DEPARTMENT OF

COMPUTER SCIENCE

PROGRAMS OFFERED

- BS Computer Science
- BS Software Engineering
- BS Artificial Intelligence
- BS Computer Enginering
- MS Computer Science
- MS Software Engineering
- P.hD Computer Science

MISSION STATEMENT

To impart computing knowledge, problem solving techniques, and practical skills to our graduates with a high level of professionalism and ethical values for addressing the challenges of modern society through innovative solutions.

Message From Head Of Department

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Welcome to the Department of Computer Science, where we are dedicated to cultivating professionals with exceptional computing skills, innovative thinking, and strong ethical values. Our mission is to equip graduates with the knowledge and practical abilities to tackle modern societal challenges. We are committed to fostering lifelong learning, teamwork, and professional growth, ensuring our students excel in their careers and contribute positively to society. Join us in our journey towards excellence and innovation in computer technologies.

Dr. Maryam Mahsal Khan

Associate Professor – PhD Computer Science, University of Newcastle, Australia

Dr. Maryam Mahsal Khan
Associate Professor/ Head of Department
PhD Computer Science, University of Newcastle, Australia

Mr. Attiq ur Rehman
Assistant Professor
MS Computer Science Agriculture University, Peshawar
PhD (in Progress)

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MS Computer Science, CECOS University

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Lecturer/FYP coordinator (SE)
MS Computer Science, Agriculture University, Peshawar

Waqas Siddiqui
Program Manager CS, CE, MS Management Sciences
Abasyn University.

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MS Computer Science, Gandahara University, Peshawar

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MS Computer Science, Islamia College, Peshawar
PhD (in Progress)

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Lecturer
M.Sc Computer System Engineering, UET, Peshawar

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MS Computer Science, GIKI Swabi.

Mr. Shahriaz Zeb
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Mr. Sikander Azam
Lecturer
MS Computer Science, CECOS University,

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BS Computer Science, City University
MS (in Progress)

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PhD Computer Science,
University of Sao Paulo(USP), Sao Carlos, Barzil

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Assistant Professor
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MS(HRM) Gomal University, D.I.Khan

Tauseeq ur Rehman
Program Manager AI, SE, MS Computer Science,
CECOS University

Mr. Asad Iftikhar (On Leave)
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MS Wireless Networks, University of London, UK

Mr. Shiraz Hassan
Lecturer
MS Computer Science, CECOS University

Mr. Wisal Zafar
Lecturer/ MS Software Engineering
Iqra National University

Mr. Kamal Ahmad
Lecturer
MS Software Engineering, Gandhara University

Mr. Muhammad Yahya
Lecturer
MS Computer Science, Qurtuba University

Mr. Muhammad Younas
Lecturer
MS Computer Engineering, UET Taxila

Adnan Sher
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MS Computer Engineering, GIKI Swabi.

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BS Software Engineering, IMSciences
MS Software Engineering (in progress)

Mrs. Manahil Ather
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BS Software Engineering, CECOS University

Mr. Hamza Noman
Junior Lecturer
BS Software Engineering, CECOS University

Mr. Ibtisam Khan
Junior Lecturer
BS Software Engineering, CECOS University

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Associate Professor
PhD Mechatronics Engineering
UET Peshawar

Mr. Col. Ashfaq Ahmad
Associate Professor
MSc Computer System Engineering, NUST, Islamabad

Mr. Abdul Hanan
Assistant Professor
MS Computer Science, CECOS University

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PhD (in Progress)

Asad Khan
Lecturer
MS Computer Science, IMSciences

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Lecturer
MS Computer Science, Bahria University Islamabad

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Lecturer
MS Computer Science (Software Engineering)
CECOS University

Mr. Muhammad Bilal Khan
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London Metropolitan University, UK

Mr. Saifullah Khan
Lecturer
MSc. Advanced Computer Networking
Glasgow Caledonian University, UK

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MS (in Progress)

Mr. Muhammad Musab Abdullah
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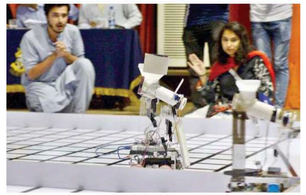
BS Computer Science, Agriculture University
MS (in Progress)

