Semester
Autumn
2025

AIOU

PROSPECTUS

BS
Face to Face Programmes

- **Faculty of Sciences**
- **Faculty of Education**

Allama Iqbal Open University, Islamabad
www.aiou.edu.pk

Help Line: (051) 111-112-468

PROSPECTUS

OF

BS (Face to Face) Programmes

For

SEMESTER: Autumn 2025

Allama Iqbal Open University, Islamabad

Vice-Chancellor's Message

Dear Student,

السلام علیکم

Allama Iqbal Open University (AIOU) is one of the mega universities of the world and it occupies a unique position in the education sector of Pakistan, because of its affordability and high quality distance and online academic programs. AIOU has now turned into the most favorite university of the country with high international repute. The university made a landmark progress by ensuring access to quality education for rural areas under-privileged students and the people of all ages particularly the females can now select and join the programs of their choice, while sitting at their residence and simultaneously with continuing their jobs. After assessing the success of many degree programs in Pakistan, AIOU is now going to offer a variety of range programs for the students residing worldwide. More than 1.3 million students are getting benefits from the high quality educational services of AIOU in all regions of the country through more than fifty regional offices of the university. It offers-suggests many undergraduate and postgraduate programs at rural and remote areas providing an unparalleled opportunity to all the poor and deprived segments of the society at an affordable cost. The university has recently digitalized all its student-support services for facilitating its students on priority basis. This digitization of the system, it is hoped, will enable AIOU students to get all discipline of educational programmes using their Learning Management system (LMS) portal support online.

Committed to your bright future

Prof. Dr. Nasir Mahmood
Vice Chancellor

AIOU ACADEMIC CALENDAR

IMPORTANT ACTIVITIES TO BE REMEMBERED

Autumn Semester			Spring Semester		
Proposed Activity	**Schedule**		**Proposed Activity**	**Schedule**	
	From	**To**		**From**	**To**
Admission	01 July	05 September	**Admission**	01 January	05 March
Mailing	01 September	15 November	**Mailing**	01 March	15 May
Study Period	16 November	28 February	**Study Period**	16 May	30 August
Examination (Conduct)	01 March	30 April	**Examination (Conduct)**	01 September	30 October
Result Declaration	30 June		**Result Declaration**	30 December	

Note: Contact concerned Regional office for exact schedule of activities. Continuing Students are sent information for all activities by LMS/SMS. Simultaneously information is placed on website (www.aiou.edu.pk), students can download if not received by post.

MINIMUM AND MAXIMUM DURATION/SEMESTERS
FOR FACE TO FACE PROGRAMMES

Sr. No.	Degree Level	Minimum Duration	Maximum Duration
1	Ph.D	3 years / 5 semesters	8 years *
2	MS/M.Phil/M.Sc (Hons)/MBA/COL MBA/MPA	2 years / 4 Semesters	4 Years **
3	BS (4-Year)	4 years / 8 Semesters	6 Years
4	Postgraduate Diploma (1-Year)	1 Year / 2 Semesters	2 Years
5	Certificate (6-Months)	6 Months / 1 Semester	1 Years
6	BS 2.5 years	2.5 Years/5 Semester	4 Years
7	BS 2 Years	2 years/ 8 Semester	4 Years

Evaluation/Assessment Criteria for all PGD/ADS/BS Face to Face Programmes

For Theory Courses:

S.No.	Components	Total Marks	Weightage	Passing Marks
1	Assignment	10	20%	50% (In aggregate)
2	Assignment 2	10		
3	Mid Term	30	30%	
4	Attendance	100	Nil	70%
5	Final Exam	100	50%	50%

For Theory-Practical Courses:

S.No.	Components	Total Marks	Weightage	Passing Marks
1	Assignment	10	20%	50% (In aggregate)
2	Assignment 2	10		
3	Mid Term	30	30%	
4	Practical	15		
5	Attendance	100	Nil	70%
6	Final Exam	100	50%	50%

For Practical/FYP Courses:

S.No.	Components	Total Marks	Weightage	Passing Marks
1	Attendance	100	Nil	70%
2	Final Exam	100	100%	50%

COMPLETE PROCEDURE TO
ENROLL IN AIOU PROGRAMMES AND SUBMISSION OF
FORM IN AIOU ISLAMABAD

All fresh and continue students can submit their admission using online system.

Follow these instructions to apply:

APPLY ONLINE (FRESH STUDENTS)
1.   Visit website: **https://aiou.edu.pk/oas-fresh-admission**
2.   Press link "**Application for New Admission ⟹ Click here**"
3.   Get register by entering your email or mobile phone number
4.   Login into your registered account
5.   Fill all the requisite fields of admission form
6.   After filling the admission form, print out your "Challan Form".
7.   Using printed challan form and submit your fee in any branch of FWBL, ABL, MCB or NBP.
8.   You can also deposit fee through Upaisa, Jazzcash & Easypaisa.

