RIPHAH
INTERNATIONAL UNIVERSITY

Prospectus

FACULTY OF
COMPUTING

MISSION

To extend the mission of the university by keeping pace with the demands of the ever-changing Computing landscape, meeting the local and global educational standards and producing quality graduates who are capable of developing indigenous solutions for socio-economic development of the nation.

FACULTY OF COMPUTING

Faculty of Computing is a constituent unit of Riphah International University. It is responsible for academic quality management of all computing programs offered by Riphah. The faculty manages BS programs in the field of Software Engineering, Computer Science, Information Technology, Cyber security and Computer Arts and MS programs in Computer Science, Software Engineering, Information Technology, Information Security, and Data Science at various campuses of the university. Furthermore, it also offers PhD program in Computing.

Dr. Muhammad Zubair
Dean, Faculty of Computing,
Ph.D. – Electrical Engineering (IIUI)

Dean's Message

The faculty of computing was established with the mission of developing strong academic programs and has been contributing towards swift development of technology to support the socio-economic development of the nation. The countries around the world have turned their attention to the universities as a driving force for development of innovative systems in an ever-changing, highly complex, and global environment. It is with this motivation we seek to prepare our graduates and researchers to contribute towards development of indigenous innovative systems. We also feel it is our responsibility to inspire students, equip them with sufficient analytical, design and computing skills and at the same time build their character so that they can play their role in the noble cause of nation building through dedication, diligence, and committed professionalism. The university course, Life and Living – based on eight modules, is designed to develop a character that is worthy of a dedicated professional, is mandatory for all the graduates.

Our degree programs are duly accredited and recognized by the Higher Education Commission of Pakistan. The innovation ecosystem that we have developed at the Faculty is based on bilateral relationship with the industry. Our faculty members are engaged in industrial training and consultancy, which not only enriches our academic programs but also brings industrial relevant problems for research and development of creative solutions. Our faculty members have trained hundreds of professional from the industry and provide consultancy to almost all industrial sectors including public organizations. We have developed strong industrial partnerships with leading national and international organizations. Our researchers are actively engaged in developing effective solutions in the field of information security and software engineering. The wide variety of courses at the graduate level, especially designed to address the industry requirements, offers a unique learning experience.
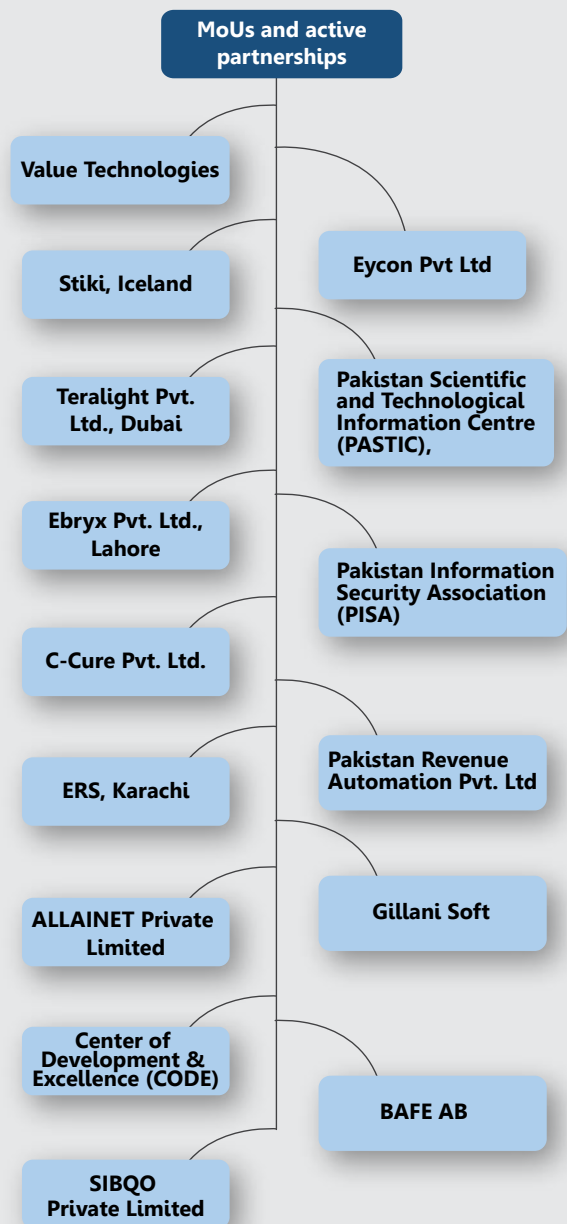
I would like to invite all the perspective students to explore the possibility of joining the Faculty of Computing programs and to take a deeper look beyond accreditation of our programs by National Computing Education Accreditation Council (NCEAC). I am confident that a unique learning experience that would have a long lasting impact on your personal and professional life awaits you.

