab (Pre-Req EE 223L)	0-1	
CS 201T	Analysis of Algorithms (Pre-Req CS 232T)	2-0	
CS 201L	Analysis of Algorithms Lab (Pre-Req CS 232L)	0-1	
CS 206T	Introduction to Cyber Security (Pre-Req CS 346)	2-0	
CS 206L	Introduction to Cyber Security (Pre-Req CS 346)	0-1	
SE 336	Software Engineering (CS Core)	3-0	

5th SEMESTER

Course Code	Course Title	Cr. Hrs.	18
CS 324T	Operating Systems (CS Core) (Pre-Req CS 232T)	2-0	
CS 324L	Operating Systems Lab (Pre-Req CS 232L)	0-1	
CS 314T	Digital Forensics (Pre-Req CS 206T)	2-0	
CS 314L	Digital Forensics Lab (Pre-Req CS 206L)	0-1	
CS 322T	Network Security (Pre-Req CS 206T)	2-0	
CS 322L	Network Security Lab (Pre-Req CS 206L)	0-1	
CS 316T	Information Assurance	3-0	
MA 242	Differential Equations (CS Supporting) (Pre-Req MA 101)	3-0	
	Cyber Security Elective I	3-0	

6th SEMESTER

Course Code	Course Title	Cr. Hrs.	18
CS 325T	Parallel and Distributed Computing (Pre-Req CS 324T)	2-0	
CS 325L	Parallel and Distributed Computing Lab (Pre-Req CS 324L)	0-1	
CS 326T	Secure Software Design & Development (Pre-Req CS 206T)	2-0	
CS 326L	Secure Software Design & Development Lab (Pre-Req CS 206L)	0-1	
	Cyber Security Elective II	3-0	
CS 328T	Vulnerability Assessment & Reverse Engineering	2-0	
CS 328L	Vulnerability Assessment & Reverse Engineering Lab Cyber Security Elective III	0-1 3-0	
	University Elective II	3-0	

Bachelor of Science in Cyber Security

Electives

7th SEMESTER

Course Code	Course Title	Cr. Hrs.
ENG 440	Technical & Business Writing (Pre-Req ENG 111)	3-0
	University Elective III	3-0
	Cyber Security Elective IV	3-0
	Cyber Security Elective V	3-0
RES 491	Project Phase I	0-2

8th SEMESTER

Course Code	Course Title	Cr. Hrs.
	University Elective IV	3-0
CS 444	Professional Practices	3-0
RES 492	Project Phase II (Pre-Req FYP-I)	0-4

Cyber Security

Course Code	Course Title	Cr. Hrs.
CS 318T	Malware Analysis	2-0
CS 318L	Malware Analysis Lab	0-1
CS 340	Theory of Automata	3-0
CS 329T	Wireless and Mobile Security	2-0
CS 329L	Wireless and Mobile Security Lab	0-1
CS 437T	HCI & Computer Graphics	2-0
CS 437L	HCI & Computer Graphics Lab	0-1
CS 439T	Penetration Testing	2-0
CS 439L	Penetration Testing Lab	0-1
CS 436T	Computer Architecture	2-0
CS 436L	Computer Architecture Lab	0-1
CS 431T	Cyber Law & Cyber Crime (Cyber Warfare)	2-0
CS 431L	Cyber Law & Cyber Crime (Cyber Warfare) Lab	0-1
CS 430T	Advanced Digital Logic Design	2-0
CS 430L	Advanced Digital Logic Design Lab	0-1

University Electives

Course Code	Course Title	Cr. Hrs.
GS 322	Sociology	3-0
MGT 106	Principles of Management	3-0
GS 302	Critical Logic & Thinking	3-0
HR 332	Human Resource Management	3-0

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

NOTE: Students are required to study The Holy Quran as per the directive of the Government of Pakistan. See section 5 (a) e (i and ii).

Bachelor of Science in Electronics

Eligibility :

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

Pre-Medical Must Pass deficiency courses of mathematics of 6 credit hours with in first year of their regular studies.

Candidates need to pass an Entry test/aptitude interview conducted by the university.

Program 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.