APPLY ONLINE (CONTINUE STUDENTS):
1.   Visit website: **https://aiou.edu.pk/cms-continuing-students**
2.   Press link "**CMS for Continuing Students**"; (**https://enrollment.aiou.edu.pk**)
3.   Enter your "User ID & Password
4.   Select courses and print challan form.
5.   Using printed challan form, submit your fee in any branch of FWBL, MCB, ABL, NBP. Keep save copy of your challan form after submission of fee. **You need not to send challan to the University,** but University can ask for copy of challan form any time, if required.
6.   You can also deposit fee through Upaisa, Jazzcash & Easypaisa.

CONTENTS

ALLAMA IQBAL OPEN UNIVERSITY

Allama Iqbal Open University, a mega university was established in 1974 under an Act of Parliament. The main campus of the university is situated in sector H-8, Islamabad. It was the second open university of the world and the first of its kind in Asia and Africa. The aim of establishing AIOU was to provide affordable and accessible education through distance learning at the doorsteps to those people who could not continue their educational journey through formal system of education. The University (AIOU) operates on semester system and admits students in Autumn and Spring semesters, Undergraduate admissions are being offered in both the semesters, whereas postgraduates are being offered once a year. The enrolled students are given course books specially prepared by the university on self instructional principles. However, at post graduate level reprints of foreign books alongwith allied material and university prepared study guides help students to polish their skills.

At present, the AIOU is offering programmes from Matric to PhD level in diverse disciplines comprised four faculties. The university has established study centres across the country where distance education students are provided necessary guidance by their respective tutors. AIOU is also offering four years under-graduate degrees.

Apart from curricular and extra-curricular activities during the academic year, the AIOU and its regional centres actively participate in the co-curricular activities by arranging educational and literary seminars, workshops and conferences, attended not only by the students and faculties of the university, but also by the renowned dignitaries and scholars. For the science students and the research scholars, a science complex has been constructed, where they use the latest equipment of international standard for experiments and research. To meet the present-day challenges, internet facility is also available in the student hostel and the Central Library, where computers have been provided to enable students to access the latest information available through open source databases.

FACULTY OF SCIENCES

Faculty of Sciences form an integral part of the University, Since its establishment in 1982 with five teaching departments, it has undergone major development changes. It now comprises nine teaching and research departments which are offering courses at the undergraduate and postgraduate levels to more than ten thousand students. The Faculty operates under the basic guidelines of the University Act and on "Education for All as Convenient" basis so that maximum students get benefit from its academic programs and educational facilities. This principle has necessitated some structural changes in the non-formal mode, particularly at the postgraduate level, in the offering of theory courses and practical lab work. This conceptual adjustment has been quite successful and many in-service students are benefiting from postgraduate study programs. Improvement in qualification for a better life is a right of everyone and the faculty's programs meet this challenge by offering opportunities to all. In particular, a significant number of beneficiaries are those who cannot afford education in formal institution due to a variety of reasons.

DEPARTMENT OF BIOLOGY

The approval for the establishment of the Department of Biology Science was granted by the Executive Council in February 1998. The objective of its establishment is to provide human resources/skilled personnel in various areas of Biology. Furthermore, the purpose is to educate future generation and improvement in quality of life and welfare of human being through research for the environmentally sustainable and socially equitable use of the natural resources. The Department is imparting face-to-face education in Pakistan in different disciplines of Biological Sciences.

The mission of Department of Biology is to educate students in various disciplines of Life Sciences including those who could not continue their education due to economic or job constraints. The purpose of its establishment is to educate future generation and improvement in quality of life and welfare of human being through research and self-sufficiency.

The Department is striving to uplift the teaching standards and provide a congenial environment for research in the field of Biology. The Department always seeks to introduce more disciplines at graduate and postgraduate levels as per demand of the society, so as to keep the undergraduate and postgraduate scholars well informed with the recent advances in the field. This will help produce well-trained manpower to serve science both at national and International levels.

The Department is offering following programmes:
i. BS Botany
ii. BS Biochemistry
iii. BS Microbiology

The department is enriched with highly qualified regular faculty to fulfill teaching and research requirements. Well equipped labs and Biology are available to cater practical and research requirements.

BS Biochemistry
(Programme Code 5048)

1. Introduction

Biochemistry can be considered as *chemistry of life* and is central to all areas of the biological or life sciences. It deals with chemical processes taking place in all living organisms from viruses and bacteria to plants and animals. It specifically focuses on the study of biomolecules and vital processes that give rise to complexities of life. It comprehensively demonstrates human biochemical aspects pertaining to the wellbeing and in the pathological state.

BS Biochemistry has an interdisciplinary and multidisciplinary approach enabling students to understand the core principles and experimental basis of Biochemistry. The scope of the discipline is extremely broad and graduates in Biochemistry can progress to a wide range of careers. They can work in national and international organization in either public or private sectors, biochemical industries, food production companies, hospitals and diagnostic laboratories, pharmaceutical industries and research institutes etc.

Biochemists may emerge as *Genetic counselor, Forensic scientists*, Healthcare officials, Sequencing data analyst, Research scientists, Project officers, Quality control officers, Genetic engineers etc.

The programme aims at developing human resources in the field of Biochemistry through appropriate education and research.