FACULTY OF COMPUTING

We believe that education should transfer and develop knowledge more effectively such that it aids in the economic development of the country. The new knowledge should be commercialized in the form of innovations and novel high-tech products. This is possible when there is a robust interface between the university, entrepreneurs and small & large scale businesses. Our academic programs provide such a platform by leveraging research and development activities. The fundamental research along with industrial collaboration promotes training and consultancy, there by becoming a catalyst for creation of startups and technology-led economic development. The training and consultation feeds back to the academic programs in turn enriching it. This interaction between the academia, research and industry is continuous, and is crucial for the development of innovative solutions. Industrial collaborations feed the academia and research with industrially relevant curriculum and case studies as a result of which academia and research helps generate innovative and commercialization activities.

INDUSTRIAL COLLABORATION

As a first step towards the said concept, industrial collaboration has bore fruits in the form of active partnerships and MoUs with several national and international organizations.

MoUs and active partnerships

- Value Technologies
- Eycon Pvt Ltd
- Stiki, Iceland
- Pakistan Scientific and Technological Information Centre (PASTIC),
- Teralight Pvt. Ltd., Dubai
- Ebryx Pvt. Ltd., Lahore
- Pakistan Information Security Association (PISA)
- C-Cure Pvt. Ltd.
- Pakistan Revenue Automation Pvt. Ltd
- ERS, Karachi
- ALLAINET Private Limited
- Gillani Soft
- Center of Development & Excellence (CODE)
- BAFE AB
- SIBQO Private Limited

ACADEMIC PROGRAMS

Faculty of computing offers divergent programs developed after extensive academic research and are shaped under the influence of broad experience. Currently we offer both undergraduate and graduate programs in the field of computing. These programs meet the national requirements as identified by the Higher Education Commission (HEC) and are in line with the international curriculum of IEEE / ACM.

UNDERGRADUATE PROGRAMS

BS SOFTWARE ENGINEERING (BSSE)

Our undergraduate program is designed to equip the students with technical knowledge of the fundamentals of computing, their mathematical foundations and applications. A sequence of courses is designed so that theoretical study is combined with practical on ground exercises. We believe that teaching should not be confined to the class room walls, rather it should be activity driven combining lectures, assigning real life projects and imparting soft skills. This experience of beyond class room education prepares the students with computing skills, ability to solve problems, and to face the challenges in team work environment.

Duration   8 Semesters (4 Years)

Eligibility:

The minimum requirements for admission in a Bachelor degree program in Software Engineering, is at least 50% or above marks in Intermediate (HSSC) examination with Mathematics or equivalent qualification.

The candidates for BS Software Engineering with at least 50% or above marks in Intermediate with Pre-Medical background (without Mathematics) will be required to pass deficiency courses of Mathematics of 6 credit hours within one year of their regular studies.

Admission Criteria:

Academic Qualification 60%

Test / Interview   40%

Class Timings: (Monday – Friday)

Scholarships: Talent & need based scholarship (upto 100% on tution fee)

Degree Completion: For award of BS degree, a student must have:

a. Passed courses totaling at least 130 credit hours, including six credit hours of Final Year Project.

b. Obtained a CGPA of 2.0 or more.