Mr. Rana Sumraiz
Junior Lecturer
BS Software Engineering, CECOS University

FACULTY OF

COMPUTER SCIENCE



Dig Tech

- A Signature Event organized by the Department of Computer Science. Dig Tech is Biggest Tech Event of KPK held every year at CECOS

CURRICULUM OF BS COMPUTER SCIENCE

Semester-I

Course Code	Course Title	Credit Hours Theory + Lab
CS-110	Applications of Information and Communication Technologies	2+1
CS-112	Programming Fundamentals	3+1
ENG-101	Functional English	3+0
MATH-106	Calculus and Analytical Geometry	3+0
CS-111	Discrete Structures	3+0
SS-101	Islamic Studies	2+0
SS-111	Ethics (For Non Muslims)	2+0
Math-103	Pre-Calculus 1 (Pre Medical Students only)	3+0
Total Credit Hours		18

Semester-II

Course Code	Course Title	Credit Hours Theory + Lab
CS-113	Object Oriented Programming	3+1
MATH-204	Multivariable Calculus	3+0
CS-114	Database Systems	3+1
MATH-107	Linear Algebra	3+0
NS-101	Applied Physics	3+0
Math-104	Pre-Calculus 2 (Pre Medical Students only)	3+0
Total Credit Hours		17

Semester-III

Course Code	Course Title	Credit Hours Theory + Lab
CS-222	Operating Systems	2+1
CS-220	Software Engineering	3+0
SS-215	Digital Logic Design	2+1
CS-216	Data Structures	3+1
ENG-102	Expository Writing	3+0
MGT-246	Introduction to Entrepreneurship	2+0
Total Credit Hours		18

Semester-IV

Course Code	Course Title	Credit Hours Theory + Lab
CS-223	Analysis of Algorithms	3+0
CS-221	Computer Organization & Assembly Language	2+1
CS-230	Theory of Automata	3+0
CS-218	Artificial Intelligence	2+1
ENG-203	English 3 / Technical & Business writing	3+0
SS-203	Ideology & Constitution of Pakistan	2+0
Total Credit Hours		17

Semester-V

Course Code	Course Title	Credit Hours Theory + Lab
CS-333	Computer Architecture	3+0
CS-319	Computer Networks	2+1
CS-332	HCI & Computer Graphic	2+1
CS-34x	DElective-I	2+1
CS-34x	DElective-II	2+1
Math-211	Probability & Statistics	3+0
Total Credit Hours		18

Semester-VI

Course Code	Course Title	Credit Hours Theory + Lab
CS-317	Information Security	2+1
CS-34x	DElective-III	3+0
CS-34x	DElective-IV	2+1
CS-34x	DElective-V	2+1
CS-34x	DElective-VI	2+1
CS-331	Advance data Base Management systems	2+1
Total Credit Hours		18

Semester-VII

Course Code	Course Title	Credit Hours Theory + Lab
CS-424	Final Year Project - I	0+2
CS-435	Parallel & Distributed Computing	3+0
CS-108	Professional Practices	2+0
CS-44x	DElective VII	2+1
SS-105	Introduction to Economics	2+0
SS-113	Understanding of Holy Quran-1	0+1
Total Credit Hours		13

Semester-VIII

Course Code	Course Title	Credit Hours Theory + Lab
CS-425	Final Year Project - II	0+4
CS-434	Compiler Construction	2+1
SS-204	Civics & Community Engagement	2+0
SS-102	Pakistan Studies	2+0
MGT-121	Introduction to Marketing	3+0
SS-114	Understanding of Holy Quran-1	0+1
Total Credit Hours		15

Total Credit Hours = 134

Fact File

Duration: Four Years
Eligibility: Minimum 50% marks in intermediate or equivalent with mathematics/minimum 50% marks in intermediate (without mathematics) with two deficiency courses of mathematics to be studied and passed in 1st and 2nd semester after admission.