2. Objectives

Objectives of this programme are

i.   To equip students with the in-depth knowledge and skills necessary for understanding basic as well as advanced and recent trends in Biochemistry and Molecular Biology
ii. To impart skills to carry out independent scientific and technical research in key areas of Biochemistry
iii. To equip students with laboratory procedures and techniques necessary to understand the life processes and enable them to serve in diagnostics and research labs
iv. To inculcate confidence among students to pursue higher education in their specialized areas of interest

3. Eligibility Criteria

F.Sc (Pre-medical) OR Equivalent "A" Level qualification with Biology as major subject.

Foreign certificate holders will need to produce equivalence certificate from IBCC to seek admission in 4 years BS Biochemistry.

4. Duration of the Programme

In order to be eligible for the award of BS in Biochemistry, the student will have to earn a total of 130 credit hours including Capstone. Project of three credit hours within a minimum period of 4 years (8 semesters) failing which, a student can be given an extension of upto 2 years in maximum after completion of initial period.

5. Scheme of Studies (BS Biochemistry 4- years)

6. Semester wise lay out for BS Programs (Total CH Semester 130)

Semester 1

Code	Course Title	CH	
BIO3507	Cell Biology	3(2+1)	Major
ITHC3501/	Islamic	2(2+0)	General
HADH3501	studies/Ethics		
PKST3502	Ideology & constitution of Pakistan	2(2+0)	General
MATH3508	Quantitative Reasoning	3(3+0)	General
ENGL3505	Functional English	3(3+0)	General
URD3503	Pakistani Adab-1	2(2+0)	General (Arts and Humanities)
Bio 3509	Introductory Biochemistry	3(2+1)	Major
	Total Credits	**18**	

Semester-2

Code	Course Title	CH	
ENGL3504	Expository Writing	3(3+0)	General
BIO 3510	Fundamentals of Microbiology	3(2+1)	Major
SOC3503	Civics and Community Engagement	2(2+0)	General
CS3503	Application of Information communication & Technologies	3(2+1)	General
MATH4505	Quantitative Reasoning II	3(3+0)	General
SOC3506	Introduction to Sociology	2(2+0)	General
PKST 3501	Pakistan Studies	2(2+0)	General
	Total Credit	**18**	

Semester-3			
Code	**Course Title**	**CH**	
CHEM3501	Inorganic Chemistry	4(3+1)	General
BIO4508	Diversity of Plants	3(2+1)	Major
BIO4509	Diversity of Animals	3(2+1)	Major
ENVS4501	Basics of Environmental science	3(2+1)	General (Natural Science)
MGT3503	Entrepreneurship	2(2+0)	General
BIO4504	Genetics and Evolution	3(2+1)	Major
	Total Credits	**18**	
Semester 4			
Code	**Course Title**	**CH**	
CHEM3502	Organic Chemistry	4(3+1)	General
BIO4505	Biosafety; Principles and applications	3(2+1)	Major
BIO4510	Biotechnology	3(2+1)	Major
BIO4506	Animal Physiology and Ecology	3(3+0)	Major
BIO4507	Plant Physiology and Ecology	3(3+0)	Major
	Total Credits	**16**	
Semester 5			
Code	**Course Title**	**CH**	
BIO5520	Amino acids and Proteins	3(2+1)	Major
BIO5521	Carbohydrates and Lipids	3(2+1)	Major
BIO5525	Human Physiology	3(2+1)	Major
BIO6525	Immunology	3(2+1)	Major
BIO5519	Biochemical Techniques	3(2+1)	Major
BIO5522	Microbial Genetics	3(2+1)	Interdisciplinary
TFSR3501	Fahm-e-Quran(Tajwid, Translation & Tafsir	NC	
	Total Credits	**18**	
Semester 6			
Code	**Course Title**	**CH**	
BIO5530	Enzymology	3(2+1)	Major
BIO5531	Nutritional Biochemistry	3(2+1)	Major
BIO5526	Molecular Biology	3(2+1)	Major
BIO6521	Metabolism-1	3(3+0)	Major
BIO5532	Clinical Biochemistry	3(2+1)	Major
SERT3501	Seerat -e- Tayyaba	NC	
	Total Credits	**15**	
Semester-7			
Code	**Course title**	**CH**	
BIO6516	Bio-membrane and Cell Signaling	3(3+0)	Major
BIO6524	Scientific Research and Report writing	3(2+1)	Major
STAT3506	Biostatistics	3(3+0)	Interdisciplinary
BIO6523	Bioinformatics	3(2+1)	Interdisciplinary
BIO6522	Metabolism 2	3(3+0)	Major
	Total Credits	**15**	

	Semester-8		
Code	**Course Title**	**CH**	
BIO6519	Capstone Project	3(0+3)	Mandatory
BIO6520	Internship/ Field Experience	3(0+3)	Mandatory
BIO6528	Genetic Engineering	3(2+1)	Major
BIO6527	Epidemiology	3(2+1)	Interdisciplinary
	Total Credits	**12**	
Total Credit Hours: Semester 5 – 8 =60 and Total CH: 70+60= 130			