Study Plan for BS (Software Engineering)

4-Year Program (8 Regular Semesters of 18 weeks each)

Study Plan for BS (Software Engineering)

Semester 1 16 Credit Hrs.	Semester 2 18 Credit Hrs.	Semester 3 18 Credit Hrs.	Semester 4 16 Credit Hrs.	Semester 5 17 Credit Hrs.	Semester 6 16 Credit Hrs.	Semester 7 17 Credit Hrs.	Semester 8 12 Credit Hrs.
Introduction to ICT (2+1)	Calculus and Analytical Geometry (3)	Data Structures and Algorithms (3+1)	Operating Systems (3+1)	University Elective-IV (Introduction to the Hadith & Seerah (2))	SE Elective-IV (3)	Final Year Project-I (3)	Final Year Project-II (3)
Discrete Structures (3)	Object Oriented Programming (3+1)	Software Requirements Engineering (3)	Database Systems (3+1)	Software Construction and Development (2+1)	Computer Networks (3+1)	Software Re-Engineering (3)	SE Supporting-III (3)
Applied Physics (3)	Software Engineering (3)	SE Elective-I (3)	Probability & Statistics (3)	Web Engineering (3)	Software Quality Engineering (3)	SE Elective V (3)	Professional Practice (3)
English Composition and Comprehension (3)	Communication and Presentation Skills (3)	Linear Algebra (3)	Human Computer Interaction (3)	SE Elective-II (3)	Software Design and Architecture (2+1)	Software Project Management (3)	Information Security (3)
Programming Fundamentals (3+1)	University Elective-I (3)	University Elective-II (3)	University Elective-III (Introduction to the Basic Teachings of the Qura'n (2))	SE Supporting-I (3)	SE Supporting-II (3)	Technical & Business Writing (3)	
	Pakistan Studies (2)	Islamic Studies (2)		SE Elective-III (3)		University Elective-V (Family Life in 21st Century: Challenges and Prospects (2))	
Computing Core 39 Credit Hrs.	Mathematics and Science Foundation (Core) 12 Credit Hrs.	General Education (Core) 19 Credit Hrs.	University Elective 12 Credit Hrs.	SE Core 24 Credit Hrs.	SE Elective 15 Credit Hrs.	SE Supporting 9 Credit Hrs.	**130**

BS COMPUTER SCIENCE (BSCS)

In this modern era of information age, the field of computing is advancing at an ultra-high speed. With the recent advancements in different areas of computing e.g. Internet of Things, Big Data, Cloud Computing, Cyber Security, although there has been a growing demand to excel in these particular areas, however, the importance of having a strong foundation of the core principles of computing has also got more attention. The need to build the core competency in the area of foundation of the computing, the underlying hardware and software platforms, programming interfaces, complex algorithms, trends in user interface designs, emergence of new businesses, has increased.

This program of BS Computer Science is aimed to fulfil this need of the new era. The Bachelor of Science in Computer Science program will try to produce the high-quality computer scientists who will have the necessary theoretical background to understand the computing problems, will be equipped with the necessary tools and techniques to design, develop and deliver the solutions for these problems and will have the necessary ethical values to apply this skill set in the appropriately right way.

Duration   8 Semesters (4 Years)

Eligibility:

The minimum requirements for admission in a Bachelor degree program in Computer Science, is at least 50% or above marks in Intermediate (HSSC)

examination with Mathematics or equivalent qualification.

The candidates for BS Computer Science with at least 50% or above marks in Intermediate with Pre-Medical background (without Mathematics) will be required to pass deficiency courses of Mathematics of 6 credit hours within one year of their regular studies.

Admission criteria:

Academic Qualification 60%

Test / Interview   40%

Class Timings:

(Monday – Friday)

Scholarships:

Talent & need based scholarship (upto 100% on tution fee)

Degree Completion:

For award of BS degree, a student must have:

a. Passed courses totaling at least 130 credit hours, including six credit hours of Final Year Project.
b. Obtained a CGPA of 2.0 or more.