CURRICULUM OF BS SOFTWARE ENGINEERING

Semester-I

Course Code	Course Title	Credit Hours Theory + Lab
CS-110	Applications of Information and Communication Technologies	2+1
CS-112	Programming Fundamentals	3+1
ENG-101	Functional English	3+0
MATH-106	Calculus and Analytical Geometry	3+0
CS-111	Discrete Structures	3+0
SS-101	Islamic Studies	2+0
SS-111	Ethics (For Non Muslims)	2+0
Math-103	Pre-Calculus 1 (Pre Medical Students only)	3+0
Total Credit Hours		18

Semester-II

Course Code	Course Title	Credit Hours Theory + Lab
CS-113	Object Oriented Programming	3+1
MATH-204	Multivariable Calculus	3+0
CS-114	Database Systems	3+1
MATH-107	Linear Algebra	3+0
NS-101	Applied Physics	3+0
MATH-104	***Pre-Calculus II (Pre-Medical Students Only)	3+0
Total Credit Hours		17

Semester-III

Course Code	Course Title	Credit Hours Theory + Lab
CS-222	Operating Systems	2+1
CS-220	Software Engineering	3+0
CS-215	Digital Logic Design	2+1
CS-216	Data Structures	3+1
ENG-102	Expository Writing	3+0
MGT-246	Introduction to Entrepreneurship	2+0
Total Credit Hours		18

Semester-IV

Course Code	Course Title	Credit Hours Theory + Lab
CS-223	Analysis of Algorithms	3+0
CS-221	Computer Organization & Assembly Language	2+1
SS-203	Ideology and Constitution of Pakistan	2+0
CS-218	Artificial Intelligence	2+1
SE-x4x	DElective 1	3+0
SE-x4x	DElective 2	2+1
Total Credit Hours		17

Semester-V

Course Code	Course Title	
CS-319	Computer Networks	2+1
SE-331	Software Construction & Development	2+1
SE-330	Software Design & Architecture	3+0
SE-333	Software Quality Engineering	2+1
SE-334	Software Requirement Engineering	2+1
SE-x4x	DElective 3	2+1
Total Credit Hours		18

Semester-VI

Course Code	Course Title	Credit Hours Theory + Lab
SE-332	Software Project Management	2+1
SE-335	Parallel & Distributed Computing	3+0
SE-x4x	DElective 4	3+0
SE-x4x	DElective 5	3+0
SE-x4x	DElective 6	2+1
SE-x4x	DElective 7	3+0
Total Credit Hours		18

Semester-VII

Course Code	Course Title	Credit Hours Theory + Lab
CS-417	Information Security	2+1
MATH-211	Probability & Statistics	3+0
CS-424	Final Year Project - I	0+2
CS-108	Professional Practices	2+0
SS-105	Introduction to Economics	2+0
SS-113	Understanding of Holy Quran - I	0+1
Total Credit Hours		13

Semester-VIII

Course Code	Course Title	Credit Hours Theory + Lab
CS-425	Final Year Project - II	0+4
ENG-203	English III/ Technical & Business Writing	3+0
SS-204	Civics and Community Engagement	2+0
SS-102	Pakistan Studies	2+0
MGT-121	Introduction to Marketing	3+0
SS-114	Understanding of Holy Quran - II	0+1
Total Credit Hours		15

Total Credit Hours = 134

Fact File

Duration: Four Years
Eligibility: Minimum 50% marks in intermediate or equivalent with mathematics/minimum 50% marks in intermediate (without mathematics) with two deficiency courses of mathematics to be studied and passed in 1st and 2nd semester after admission.

CURRICULUM OF BS ARTIFICIAL INTELLIGENCE

Semester-I

Course Code	Course Title	Credit Hours Theory	Lab
CS-110	Applications of Information and Communication Technologies	2	1
CS-112	Programming Fundamentals	3	1
ENG-101	Functional English	3	0
MATH-106	Calculus and Analytical Geometry	3	0
CS-111	Discrete Structures	3	0
SS-101	Islamic Studies	2	0
SS-111	Ethics (For Non Muslims)	2	0
Math-103	Pre-Calculus 1 (Pre Medical Students only)	3	0
Total Credit Hours		16	2

Semester-II

Course Code	Course Title	Credit Hours Theory	Lab
CS-113	Object Oriented Programming	3	1
MATH-204	Multivariable Calculus	3	0
CS-114	Database Systems	3	1
MATH-107	Linear Algebra	3	0
NS-101	Applied Physics	3	0
MATH-104	*Pre-Calculus II (Pre-Medical Students Only)	3	0
Total Credit Hours		15	2