7. Fee Tariff for 1ˢᵗ Semester

Item	Rates
Registration Fee (Once at time of admission)	Rs.650/-
Admission Fee (Once at time of admission)	Rs.1300/-
Degree Fee (Once at time of admission)	Rs.1500/-
Technology Fee	Rs.800/-
Per 1 Credit course 2600	Rs. 46800/-
LAB CHARGES	Rs.3900/-
Total	Rs. 54950/-

BS BOTANY

1. Introduction

The study of plants is vital because they underpin almost all life forms on Earth by generating a large proportion of oxygen and food that allow humans and other organisms to subsist. Plants are one of the major groups of organisms that carry out photosynthesis, a process that absorbs carbon dioxide, a greenhouse gas that is a small but important variable that influences global climate. Plants are crucial to the future of human society as they provide food, oxygen, medicine, and products for people, as well as creating and preserving soil.

This programme has an interdisciplinary and multidisciplinary scope enabling students to understand the concepts of Botany. It covers a wide range of scientific disciplines including the study of plant structure, growth, reproduction, metabolism, development, diseases, chemical properties, evolutionary relationships, and plant taxonomy. Graduates with Botany can work in national and international organization in public and private sectors as Biodiversity Researchers, Environmental Scientists, Nature Reserve Managers, Wildlife Management Advisors, Ecological Consultants and Conservation Officers, Quality Control Officers, Salesperson etc.

2. Objectives

On accomplishing the course, the students will be able to:

i. Demonstrate comprehensive understanding of Botany as an interdisciplinary and multidisciplinary subject.

ii. Achieve awareness about the evolutionary trends and plants systematic in pursuit of nature conservation.

iii. Understand the relationship between economic growth and importance of indigenous plant resources.

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3. BS Botany (4 Year)
(Programme Code 5046)

Eligibility Criteria for admission in BS Programs(4 years) is:

1. Students holding FSC (Pre Medical) or equivalent/ 'A' lavel with Biology as a major subject shall be eligible for admission.

BS BOTANY (4 Years)

Semester 1			
Code	**Course Title**	**CH**	
BIO3507	Cell Biology	3(2+1)	Major
ITHC3501/ HADH3501	Islamic studies/Ethics	2(2+0)	General
PKST3502	Ideology & constitution of Pakistan	2(2+0)	General
MATH3508	Quantitative Reasoning	3(3+0)	General
ENGL3505	Functional English	3(3+0)	General
URD 3503	Pakistani Adab-1	2(2+0)	General (Arts and Humanities)
Bio 3509	Introductory Biochemistry	3(2+1)	Major
	Total Credits	**18**	
Semester-2			
Code	**Course Title**	**CH**	
ENGL3504	Expository Writing	3(3+0)	General
BIO3510	Fundamentals of	3(2+1)	Major

	Microbiology		
PKST 3501	Pakistan Studies	2(2+0)	General
SOC3503	Civics and Community Engagement	2(2+0)	General
CS3503	Application of Information communication & Technologies	3(2+1)	General
MATH4505	Quantitative Reasoning II	3(3+0)	General
SOC3506	Introduction to Sociology	2(2+0)	General
	Total Credits	**18**	
	Semester-3		
Code	**Course Title**	**CH**	
CHEM3501	Inorganic Chemistry	4(3+1)	General
BIO4508	Diversity of Plants	3(2+1)	Major
BIO4509	Diversity of Animals	3(2+1)	Major
ENVS4501	Basics of Environmental science	3(2+1)	General (Natural Science)
MGT3503	Entrepreneurship	2(2+0)	General
BIO4504	Genetics and Evolution	3(2+1)	Major
	Total Credits	**18**	

	Semester 4		
Code	Course Title	CH	
CHEM3502	Organic Chemistry	4(3+1)	General
BIO4505	Biosafety; Principles and applications	3(2+1)	Major
BIO4510	Biotechnology	3(2+1)	Major
BIO4506	Animal Physiology and Ecology	3(3+0)	Major
BIO4507	Plant Physiology and Ecology	3(3+0)	Major
	Total Credits	16	
	Semester 5		
Code	Course Title	CH	
BIO5509	Diversity of Vascular Plants	3(2+1)	Major
BIO5510	Plant Anatomy	3(2+1)	Major
BIO5511	Phycology and Bryology	3(3+0)	Major
BIO5508	Biodiversity and Conservation	4(3+1)	Major
ENVS3506	Environmental Biology	4(3+1)	Interdisciplinary
TFSR3501	Fahm-e-Quran (Tajwid, Translation & Tafsir		NC
	Total Credits	17	