Study Plan for BS (Computer Science)

4-Year Program (8 Regular Semesters of 18 weeks each)

Study Plan for BS (Computer Science)

Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6	Semester 7	Semester 8
16 Credit Hrs.	**16 Credit Hrs.**	**16 Credit Hrs.**	**18 Credit Hrs.**	**18 Credit Hrs.**	**17 Credit Hrs.**	**17 Credit Hrs.**	**12 Credit Hrs.**
Programming Fundamentals (3+1)	Calculus and Analytical Geometry (3)	Data Structures and Algorithms (3+1)	Design and Analysis of Algorithms (3)	University Elective-III (Introduction to the Hadith & Seerah (2))	CS Elective-III (3)	Final Year Project-I (3)	Final Year Project-II (3)
Discrete Structures (3)	Object Oriented Programming (3+1)	Computer Organization and Assembly Language (4)	Database Systems (3+1)	Compiler Construction (3)	Computer Networks (3+1)	Parallel and Distributed Computing (3)	CS Supporting-III (3)
Applied Physics (3)	Digital Logic and Design (4)	University Elective-I (3)	Probability & Statistics (3)	CS Elective-I (3)	Artificial Intelligence (4)	Information Security (3)	Professional Practices (3)
English Composition and Comprehension (3)	Communication and Presentation Skills (3)	Linear Algebra (3)	University Elective-II (Introduction to the Basic Teachings of the Qura'n (2))	CS Elective-II (3)	CS Elective-IV (3)	Technical & Business Writing (3)	University Elective-V (3)
Introduction to ICT (2+1)	Pakistan Studies (2)	Islamic Studies (2)	Software Engineering (3)	CS Supporting-I (3)	CS Supporting-II (3)	CS Elective-V (3)	
			Theory of Automata (3)	Operating Systems (3+1)		University Elective-IV (Family Life in 21st Century: Challenges and Prospects (2))	
Computing Core	Mathematics and Science Foundation (Core)	General Education (Core)	University Elective	Domain CS (Core)	Domain CS Elective	Domain CS Supporting	**130**
39 Credit Hrs.	**12** Credit Hrs.	**19** Credit Hrs.	**12** Credit Hrs.	**24** Credit Hrs.	**15** Credit Hrs.	**9** Credit Hrs.	

BACHELOR IN COMPUTER ARTS (BCA)

In the twenty first century, where gig economy constitutes a major portion in the world economy, Pakistan has its fair share by standing at the fourth position as per Online Labor Index. Besides software development and technology, creativity and multimedia has 1/3rd portion in terms of online jobs. To garner a work force for this sector, it is vital that the foundations of arts be built along with the latest computer graphic technologies. The need to inculcate the aesthetic sense in terms of art as well as the computations technologies for its production and reception is the core of the Bachelors of Computer Arts program. This program will fulfill the needs of the present highly digitized era by producing high-quality computer artists equipped with digital technological skills required for branding, printing, packaging and publishing Medias.

Duration   8 Semesters (4 Years)

Eligibility:

Intermediate or equivalent at least 45% marks in Intermediate (HSSC) examination with Arts/Science or equivalent qualification

Admission Criteria:

Academic Qualification 60%

Test / Interview   40%

Class Timings:

(Monday – Friday)

Scholarships:

Talent & need based scholarship (upto 100% on tution fee)

Degree Completion:

For award of bachelor degree, a student must have:

a. Passed courses totaling at least 130 credit hours, including three credit hours of Internship and six credit hours of Final Year Project.
b. Obtained a CGPA of 2.0 or more.

Study Plan for Bachelor in Computer Arts

4-Year Program (8 Regular Semesters of 18 weeks each)