Semester-III

Course Code	Course Title	Credit Hours Theory	Lab
CS-222	Operating Systems	2	1
CS-220	Software Engineering	3	0
CS-216	Data Structures	3	1
CS-115	Digital Logic Design	2	1
CS-218	Artificial Intelligence	2	1
SS-203	Ideology and Constitution of Pakistan	2	0
Total Credit Hours		14	4

Semester-IV

Course Code	Course Title	Credit Hours Theory	Lab
CS-221	Computer Organization & Assembly Language	2	1
AI-230	Programming for AI	2	1
CS-219	Computer Networks	2	1
MATH-211	Probability & Statistics	3	0
AI-231	Machine Learning	3	0
ENG-102	Expository Writing	3	0
Total Credit Hours		15	3

Semester-V

Course Code	Course Title	Credit Hours Theory	Lab
CS-323	Analysis of Algorithms	3	0
CS-317	Information Security	2	1
AI-34x	DElective 1	2	1
AI-34x	DElective 2	2	1
AI-34x	DElective 3	2	1
MGT-246	Introduction to Entrepreneurship	2	0
Total Credit Hours		13	4

Semester-VI

Course Code	Course Title	Credit Hours Theory	Lab
AI-332	Artificial Neural Networks & Deep Learning	2	1
AI-334	Computer Vision	2	1
AI-34x	DElective 4	2	1
AI-35x	DElective 5	3	0
AI-35x	DElective 6	3	0
SS-204	Civics and Community Engagement	2	0
Total Credit Hours		14	3

Semester-VII

Course Code	Course Title	Credit Hours Theory	Lab
AI-435	Parallel & Distributed Computing	3	0
AI-433	Knowledge Representation & Reasoning	2	1
CS-108	Professional Practices	2	0
SS-105	Introduction Economics	2	0
CS-424	Final Year Project - I	0	2
SS-113	Understanding of Holy Quran - I	0	1
Total Credit Hours		9	4

Semester-VIII

Course Code	Course Title	Credit Hours Theory	Lab
Eng-203	English III/ Technical & Business Writing	3	0
AI-44x	DElective 7	2	1
SS-102	Pakistan Studies	2	0
CS-425	Final Year Project - II	0	4
MGT-121	Introduction to Marketing	3	0
SS-114	Understanding of Holy Quran - II	0	1
Total Credit Hours		10	6

Total Credit Hours = 134

Fact File

Duration: Four Years

Eligibility: Minimum 50% marks in intermediate or equivalent with mathematics/minimum 50% marks in intermediate (without mathematics) with two deficiency courses of mathematics to be studied and passed in 1st and 2nd semester after admission.

CURRICULUM OF BS COMPUTER ENGINEERING

Semester-I

Course Code	Course Title	Credit Hours Theory + Lab
CS-110	Applications of Information and Communication Technologies	2+1
CS-112	Programming Fundamentals	3+1
ENG-101	Functional English	3+0
MATH-106	Calculus & Analytical Geometry	3+0
COMP-130	Linear Circuit Analysis	3+0
SS-101	Islamic Studies	2+0
SS-111	Ethics (For Non Muslims)	2+0
Math-103	Pre-Calculus 1 (Pre Medical Students only)	3+0
Total Credit Hours		18

Semester-II

Course Code	Course Title	Credit Hours Theory + Lab
CS-113	Object Oriented Programming	3+1
MATH-204	Multivariable Calculus	3+0
CS-114	Database Systems	3+1
NS-101	Applied Physics	3+0
COMP-132	Electronic Devices & Circuits	2+1
MATH-104	*Pre-Calculus II (Pre-Medical Students Only)	3+0
Total Credit Hours		17

Semester-III

Course Code	Course Title	Credit Hours Theory + Lab
COMP-231	Electrical Network Analysis	2+1
CS-220	Software Engineering	3+0
CS-215	Digital Logic Design	2+1
MATH-211	Probability & Statistics	3+0
CS-219	Computer Networks	2+1
CS-223	Analysis of Algorithms	3+0
Total Credit Hours		18