	Semester 6		
Code	Course Title	CH	
BIO5512	Plant Ecology -I	3(2+1)	Major
BIO5513	Plant Physiology – I	3(2+1)	Major
BIO5526	Molecular Biology	3(3+1)	Major
BIO6513	Plant Systematics	3(2+1)	Major
BIO5514	Mycology and Plant Pathology	3 (2+1)	Major
SERT3501	Seerat -e-Tayyaba	NC	
	Total Credits	15	
	Semester-7		
Code	Course Title	CH	
BIO6508	Plant Ecology -II	3(2+1)	Major
BIO6509	Plant Physiology – II	3 (2+1)	Major
BIO6523	Bioinformatics	3 (2+1)	Interdisciplinary
BIO6524	Scientific Research and Report writing	3 (2+1)	Major
STAT3506	Biostatistics	3 (3+0)	Interdisciplinary
BIO6516	Bio-membrane and cell signaling	3(3+0)	Interdisciplinary
	Total Credits	18	
	Semester-8		
Code	Course title	CH	
BIO6519	Capstone Project	3(0+3)	Mandatory
BIO6520	Field Experience	3(0+3)	Mandatory

BIO6528	Genetic Engineering	3 (2+1)	Major
BIO6512	Ethnobotany	3 (3+0)	Major
	Total Credits	**12**	

Total Credit Hours: Semester 70+62=132

8. Fee Tariff

Item	Rates
Registration Fee (Once at time of admission)	Rs.650/-
Admission Fee (Once at time of admission)	Rs.1300/-
Degree Fee (Once at time of admission)	Rs.1500/-
Technology Fee	Rs.800/-
Per 1 Credit course 2600 x18	Rs. 46800/-
LAB CHARGES	3900/-
Total	Rs. 54950/-

BS MICROBIOLOGY
(Programme Code 5045)

1. Introduction

The Department of Biology is well aware of the fact that this is an era of scientific revolutions. Microbiology, which is parallel to molecular biology as well as biotechnology, is an emerging scientific field. Lots of work is being done at international level but Pakistan is still behind in this field. The trained manpower well versed with laboratory techniques and disease diagnostic facilities is limited in the country.

Keeping this in view, the Department of Biology has launched four years BS Programme in Microbiology from the semester Spring, 2009.

This programme is designed to:

  i. Provide skilled laboratory personnel for catering general public needs.
  ii. Provide research atmosphere for the support of laboratory facilities.

2. Objectives

After completing this programme, students will acquire the necessary knowledge based in the area of Bio-medical sciences, which is very important to diagnose the infectious diseases as well as epidemics.

The overall objectives of this programme is to **promote education of Applied/Life Sciences in the country**.

i. To provide human resources/skilled Microbiologist for catering the needs of medical laboratories in hospitals and research institutes.
ii. To provide foundation for higher studies in Microbiology.

iii. To create awareness about application of Microbiology for public benefit.

3. Eligibility Criteria (BS Microbiology 4 years)

F.Sc (Pre-medical) OR Equivalent A Level qualification with Biology as major subject.

4. Duration of Programme

In order to be eligible for the award of BS in Microbiology, the student will have to earn a total of 128 credit hours including three credit hours for research within a minimum period of 4 years (8 semesters) failing which, a student can be given an extension of 2 years (4 semesters) in maximum, after completion of initial period.

5. Scheme of Studies:

Semester 1			
Code	**Course Title**	**CH**	
BIO3507	Cell Biology	3(2+1)	Major
ITHC3501/ HADH3501	Islamic studies/Ethics	2(2+0)	General
PKST3502	Ideology & constitution of Pakistan	2(2+0)	General
MATH3508	Quantitative Reasoning-I	3(3+0)	General
ENGL3505	Functional English	3(3+0)	General
URD3503	Pakistani Adab-1	2(2+0)	General (Arts and Humanities)
Bio 3509	Introductory Biochemistry	3(2+1)	Major
	Total Credits	**18**	

Semester-2			
Code	**Course Title**	**CH**	
ENGL3504	Expository Writing	3(3+0)	General
BIO3510	Fundamentals of Microbiology	3(2+1)	Major
SOC3503	Civics and Community Engagement	2(2+0)	General
CS3503	Application of Information communication & Technologies (ICT)	3(2+1)	General
MATH4505	Quantitative Reasoning II	3(3+0)	General
SOC3506	Introduction to Sociology	2(2+0)	General
PKST3501	Pakistan Studies	2(2+0)	General
	Total Credits	**18**	

Semester-3			
Code	**Course Title**	**CH**	
CHEM3501	Inorganic Chemistry	4(3+1)	General
BIO4508	Diversity of Plants	3(2+1)	Major
BIO4509	Diversity of Animals	3(2+1)	Major
ENVS4501	Basics of Environmental science	3(2+1)	General (Natural Science)
MGT3503	Entrepreneurship	2(2+0)	General
BIO4504	Genetics and Evolution	3(2+1)	Major
	Total Credits	**18**	

Semester 4

Code	Course Title	CH	
CHEM3502	Organic Chemistry	4(3+1)	General
BIO4505	Biosafety; Principles and applications	3(2+1)	Major
BIO4510	Biotechnology	3(2+1)	Major
BIO4506	Animal Physiology and Ecology	3(3+0)	Major
BIO4507	Plant Physiology and Ecology	3(3+0)	Major
	Total Credits	**16**	