Program Code	008
Number of Courses	43 + Research Project
Credit Hours	137
Minimum Duration	8 Semesters, 4 Years
Maximum Duration	16 Semesters, 8 Years
Minimum CGPA Required To Earn Degree	2.00

1st SEMESTER

Course Code	Course Title	Cr. Hrs.19
CS 114	Introduction to Computing	2-1
MA 101	Calculus & Analytical Geometry	3-0
GS 111	Physics I	2-1
ENG 111	Basic Communication Skills	3-0
ELC 127	Circuit Analysis	3-1
GS 123/240	Islamic Studies/Values, Ethics & Society (For Non Muslims)	2-0

2nd SEMESTER

Course Code	Course Title	Cr. Hrs.19
MA 105	Multivariable Calculus	3-0
ELC 216	Electronics I	2-1
GS 131	Physics II	2-1
CS 125	Object Oriented Programming	3-1
ENG 316	Effective Communications Skills	3-0
COM 301	Intro to Telecommunication	3-0

3rd SEMESTER

Course Code	Course Title	Cr. Hrs.18
MGT 106	Principles of Management	3-0
GS 128	Pakistan Studies	2-0
EE 226	Electronics II	2-1
MA 313	Probability & Statistics	3-0
EE 223	Digital Logic Design	3-1
MA 242	Differential Equations	3-0

4th SEMESTER

Course Code	Course Title	Cr. Hrs.17
IT 340	Industrial Management	3-0
EE 121	Electric Machine-I	2-1
COM 304	Data Communication	3-1
CS 323	Microprocessor Architecture & Assembly Language	2-1
RES 201	Seminar (Audit Basis)	0-1
MA 135	Applied Linear Algebra	3-0

5th SEMESTER

Course Code	Course Title	Cr. Hrs.18
COM 232	Signals and Systems	3-0
ENG 322	Technical Report Writing	3-0
ELC 334	Industrial Electronics	3-0
EE 367	Electronics Communication Systems	2-1
CS 252	Computer Architecture	3-0
MA 306	Numerical Analysis	3-0

6th SEMESTER

Course Code	Course Title	Cr. Hrs.16
ELC 229	Solid State Electronics	3-0
ELC 221	Instrumentation and Measurement	3-0
GS 304	Laser & Applied Optics	2-1
EE 411	Digital Signal Processing	3-1
ELC 315	Electromagnetic Field Theory	3-0

7th SEMESTER

Course Code	Course Title	Cr. Hrs.16
ELC 416	Power Electronics	2-1
ELC 321	Control Systems	3-1
ELC 338	Microprocessor Interfacing Technology	2-1
RES 491	Research Project I	0-3
	Elective-I	3-0

8th SEMESTER

Course Code	Course Title	Cr. Hrs.15
	Elective II	3-0
	Elective III	3-0
	Elective IV	3-0
	Elective V	3-0
RES 492	Research Project II	0-3

Electives

Course Code	Course Title	Cr. Hrs.
COM 311	Antenna & Wave Propagation	3-0
COM 313	Mobile Communication I	3-0
COM 350	Mobile Communication II	3-0
COM 375	Next Generation Networks	2-1
COM 406	Digital Image Processing	3-0
COM 445	Fiber Optic Communication Networks	3-0
ELC 360	Digital Filter Design	2-1
GS 233	Optics & Modern Physics	2-1
ELC 327	Advanced Electronics	3-0
ELC 370	Linear Integrated Circuits	3-0
ELC 455	Microwave & Satellite Systems	3-0
ELC 456	PLC Programming	2-1
ELC 475	VLSI & Digital Design	3-0
IT 308	Information Theory and Code	3-0

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

NOTE: Students are required to study The Holy Quran as per the directive of the Government of Pakistan. See section 5 (a) e (i and ii).

Bachelor of Science in Telecommunication

Eligibility :

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

Pre Medical Must Pass deficiency courses of mathematics of 6 credit hour's with in first year of their regular studies.

Candidates need to pass an Entry test/apptitude interview conducted by the university.

Program 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.