Semester-IV

Course Code	Course Title	Credit Hours Theory + Lab
CS-221	Computer Organization & Assembly Language	2+1
CS-111	Discrete Structures	3+0
CS-216	Data Structures	3+1
MATH-107	Linear Algebra	3+0
CS-108	Professional Practice	2+0
COMP-234	Signals & System	2+1
Total Credit Hours		18

Semester-V

Course Code	Course Title	
CS-322	Operating Systems	2+1
CS-318	Artificial Intelligence	2+1
COMP-34x	DElective 1	2+1
COMP-333	Computer Architecture	3+0
ENG-102	Expository Writing	3+0
SS-105	Introduction to Economics	2+0
Total Credit Hours		17

Semester-VI

Course Code	Course Title	Credit Hours Theory + Lab
CS-317	Information Security	2+1
COMP-335	Parallel & Distributed Computing(2-1)	3+0
COMP-34x	DElective 2	2+1
COMP-34x	DElective 3	3+0
COMP-34x	DElective 4	2+1
ENG-203	English III / Technical & Business Writing	3+0
Total Credit Hours		18

Semester-VII

Course Code	Course Title	Credit Hours Theory + Lab
COMP-44x	DElective 5	2+1
COMP-45x	DElective 6	2+1
SS-203	Ideology & Constitution of Pakistan	2+0
MGT-246	Introduction to Entrepreneurship	2+0
CS-424	Final Year Project - I	0+2
SS-113	Understanding of Holy Quran - I	0+1
Total Credit Hours		13

Semester-VIII

Course Code	Course Title	Credit Hours Theory + Lab
COMP-45x	DElective 7	3+0
SS-102	Pakistan Studies	2+0
CS-425	Final Year Project - II	0+4
MGT-121	Introduction to Marketing	3+0
SS-204	Civics and Community Engagement	2+0
SS-114	Understanding of Holy Quran - II	0+1
Total Credit Hours		15

Total Credit Hours = 134

Fact File

Duration: Four Years

Eligibility: Minimum 50% marks in intermediate or equivalent with mathematics/minimum 50% marks in intermediate (without mathematics) with two deficiency courses of mathematics to be studied and passed in 1st and 2nd semester after admission.

Domain Elective

Computer Science

Course Code	Subject	Credit Hours
CS-x40	Web Technologies	2-1
CS-x41	Mobile Application Development	2-1
CS-x42	Advanced Programming	2-1
CS-x43	Numerical Analysis	2-1
CS-x44	Web Engineering	2-1
CS-x45	Cyber Security	2-1
CS-x46	Software Testing & Quality Assurance	2-1
CS-x47	Cloud Computing	2-1
CS-x48	Object Oriented Analysis & Design	2-1
CS-x49	Wireless Network	3-0
CS-x50	Data Warehousing	3-0
CS-x51	Machine Learning	3-0
CS-x52	Deep Learning	3-0
CS-x53	Data Mining	3-0
CS-x54	Data Science Technologies	3-0
CS-x53	Big Data Analytics	3-0
CS-x54	Natural Language Processing	3-0
CS-x55	Robotics	3-0
CS-x56	Realtime Systems	3-0
CS-x57	Digital Image Processing	3-0
CS-x58	Game Development	3-0
CS-x59	Computer Vision	3-0
CS-x60	Internet of Things	2-1

Software Engineering

Course Code	Subject	Credit Hours
SE-x40	Software Verification and Validation (Testing & QA)	2-1
SE-x41	Object Oriented Analysis & Design	2-1
SE-x42	*Computer Architecture	3-0
SE-x43	Theory of Automata	3-0
SE-x44	HCI & Computer Graphics	3-0
SE-x45	Advanced Database Management	3-0
SE-x46	Data Science	2-1
SE-x47	Software Re-Engineering	2-1
SE-x48	Mobile Application Development	2-1
SE-x49	Web Engineering	2-1
SE-x50	Advanced Programming	2-1
SE-x51	Computer Vision	3-0
SE-x52	Machine Learning	3-0
SE-x53	Cloud Computing	2-1
SE-x54	Data Science Technologies	3-0
SE-x55	Big Data Analysis	3-0
SE-x56	Game Development	3-0
SE-x57	Deep Learning	3-0
SE-x58	Natural Language Processing	3-0
SE-x59	Realtime Systems	3-0
SE-x60	Agent Based Software Engineering	3-0
SE-x61	Global Software Development	3-0
SE-x62	Management Information System	3-0
SE-x63	Information System Audit	3-0
SE-x64	Software Engineering Economics	3-0
SE-x65	Software Metrics	3-0
SE-x66	Internet of Things	2-1
SE-x67	Formal Methods in Software Engineering	3-0