Semester 5

Code	Course Title	CH	
BIO5518	Applied Environmental Microbiology	3(2+1)	Major
BIO5522	Microbial Genetics	3(2+1)	Major
BIO5523	Virology	3(2+1)	Major
BIO5524	Soil Microbiology	3(2+1)	Major
BIO5525	Human Physiology	3(2+1)	Major
BIO5519	Biochemical Techniques	3(2+1)	Interdisciplinary
TFSR3501	Fahm-e-Quran (Tajwid, Translation & Tafsir	NC	
	Total credits	**18**	

Semester 6

Code	Course Title	CH	
BIO5526	Molecular Biology	3(2+1)	Major
BIO5533	Antimicrobial and Antiviral Agents	3(2+1)	Major
BIO5527	Food and Dairy Microbiology	3(2+1)	Major
BIO5528	Microbial Anatomy and Physiology	3(2+1)	Major
BIO5529	Industrial Microbiology	3(2+1)	Major
SERT3501	Seerat -e- Tayyaba	NC	
	Total credits	15	

Semester-7

Code	Course title	CH	
STAT3506	Biostatistics	3(3+0)	Interdisciplinary
BIO6524	Scientific Research and Report writing	3(2+1)	Interdisciplinary
BIO6525	Immunology	3(2+1)	Major
BIO6526	Medical Microbiology	3(2+1)	Major
BIO6523	Bioinformatics	3(2+1)	Interdisciplinary
	Total credits	**15**	

Semester-8

Code	Course title	CH	
BIO6527	Epidemiology	3(2+1)	Major
BIO6519	Capstone Project	3(0+3)	Mandatory
BIO6520	Field Experience/ Internship	3(0+3)	Mandatory
BIO6528	Genetic Engineering	3(2+1)	Major
	Total credits	**12**	

Total Credit Hours: Semester 130

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Fee Tariff

Item	Rates
Registration Fee (Once at time of admission)	Rs.650/-
Admission Fee (Once at time of admission)	Rs.1300/-
Degree Fee (Once at time of admission)	Rs.1500/-
Technology Fee	Rs.800/-
Per 1 Credit course 2600	Rs. 46800/-
LAB CHARGES	Rs.3900/-
Total	Rs. 54950/-

DEPARTMENT OF ENVIRONMENTAL SCIENCE (Programme Code 5047)

The approval for the establishment of the Department of Environmental Science was granted by the Executive Council in February 1998. The department was initiated with the aim of creating awareness and understanding of knowledge and skills required for sustainable environmental management. The purpose of its establishment is to educate future generation and improvement of quality of life and welfare of human being through research for the environmentally sustainable and socially equitable use of the natural resources. The department is determined to provide quality education to its wards through scientific and project-based learning curriculum.

The Department of Environmental Science is committed to educate its students for sustainable development of society, ensuring economic stability with eco-centric approach of development. The students from different fields can opt environmental sciences not only as a degree of substantial market value but also for their personal development on important moral values of environmental stewardship, so they can contribute significantly in achievement of better and sustainable society.

The Department is continuously growing and flourishing both on quality teaching and research facilities to facilitate its students in better learning. Undoubtedly the current era is a modern new world of environmental challenges that questions the safety and stability of life on earth. Though is developing

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labs and faculty, the Department of Environmental Science promises to develop a holistic educational approach for the students to deal with challenges of the modern era.

The Department is offering undergraduate programs:
i.   BS Environmental Science 4- Year Program
ii.   BS Environmental Science 2.5- Year Program
iii.   BS Environmental Science 2- Year Program
iv.   M.Phil. Environmental Science 2-Year Program

The Department has well established lab facilities to foster the developing research ideas of the enrolled students, with competent faculty to guide them.

BS ENVIRONMENTAL SCIENCE
Programme Code 5047

Introduction

The increasing environmental degradation due to urbanization has highlighted the need of Environmental Sciences. It is an integrated discipline designed to provide a comprehensive knowledge of the fundamentals of biological and natural sciences in solving environmental problems. The Environmental Sciences department is currently running BS and MSc Environmental Sciences Program under the Faculty of Science at AIOU. Where currently offers undergraduate program of BS Environmental Science. The courses offered in the department are designed considering the multidisciplinary nature of the discipline and focus on understanding of the fundamental processes that contribute to environmental pollution and natural resource degradation with the aim to train students to combat pollution and ensure sustainable development in the country.

Graduates from the Department of Environmental Science can find potential opportunities and career in a national and international organization working for sustainable development.

Objectives

The 4 years' degree program will enable the students to apply interdisciplinary skills, systems approaches and perspectives to understand and analyze environmental issues and policies of global and local concerns. It aims at producing dynamic young environmentalists by developing academic foundation, technical skills, communication abilities and professionalism enabling them to compete in both the governmental and non-governmental sectors.

On accomplishing the course, the students will be able to:
i.   Deal with local and global environmental challenges, both academically and practically
ii. Contribute in informed decision making, strategic planning and leadership in the society through interdisciplinary understanding and problem-solving abilities

BS Environmental Science (4-Year Program)
Eligibility Criteria

i.   F. Sc (pre-Medical) or (pre-Engineering) or equivalent qualification.
ii. Foreign certificate/ degree holders will need to produce equivalence certificate from IBCC.