Program Code	003
Number of Courses	43 + Research Project
Credit Hours	137
Minimum Duration	8 Semesters, 4 Years
Maximum Duration	16 Semesters, 8 Years
Minimum CGPA Required To Earn Degree	2.00

1st SEMESTER

Course Code	Course Title	Cr. Hrs.18
CS 110	Introduction to Computing	2-1
MA 101	Calculus and Analytical Geometry	3-0
GS 111	Physics-I	2-1
ENG 111	Basic Communication Skills	3-0
ELC 127	Circuit Analysis	3-1
GS 123/240	Islamic Studies/Values, Ethics & Society (For Non Muslims)	2-0

2nd SEMESTER

Course Code	Course Title	Cr. Hrs.18
MA 105	Multivariable Calculus	3-0
GS 131	Physics-II	2-1
COM 301	Introduction to Telecommunication	3-0
ELC 216	Electronics-I	2-1
ENG 316	Effective Communication Skills	3-0
CS 125	Object Oriented Programming	2-1

3rd SEMESTER

Course Code	Course Title	Cr. Hrs.18
MGT 106	Principles of Management	3-0
EE 226	Electronics II	2-1
EE 223	Digital Logic Design	3-1
MA 313	Probability & Statistics	3-0
GS 128	Pakistan Studies	2-0
MA 242	Differential Equations	3-0

4th SEMESTER

Course Code	Course Title	Cr. Hrs.
EE 121	Electric Machines I	2-1
IT 340	Network Management	3-0
COM 204	Data Communication	3-0
CS 323	Microprocessor Architecture & Assembly Language	2-1
RES 201	Seminar	0-1
MA 135	Applied Linear Algebra	3-0

5th SEMESTER

Course Code	Course Title	Cr. Hrs.
CS 252	Computer Architecture	3-0
MA 226	Numerical Analysis	3-0
COM 232	Signals & Systems	3-0
EE 367	Communication Systems	2-1
COM 332	Transmission Media	3-0
ENG 322	Technical Report Writing	2-0

6th SEMESTER

Course Code	Course Title	Cr. Hrs.
COM 213	Computer Networks and Internetworking	3-1
EE 315	Electromagnetic Field Theory	3-0
COM 337	Digital Communications	2-1
EE 411	Digital Signals Processing	3-1
COM 228	Telecom Switching	3-0

7th SEMESTER

Course Code	Course Title	Cr. Hrs.
EE 321	Control Systems	3-1
EE 338	Microprocessor Interfacing Technologies	3-1
	Elective-I	3-0
	Elective-II	3-0
RES 491	Project Phase I	0-3

8th SEMESTER

Course Code	Course Title	Cr. Hrs.
	Elective-III	3-0
	Elective IV	3-0
	Elective V	3-0
	Elective-VI	3-0
RES 492	Project Phase-II	0-3

Electives

Course Code	Course Title	Cr. Hrs.
COM 311	Antenna & Wave Propagation	3-0
COM 313	Mobile Communication-I	3-0
COM 315	Network Filters	3-0
COM 340	Telecom Standards	3-0
COM 433	Optical & Wireless System	3-0
COM 440	Telecom Traffic Engineering	3-0
COM 350	Mobile Communication-II	3-0
COM 375	Next Generation Networks	3-0
COM 408	Fiber Optic Communications	3-0
COM 422	Routing and Switching	2-1
COM 462	Advance Signaling Systems 7	3-0
EE 455	Microwave & Satellite System	3-0
MA 330	Stochastic Process	3-0

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

NOTE: Students are required to study The Holy Quran as per the directive of the Government of Pakistan. See section 5 (a) e (i and ii).

Bachelor of Science in Computer Engineering Technology

Program Code	180
Number of Courses	33 + Research Project
Credit Hours	134
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/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 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 professional 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.

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

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.19
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 402	Supervised Industrial Training-II	0-16

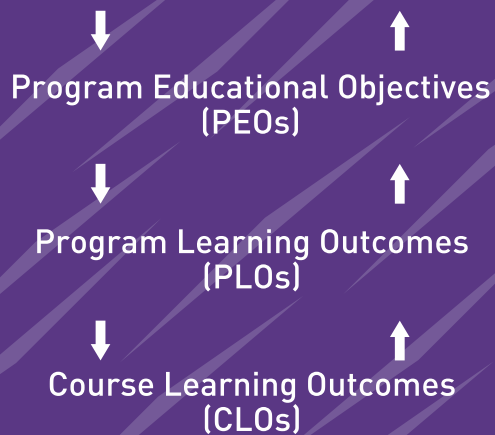
Program Learning Outcomes (PLOs):

- 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 SUIIT

Vision and Mission Statements of SUIIT/Faculty/Department



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



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

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

NOTE: Students are required to study The Holy Quran as per the directive of the Government of Pakistan. See section 5 (a) e (i and ii).