Artificial Intelligence

Course Code	Subject	Credit Hours
AI-x40	Natural Language Processing	2-1
AI-x41	Speech Processing	2-1
AI-x42	Data Mining	2-1
AI-x43	Advance Statistics	2-1
AI-x44	Reinforcement Learning	2-1
AI-x45	Theory of Automata	3-0
AI-x46	HCI & Computer Graphics	2-1
AI-x47	Fuzzy Systems	2-1
AI-x48	Swarm Intelligence	2-1
AI-x49	Agent Based Modeling	2-1
AI-x50	Knowledge Based Systems	2-1
AI-x51	Mobile Application Development	2-1
AI-x52	Web Technologies	3-0
AI-x53	Data Science	3-0
AI-x54	Digital Image & Signal Processing	3-0
AI-x55	Cognitive AI	3-0
AI-x56	Evolutionary Computing	3-0
AI-x57	Internet of Things	2-1
AI-x58	Cloud Computing	2-1

Computer Engineering

Course Code	Subject	Credit Hours
COMP-x40	Parallel Computer Architectures	2-1
COMP-x41	Digital System Design	2-1
COMP-x42	Computer Interfacing	2-1
COMP-x43	Control Engineering	3-0
COMP-x44	Theory of Automata	3-0
COMP-x45	HCI & Computer Graphics	3-0
COMP-x46	Digital Signal Processing	2-1
COMP-x47	Embedded Systems	2-1
COMP-x48	Artificial Neural Networks & Deep Learning	2-1
COMP-x49	Digital Image Processing	2-1
COMP-x50	Internet of Things	2-1
COMP-x51	Cloud Computing	2-1
COMP-x52	Wireless Network	3-0
COMP-x53	Robotics	3-0

MS COMPUTER SCIENCE

Minimum 2.0 CGPA or 16-years equivalent degree from HEC recognized Institution / University with any of the following BS degrees.

ELIGIBILITY CRITERIA

a. Applicants with undergraduate degrees accredited by NCEAC:
Admission is allowed without any conditions.

b. Applicants with undergraduate degrees not accredited by NCEAC:
These include degrees such as Computer Systems Engineering, Computer Engineering, Software Engineering and other related fields. Admission may be granted; however, students must fulfill any recommended deficiencies identified in the Computing core courses as outlined in the NCEAC 2023 curriculum. These deficiencies will be determined by the Graduate Studies Committee through a review of the student's transcript. Students lacking any of the required core courses will be required to complete them prior to formal admission into the program.

c. Applicants with Foreign Degrees:
The HEC Equivalence Certificate will be used to determine whether the degree aligns with an NCEAC or non-NCEAC accredited program. Admission decisions will then be based on this determination.

MS SOFTWARE ENGINEERING

Minimum 2.0 CGPA
or 16-years equivalent degree from HEC recognized Institution / University with any of
the following BS degrees.

ELIGIBILITY CRITERIA

a. Applicants with Undergraduate Degrees Accredited by NCEAC:
Admission is allowed without any conditions.

b. Applicants with Undergraduate Degrees Not Accredited by NCEAC:
These include degrees such as Computer Systems Engineering, Computer Engineering, and other related fields. Admission may be granted; however, students must fulfill any recommended deficiencies identified in the Computing
core courses as outlined in the NCEAC 2023 curriculum. These deficiencies will be determined by the Graduate Studies Committee through a review of the student's transcript. Students lacking any of the required core courses will be required to complete them prior to formal admission into the program.

c. Applicants with Foreign Degrees:
The HEC Equivalence Certificate will be used to determine whether the degree aligns with an NCEAC-accredited program. Admission decisions will be based on this determination

PHD COMPUTER SCIENCE

ELIGIBILITY CRITERIA

Having M.Phil/ M.S/ Equivalent degree in any of the following relevant fields from a HEC recognized university with a minimum CGPA of 3.0 out of 4.0 in the semester system or first division in the annual examination system. In the case of a foreign qualification, an HEC equivalence certificate must be provided. The relevance of the degree will then be assessed based on the specific category under which it falls.