Study Plan for Bachelor of Computer Arts

Semester 1 18 Credit Hrs.	Semester 2 17 Credit Hrs.	Semester 3 17 Credit Hrs.	Semester 4 15 Credit Hrs.	Semester 5 14 Credit Hrs.	Semester 6 17 Credit Hrs.	Semester 7 Credit Hrs. 15+ (3int)	Semester 8 14 Credit Hrs.
History of Arts (3 Cr. Hrs.)	Design II (2+1 Cr. Hrs.)	Introduction to Photography (3 Cr. Hrs.)	Color Theory (2+1 Cr. Hrs.)	Elective 2	Elective 5	Professional Practice (3 Cr. Hr)	Elective 13
Design-I (2+1Cr. Hrs.)	Drawing-II (2+1 Cr. Hrs)	Story Boarding (2+1 Cr. Hrs.)	2D/3D Modeling (2+1 Cr. Hrs.)	Elective 3	Elective 6	Elective 10	Elective 14
English Composition & Comprehension (3 Cr. Hrs.)	Graphic Design (2+1 Cr. Hrs.)	Communication & Presentation Skills (3 Cr. Hrs.)	Introduction to Freelancing (3 Cr. Hrs.)	Digital Advertising (3 Cr. Hrs.)	Elective 7	Elective 11	Life & Living-Il : Pakistan Studies (2 Cr.Hrs)
Drawing-I (2+1 Cr. Hrs.)	Life & Living-I: Islamic Studies (2 Cr.Hrs)	University Elective - II (Life & Living-III: Introduction to the Basic Teachings of the Qura'n 2 Credit Hours Teachings of the Qura'n)	Process of Creativity (3 Cr. Hrs.)	University Elective - V (Life & Living-IV: Introduction to the Hadith & Seerah 2 Credit Hours Seerah)	Elective 8	Final Year Project-I (3 Cr. Hrs.)	Foreign Language (3 Cr. Hrs.)
Introduction to Information and Communication Technology (2+1 Cr. Hrs.)	Creative Content Writing (3 Cr. Hrs.)	Basic Mathematics (3 Cr. Hrs.)	Elective 1		Elective 9	Elective 12	Final Year Project-II (3 Cr. Hrs.)
Introduction to Graphic Tools (2+1 Cr. Hrs.)	Introduction to Programing (2+1 Cr. Hrs.)	Introduction to Psychology (3 Cr. Hrs.)		Elective 4	University Elective-IV (Family Life in 21st Century: Challenges & Prospects (2))		
			Internship (3 Cr. Hrs.)				
Computer Arts Core (45 Credit Hrs.)	Computer Art Supporting (12 Credit Hrs.)	Computer Arts Electives (45 Credit Hrs.)	General Education (9 Credit Hrs.)	University Elective (19 Credit Hrs.)			130 Credit Hrs.

BS CYBER SECURITY (BS CySec)

In this modern era of information age, the field of computing is advancing at an ultra-high speed. With the recent advancements in Cyber Security, there has been a growing demand to excel in these particular areas, however, the importance of having a strong foundation of the core principles of Cyber Security has also got more attention. The need to build the core competency in the area of foundation of the Cyber Security, the underlying hardware and software security platforms, programming interfaces, complex algorithms, trends in user interface designs, emergence of new businesses, has increased. This program of Bachelor of Science in Cyber Security (BS CySec) is aimed to fulfil this need of the new era. The BS Cyber Security program will try to produce the high-quality Cyber Security specialists who will have the necessary theoretical background to understand the computing problems, will be equipped with the necessary tools and techniques to design, develop and deliver the solutions for these problems and will have the necessary ethical values to apply this skill set in the appropriately right way. This program will equip to master the foundational goals of Cyber Security. This will apply current technical tools and methodologies to solve security problems. Upon completion, students will be able to evaluate security trends, recognize best practices, and understand IT security products and threats.

Duration   8 Semesters (4 Years)

Eligibility: The minimum requirements for admission in a Bachelor degree program in Cyber Security, is at least 50% or above marks in Intermediate (HSSC) examination with Mathematics or equivalent qualification.

The candidates for BS Cyber Security with at least 50% or above marks in Intermediate with Pre-Medical background (without Mathematics) will be required to pass deficiency courses of Mathematics of 6 credit hours within one year of their regular studies.

Admission Criteria:

Academic Qualification   60%

Test / Interview   40%

Class Timings: (Monday – Friday)

Scholarships: Talent & need based scholarship (upto 100% on tution fee)

Degree Completion: For award of bachelor degree, a student must have:

a. Passed courses totaling at least 130 credit hours, including six credit hours of Final Year Project.

b. Obtained a CGPA of 2.0 or more.