Duration of Program

To be eligible for the award of BS in Environmental Science, the student will have to complete 134 credit hours including three credit hours for capstone project, within a minimum period of 4 years (8 semester) failing which a student can be given an extension of two years (4 semester) in minimum, after completion of initial period.

Semester wise lay out for BS Programs (Total CH Semester 1-8 = 134)

Semester I			Course Category
Course Code	**Course Title**	**CH**	
ENGL 3505	Functional English	3 (3+0)	GC
ITHC 3501/ HADH3501	Islamic Studies/ Ethics	2 (2+0)	GC
PKST3502	Ideology and Constitution of Pakistan	2 (2+0)	GC
MATH3508	Quantitative Reasoning	3 (3+0)	QR (GC)
URD3503	Pakistani Adab-I	2 (2+0)	Arts& Humanities (GC)
ENVS4501	Basics of Environmental Science	3 (2+1)	Natural Science
	Credit hours	15	

SEMESTER II			
Course Code	**Course Title**	**CH**	
ENGL 3504	Expository Writing	3 (3+0)	GC
SOC3503	Civics and Community Engagement	2 (2+0)	GC
SOC3506	Introduction to Sociology	2(2+0)	GC
MATH4505	Quantitative Reasoning II	3 (3+0)	GC
CS3503	Application of Information and Communication Technologies	3 (2+1)	GC
ENVS 3508	Community Ecology	3(3+0)	Major
PKST3501	Pakistan Studies	2(2+0)	GC
	Credit hours	18	

SEMESTER III			
Course Code	**Course Title**	**CH**	
MGT3503	Entrepreneurship	2 (2+0)	GC
ENVS4502	Introduction to Earth Sciences	3 (3+0)	Major
ENVS4506	Water and Wastewater Treatment	3 (2+1)	Major
ENVS 5502	Environmental Policies and Regulations	3 (3+0)	Major

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Course Code	Course Title	CH	
ENVS 3504	Environmental Pollution	4 (3+1)	Major
	Credit hours	15	

SEMESTER IV

Course Code	Course Title	CH	
ENVS4503	Climate Change	4 (3+1)	Major
ENVS 5501	Environmental Chemistry	4(3+1)	Major
ENVS4504	Solid and Hazardous Waste Management	3(3+0)	Major
ENVS 3506	Environmental Biology	4 (3+1)	Major
ENVS4505	Environmental Geography	3(3+0)	Major
	Credit hours	18	

SEMESTER V

Course Code	Course Title	CH	
BIO 3508	Applies Environmental Microbiology	3 (2+1)	Interdisciplinary
BIO 5508	Biodiversity and Conservation	4 (3+1)	Interdisciplinary
ENVS 5503	Physics of the Environment	4 (3+1)	Major
TFSR3501	Fahm-e-Quran(Tajwid, Translation & Tafsir	NC	Non-Credit

Course Code	Course Title	CH	
ENVS5507	Analytical Techniques	4 (3+1)	Major
ENVS 5508	Environment Data Visualization & Processing	3(3+0)	Major
	Credit hours	18	

SEMESTER VI

Course Code	Course Title	CH	
ENVS 5509	Scientific Research and Report Writing	3 (2+1)	Major
ENVS 5505	Intro to Environmental Economics	3 (3+0)	Major
ENVS 5504	Natural Resource Management	3 (3+0)	Major
ENVS 5506	Energy and Environment	3 (3+0)	Major
ENVS 6501	Environmental Impact Assessment	4 (3+1)	Major
STAT 3506	Biostatistics	3(3+0)	Interdisciplinary
SERT3501	Seerat-e-Tayyaba	NC	Non-Credit
	Credit hours	19	

SEMESTER VII

Course Code	Course Title	CH	
ENVS6508	Field Experience/Internship	3 (0+3)	Major
ENVS 6503	Health, Safety &	4(3+1)	Major

Course Code	Course Title		
	Environmental Management Systems		
ENVS 6502	Sustainable Development	3(3+0)	Major
ENVS 6504	Environmental Toxicology	3(3+0)	Major
BIO3507	Cell Biology	3 (2+1)	Interdisciplinary
	Credit hours	16	

SEMESTER VIII			
Course Code	Course Title	CH	
ENVS6509	Capstone Project	3 (0+3)	Major
ENVS6510	Disaster Risk Reduction and Management	4 (3+1)	Major
ENVS 6506	GIS and Remote Sensing	4 (3+1)	Major
ENVS 6505	Project Management	4 (3+1)	Major
	Credit hours	15	
Total Credit Hours		134	

9. Fee Tariff

Item	Rates
Registration Fee (Once at time of admission)	Rs.650/-
Admission Fee (Once at time of admission)	Rs.1300/-
Degree Fee (Once at time of admission)	Rs.1500/-
Technology Fee	Rs.800/-
Per 1 Credit course 2600 x 15	Rs. 39000/-
LAB CHARGES	Rs.3300/-
Total	Rs. 46550/-