a. MS in Computer Science, Software Engineering, Information Technology, Information Systems, Artificial Intelligence, Data Science, or Cybersecurity: Admission is permitted without any additional requirements.
b. MS in Computer Systems Engineering: Admission is allowed, as the program aligns with UNESCO ISCED-F sub-discipline 0613 Software and application development and analysis.
c. MS in Computer Engineering: Admission is allowed if the applicant's undergraduate degree (BS in Computer Engineering) is accredited by NCEAC. Admission is not allowed if the BS degree is accredited by PEC, due to differing accreditation standards and curriculum alignment.

MS COMPUTER SCIENCE

Curriculum for MS Computer Science Program

Core Courses

Course Code	Subject	Credit Hours
CS-702	Advanced Automata Theory	3
CS-703	Advanced Analysis of Algorithms	3
CS-704	Advanced Operating Systems	3
CS-705	Advanced Computer Architecture	3
SS-113	Understanding of Holy Quran - I	0+1
SS-114	Understanding of Holy Quran - II	0+1

Mandatory Elective Courses

Course Code	Subject	Credit Hours
CS-701	Research Methodology	3

Software Engineering Elective Courses

Course Code	Subject	Credit Hours
CS-710	Advanced Requirement Engineering	3
CS-711	Advanced Software System Architecture	3
CS-712	Software Testing and Quality Assurance	3
CS-713	Software Measurement and Metrics	3
CS-714	Component-Based Software Engineering	3
CS-715	Advanced Formal Methods	3
CS-716	Agile Software Development Methods	3
CS-717	Empirical Software Engineering	3
CS-718	Advanced Software Project Management	3
CS-719	Software Risk Management	3
CS-720	Reliability Engineering	3
CS-721	Design Oriented Programming	3
CS-722	Software Process Improvement	3
CS-723	Safety-Critical Systems	3
CS-724	Global Software Development	3
CS-725	DevOps Practices	3
CS-726	Semantic Web and Ontology Engineering	3
CS-727	Data Science for Software Engineers	3
CS-728	Software Performance Engineering	3

FACT FILE ELIGIBILITY

- Minimum CGPA 2.00/4.00 (Semester System) or 60% Marks (Annual System) in 16 years of education in Computer Science / Information Technology / Computer Engineering / Software Engineering or equivalent.
- GAT-General Test

Artificial Intelligence Elective Courses

Course Code	Subject	Credit Hours
CS-750	Machine Learning	3
CS-751	Computer Vision	3
CS-752	Knowledge Representation & Reasoning	3
CS-753	Artificial Neural Networks & Deep Learning	3
CS-754	Artificial Intelligence	3
CS-755	Programming for AI	3
CS-756	Natural Language Processing	3
CS-757	Digital Image and Signal Processing	3
CS-758	Reinforcement Learning	3
CS-759	Data Science	3
CS-760	AI Ethics and Responsible AI	3

Computer Networks Elective Courses

Course Code	Subject	Credit Hours
CS-730	Advanced Computer Networks	3
CS-731	Advanced Network Security	3
CS-732	Topics in Wireless Sensor Networks	3
CS-733	Advanced Internet of Things	3
CS-734	Network Performance and Evaluation	3
CS-735	Software Defined Networks	3
CS-736	Emerging Topics in Computer Networks	3
CS-737	Topics in Distributed Computing	3
CS-738	Topics in Cloud Computing	3
CS-739	Topics in Blockchain Technologies	3
CS-740	Social Network Analysis	3
CS-741	Cyber Physical Systems	3
CS-742	Cognitive Networks	3

*Not limited to the list above, the University may add more courses

Thesis Research

Course Code	Subject	Credit Hours
CSD-699	Master's Thesis Research	6

MS SOFTWARE ENGINEERING

Curriculum for MS Software Engineering Program

Core Courses

Course Code	Subject	Credit Hours
SE-702	Advanced Requirement Engineering	3
SE-703	Advanced Software System Architecture	3
SE-704	Software Testing and Quality Assurance	3
SS-113	Understanding of Holy Quran - I	0+1
SS-114	Understanding of Holy Quran - II	0+1