Study Plan for BS (Cyber Security)

4-Year Program (8 Regular Semesters of 18 weeks each)

Study Plan for BS (Cyber Security)

Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6	Semester 7	Semester 8
16 Credit Hrs.	17 Credit Hrs.	16 Credit Hrs.	18 Credit Hrs.	18 Credit Hrs.	16 Credit Hrs.	18 Credit Hrs.	11 Credit Hrs.
Programming Fundamentals (3+1)	Calculus & Analytic Geometry (3)	Data Structures and Algorithms (3+1)	Operating Systems (3+1)	Information Assurance (3)	Artificial Intelligence (3+1)	Final Year Project-I (3)	Final Year Project-II (3)
Discrete Structures (3)	Object Oriented Programming (3+1)	Digital Logic Design (3+1)	Database Systems (3+1)	Computer Networks (3+1)	Secure Software Design and Development (2+1)	University Elective-IV (3)	Professional Practices (3)
Probability & Statistics (3)	Information Security (3)	Introduction to Cybersecurity (3)	Software Engineering (3)	Vulnerability Assessment & Reverse Engineering (2+1)	CySec Elective-II (Cryptanalysis (3))	Technical & Business Writing (3)	University Elective-V (3)
English Composition & Comprehension (3)	Communication & Presentation Skills (3)	Linear Algebra (3)	CySec Elective-I (Cyber Law and Cyber Crime (3))	Analysis of Algorithms (3)	Network Security (2+1)	CySec Elective-III (Malware Analysis (3)	University Elective-IV (Family Life in 21st Century: Challenges & Prospects (2)
Introduction to ICT (2+1)	Pakistan Studies (2)	University Elective-II (Introduction to the Basic Teachings of the Qura'n (2))	Computer Organization and Assembly Language (3+1)	Differential Equations (3)	Digital Forensics (2+1)	CySec Elective-IV (Penetration Testing (3)	
	Islamic Studies (2)			University Elective-III (Introduction to the Hadith & Seerah (2))		Parallel & Distributed Computing (2+1)	
Computing Core	Mathematics and Science Foundation (Core)	General Education (Core)	University Elective	Domain CySec (Core)	Domain CySec (Elective)	Computer Science Core Courses	130
39 Credit Hrs.	12 Credit Hrs.	19 Credit Hrs.	12 Credit Hrs.	18 Credit Hrs.	12 Credit Hrs.	18 Credit Hrs.	

BS DATA SCIENCE (BSDS)

A Bachelor's degree in Data Science is an undergraduate program that focuses on preparing students for a career in the rapidly growing field of data analysis and interpretation. The program typically covers a range of topics such as statistics, programming, database management, data mining, machine learning, and data visualization. Students will develop a deep understanding of how to collect, organize, and analyze large amounts of data to identify patterns and insights that can drive business decisions. Graduates with a Bachelor's degree in Data Science are equipped with the skills and knowledge needed to work as data analysts, data scientists, business analysts, or database managers in various industries.

Duration:

8 Semesters (4 Years)

Eligibility:

The minimum requirements for admission in a Bachelor degree program in Data Science, is at least 50% or above marks in Intermediate (HSSC) examination with Mathematics or equivalent qualification. The candidates for BS Data Science with at least 50% or above marks in Intermediate with Pre-Medical background (without Mathematics) will be required to pass deficiency courses of Mathematics of 6 credit hours within one year of their regular studies.

Admission Criteria:

Academic Qualification   60%

Test / Interview   40%

Class Timings:

(Monday – Friday)

Scholarships:

Talent & need based scholarship (upto 100% on tuition fee)

Degree Completion:

For award of BS degree, a student must have:

a. Passed courses totaling at least 130 credit hours, including six credit hours of Final Year Project.

b. Obtained a CGPA of 2.0 or more.

Study Plan for BS (Data Science)

4-Year Program (8 Regular Semesters of 18 weeks each)

Study Plan for BS (Data Science)

Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6	Semester 7	Semester 8
16 Credit Hrs.	17 Credit Hrs.	18 Credit Hrs.	17 Credit Hrs.2	17 Credit Hrs.	18 Credit Hrs.	18 Credit Hrs.	11 Credit Hrs.
Programming Fundamentals (3+1)	Calculus & Analytic Geometry (3)	Data Structures and Algorithms (3+1)	Analysis of Algorithms (3)	Advance Statistics (3)	Data Mining (2+1)	Final Year Project-I (3)	Final Year Project-II (3)
Discrete Structures (3)	Object Oriented Programming (3+1)	Digital Logic Design (3+1)	Database Systems (3+1)	Artificial Intelligence (3+1)	Data Science Elective-III (3)	University Elective-IV (3)	Professional Practices (3)
Probability & Statistics (3)	Introduction to Data Science (2+1)	Information Security (3)	Software Engineering (3)	Data Science Elective-II (3)	Data Warehousing & Business Intelligence (2+1)	Technical & Business Writing (3)	University Elective-V (3)
English Composition and Comprehension (3)	Communication and Presentation Skills (3)	Linear Algebra (3)	Data Science Elective-I (3)	Operating Systems (3+1)	Computer Networks (3+1)	Data Visualization (2+1)	University Elective-IV (Family Life in 21st Century: Challenges and Prospects (2)
Introduction to ICT (2+1)	Pakistan Studies (2)	University Elective-II (Introduction to the Basic Teachings of the Qura'n (2))	Computer Organization and Assembly Language (3+1)	Differential Equations (3)	Big Data Analytics (2+1)	Data Science Elective-IV (3)	
	Islamic Studies (2)				University Elective-III (Introduction to the Hadith & Seerah (2))	Parallel & Distributed Computing (2+1)	
Computing Core	Mathematics and Science Foundation (Core)	General Education (Core)	University Elective	Domain Data Science (Core)	Domain Data Science (Elective)	Computer Science Core Courses	**130**
39 Credit Hrs.	**12** Credit Hrs.	**19** Credit Hrs.	**12** Credit Hrs.	**18** Credit Hrs.	**12** Credit Hrs.	**18** Credit Hrs.	

MS SOFTWARE ENGINEERING

The goal of our program is to take students with raw talent and intellect, nurture them in our environment through a thorough immersion in research and coursework, and produce well-educated researchers and future leaders in software engineers. Our program (duration approximately 2 years) is structured on the basis of minimum 32 credit hours. The program requirements involve minimum 26 credit hours of course work and 6 credit hours of research work. Our objective is to prepare students to pursue academia through research activities and Software industry through development activities and to impart knowledge of Software Engineering with team work skills in to our students. This enable the students to pursue career in related field using software Engineering skills such as requirement engineering, analysis and designing, source code writing, quality engineering, Engineering Management and through tools and technologies in the light of Islamic ethical values.

Our graduate students not only shall be able to design and develop indigenous software through tools and technologies but also perform research and development (R&D) in specialized areas of software engineering through oral and written communication skills.

Duration: 4 Semesters (2 Years)

Eligibility:

BS-SE/CS/IT/Sciences/Engineering (16 years), or its equivalent in the relevant discipline from HEC recognized university or degree awarding institute with at least 60% marks or CGPA of at least 2.0 (on a scale of 4.0)

Admission criteria: Interview and Admission Test

Class Timings:

05:30pm – 08:30pm (Monday – Friday)

Scholarships:

Talent & need based scholarship (upto 100% on tution fee)

List of Core Courses:

Code	Course Name	Cr. Hrs
SE5063	Advanced Requirements Engineering	3
SE5033	Advanced Software System Architecture	3
SE5093	Software Testing and Quality Assurance	3
UR-711	Professional Ethics - I	2

Some Elective Courses

Code	Course Name	Cr. Hrs
SE5153	Agile Software Development	3
SE5413	Advanced Software Project Management	3
SE5553	Usability Engineering	3
SE5213	Cloud Base Software Engineering	3
SE5134	Enterprise Resource Planning Systems	3
SE5253	Cloud Security in Software Engineering	3
SE5263	Machine Learning in Software Engineering	3
SE5243	Developments & Operations in Software Engineering	3

Degree Completion

For award of MS degree, a student must have:
a.   Passed courses totaling at least 32 credit hours, including four core courses.
b.   Obtained a CGPA of 2.5 or more.

PHD COMPUTING

The PhD program (duration approximately 3-8 years) is structured on the basis of minimum 50 credit hours. The program requirements involve minimum 20 credit hours of course work and 30 credit hours of research work. The candidate has to pass the comprehensive examination after successful completion of course work.

Eligibility criteria/Entry requirements:

MS/M.Phil or its equivalent degree with first class or with a CGPA of 3.0 or above in a relevant discipline from a recognized university / institution.

FACULTY MEMBERS

Names	Designation
Dr. Muhammad Zubair Ph.D. – Electrical Engineering (IIUI), MS – Information Technology (Hamdard University), m.zubair@riphah.edu.pk	Professor Dean Faculty of Computing,
Dr. Naveed Ikram Ph.D – Computer Science (UK), M.Sc – Computer Science (UK), Chartered IT Professional Senior Member ACM, Member IEEE, AIS, CSP, naveed.ikram@riphah.edu.pk	Professor Associate Dean (Graduate Programs),
Dr. Muhammad Mansoor Alam Post Doctorate – University of Malaysia PhD (Computer Science), Université de La Rochelle, France MS (Information System Engineering) University of Reading, UK m.mansoor@riphah.edu.pk	Professor
Dr. Musharraf Ahmed Ph.D – Computing, Riphah, MS – Computer Science (MAJU), musharraf.ahmed@riphah.edu.pk	Assistant Professor Head of Department, Department of Software Engineering and Computer Science,
Dr. Sumera Saleem Ph.D – Computing, MS – Systems and Software Engineering (MAJU), sumera.saleem@riphah.edu.pk	Assistant Professor
Dr. Rizwan Bin Faiz Ph.D – Computer Science (UK), M.Sc – Computer Science (MAJU), rizwan.faiz@riphah.edu.pk	Assistant Professor
Dr. Tahira Nazir PhD – Computer Science (UET Taxila) MS – Computer Science (UET Taxila) tahira.nazir@riphah.edu.pk	Assistant Professor, Head of Department, Department of Software Engineering and Computer Science (Female)
Mr. Abdul Mateen MS – Information Systems (UK) abdul.mateen@riphah.edu.pk	Assistant Professor
Mr. Muhammad Saud Khan MS – Applied Mathematics (USA), BS – Computer Science (USA), muhammad.saud@riphah.edu.pk	Assistant Professor In-Charge Industrial Liaison
Dr. Javaid Iqbal Ph.D. (Computer Science), Hazara University, Mansehra. MS (Computer Science), Hazara University, Mansehra. jawaid.iqbal@riphah.edu.pk	Assistant Professor
Dr. Naurine Farooq Khan Ph.D Computing MS - Computer Science (Riphah), M.Sc Computer Science (IIUI), naurin.zamir@riphah.edu.pk	Assistant Professor Incharge Graduate Program

Names	Designation
Ms. Hajra Murtaza Ph.D. – (In Progress), MS – Computer Sciences (MAJU), BS – Computer Sciences (MAJU), hajra.murtaza@riphah.edu.pk	Senior Lecturer
Mr. Syed Murtaza Pasha Ph.D. – (in Progress) (Computer Sciences COMSATS, Wah Cantt), MS – Computer Science (COMSATS Institute of Information Technology, Islamabad), smurtaza.pasha@riphah.edu.pk	Senior Lecturer
Mr. Muhammad Shabbir Hussain MS – Software Engineering (IIUI), BS – Software Engineering (IIUI), muhammad.shabbir@riphah.edu.pk	Senior Lecturer
Ms. Tazzaina Malik Ph.D. – (in progress), MS-System & Software Engineering (MAJU), tazzaina.malik@riphah.edu.pk	Senior Lecturer
Mr. Syed Sherjeel Gilani Ph.D – (In Progress), MS Computer Science (Riphah), MCS (Azad Jamu Kashmir University), sherjeel.gilani@riphah.edu.pk	Senior Lecturer
Mr. Basharat Hussain Ph.D (In Progress) (Computer Sciences COMSATS), MS – Computer Science (IIUI, Islamabad), basharat.hussain@riphah.edu.pk	Senior Lecturer
Mr. Shahbaz Hassan PhD (In progress) - FAST MS – Computer Science (Bahria University), BS – Computer Science (FUUAST), shahbaz.hassan@riphah.edu.pk	Senior Lecturer
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