Mandatory Elective Course(s)

Course Code	Subject	Credit Hours
SE-701	Research Methodology	3

Thesis Research

Course Code	Subject	Credit Hours
CSE-699	Master's Thesis Research	6

Domain Elective Courses

Course Code	Subject	Credit Hours
SE-710	Software Measurement and Metrics	3
SE-711	Component-Based Software Engineering	3
SE-712	Advanced Formal Methods	3
SE-713	Agile Software Development Methods	3
SE-714	Empirical Software Engineering	3
SE-715	Advanced Software Project Management	3
SE-716	Software Risk Management	3
SE-717	Reliability Engineering	3
SE-718	Design Oriented Programming	3
SE-719	Software Process Improvement	3
SE-720	Safety-Critical Systems	3
SE-721	Global Software Development	3
SE-722	DevOps Practices	3
SE-723	Semantic Web and Ontology Engineering	3
SE-724	Data Science for Software Engineers	3
SE-725	Software Performance Engineering	3

*Not limited to the list above, the University may add more courses

PhD COMPUTER SCIENCE

Curriculum for PhD Computer Science Program

Core Course

Course Code	Subject	Credit Hours
CS-801	Advanced Research Methods	Non-Credits
SS-113	Understanding of Holy Quran - I	0+1
SS-114	Understanding of Holy Quran - II	0+1

Elective Courses

Course Code	Subject	Credit Hours
CS-810	Advanced Topics in Automata Theory	3
CS-811	Advanced Topics in Analysis of Algorithms	3
CS-812	Advanced Operating Systems	3
CS-813	Advanced Computer Architecture	3
CS-814	Advanced Computer Networks	3
CS-815	Advanced Network Security	3
CS-816	Advanced Wireless Sensor Networks	3
CS-817	Advanced Internet of Things	3
CS-818	Advanced Network Performance and Evaluation	3
CS-819	Advanced Software-Defined Networks	3
CS-820	Advanced Emerging Topics in Computer Networks	3
CS-821	Special Topics in Distributed Computing	3
CS-822	Advanced Cloud Computing	3
CS-823	Emerging Topics in Blockchain Technologies	3
CS-824	Advanced Social Network Analysis	3
CS-825	Advanced Cyber Physical Systems	3
CS-826	Advanced Cognitive Networks	3
CS-830	Advanced Requirement Engineering	3
CS-831	Advanced Software System Architecture	3
CS-832	Advanced Software Testing and Quality Assurance	3
CS-833	Advanced Software Measurement and Metrics	3
CS-834	Advanced Component-Based Software Engineering	3
CS-835	Advanced Topics in Formal Methods	3
CS-836	Advanced Agile Software Development Methods	3
CS-837	Advanced Empirical Software Engineering	3
CS-838	Special Topics in Software Project Management	3
CS-839	Advanced Software Risk Management	3
CS-840	Advanced Reliability Engineering	3

Artificial Intelligence Elective Courses

Course Code	Subject	Credit Hours
CS-841	Advanced Design Oriented Programming	3
CS-842	Advanced Software Process Improvement	3
CS-843	Advanced Safety-Critical Systems	3
CS-844	Advanced Global Software Development	3
CS-845	Advanced DevOps Practices	3
CS-846	Advanced Semantic Web and Ontology Engineering	3
CS-847	Advanced Data Science for Software Engineers	3
CS-848	Advanced Software Performance Engineering	3
CS-850	Advanced Machine Learning	3
CS-851	Advanced Computer Vision	3
CS-852	Advanced Knowledge Representation & Reasoning	3
CS-853	Special Topics in Artificial Neural Networks & Deep Learning	3
CS-854	Latest Trends in Artificial Intelligence	3
CS-855	Advanced Topics in Programming for AI	3
CS-856	Advanced in Natural Language Processing	3
CS-857	Advanced in Digital Image and Signal Processing	3
CS-858	Advanced in Reinforcement Learning	3
CS-859	Advanced Topics in Data Science	3
CS-860	Special Topics in AI Ethics and Responsible AI	3

Thesis Research

Course Code	Subject	Credit Hours
CSD-899	PhD Thesis Research	36