BS Environmental Science (BA/ BSc Based Program)

Eligibility Criteria

- Students holding a BSc Degree with at least 45% marks shall be eligible for admission.
- Student with Associate Degree in relevant field with less then 60 credit hours.
- Students with a Associate Degree other then the relevant field with 50% marks who wish to switch to another discipline shall also be eligible for admission

Semester wise lay out for BS Environmental Science 2.5 years (B.Sc Based Programs) (Total CH# 86) (Programme Code 5578)

SEMESTER I (BRIDGING SEMESTER)			
Course Code	Course Title	Credit hours	
ENVS3508	Community Ecology	3(3+0)	
ENVS 5501	Environmental Chemistry	4(3+1)	
ENVS 3506	Environmental Biology	4(3+1)	
ENVS 4502	Introduction to Earth Sciences	3(3+0)	
ENVS 4503	Climate Change	4(3+1)	
	Credit hours	**18**	

SEMESTER II			
Course Code	Course Title	CH	
BIO 3508	Applies Environmental Microbiology	3(2+1)	Interdisciplinary
BIO 5508	Biodiversity and Conservation	4(3+1)	Interdisciplinary
ENVS 5503	Physics of the	4(3+1)	Major

Course Code	Course Title	CH	
	Environment		
TFSR3501	Fahm-e-Quran(Tajwid, Translation & Tafsir	NC	Non-Credit
ENVS5507	Analytical Techniques	4(3+1)	Major
ENVS 5508	Environmental Data Visualization & Processing	3(3+0)	Major
	Credit hours	18	

SEMESTER III

Course Code	Course Title	CH	
ENVS 5509	Scientific Research and Report Writing	3(2+1)	Major
ENVS 5505	Intro to Environmental Economics	3(3+0)	Major
ENVS 5504	Natural Resource Management	3(3+0)	Major
ENVS 5506	Energy and Environment	3(3+0)	Major
ENVS 6501	Environmental Impact Assessment	4(3+1)	Major
SERT3501	Seerat-e-Tayyaba	NC	Non-Credit
STAT 3506	Biostatistics	3(3+0)	Interdisciplinary
	Credit hours	19	

SEMESTER IV

Course Code	Course Title	CH	
ENVS6508	Field Experience/Internship	3(0+3)	Major
ENVS 6503	Health, Safety & Environmental Management Systems	4(3+1)	Major
ENVS 6502	Sustainable Development	3(3+0)	Major
ENVS 6504	Environmental Toxicology	3(3+0)	Major
BIO3507	Cell Biology	3 (2+1)	Interdisciplinary
	Credit hours	16	

SEMESTER V

Course Code	Course Title	CH	
ENVS6509	Capstone Project	3 (0+3)	Major
ENVS6510	Disaster Risk Reduction and Management	4 (3+1)	Major
ENVS 6506	GIS and Remote Sensing	4 (3+1)	Major
ENVS 6505	Project Management	4 (3+1)	Major
	Credit hours	15	

10. Fee Tariff

Item	Rates
Registration Fee (Once at time of admission)	Rs.650/-
Admission Fee (Once at time of admission)	Rs.1300/-
Degree Fee (Once at time of admission)	Rs.1500/-
Technology Fee	Rs.800/-
Per 1 Credit course 2600 x 18	Rs. 46800/-
LAB CHARGES	Rs.3300/-
Total	Rs. 54350/-

BS Environmental Science (AD Based) 2 years
(Programme Code 5586)

Eligibility Criteria

Students having associate degree in relevant field with at least 60 credit hours with 50% marks.

1. Students with an Associate degree in the relevant field with at least 60 credit hours shall be eligible for admission, for the award of BS degree in Environmental Science, the student will have to complete minimum 65 credit hours including six credit hours for research project.

Semester wise lay out for BS Associate Degree Based Programs (Total CH Semester 5-8 = 68)

SEMESTER I

Course Code	Course Title	CH	
BIO 3508	Applies Environmental Microbiology	3 (2+1)	Interdisciplinary
BIO 5508	Biodiversity and Conservation	4 (3+1)	Interdisciplinary
ENVS 5503	Physics of the Environment	4 (3+1)	Major
TFSR3501	Fahm-e-Quran(Tajwid, Translation & Tafsir	NC	Non-Credit
ENVS5507	Analytical Techniques	4 (3+1)	Major
ENVS5508	Environment Data Visualization & Processing	3(3+0)	Major
	Credit hours	18	

SEMESTER II

Course Code	Course Title	CH	
ENVS 5509	Scientific Research and Report Writing	3 (2+1)	Major
ENVS 5505	Intro to Environmental Economics	3 (3+0)	Major
ENVS 5504	Natural Resource Management	3 (3+0)	Major
ENVS 5506	Energy and Environment	3 (3+0)	Major
ENVS 6501	Environmental Impact Assessment	4 (3+1)	Major
SERT3501	Seerat-e-Tayyaba	NC	Non-Credit
STAT 3506	Biostatistics	3(3+0)	Interdisciplinary
	Credit hours	19	

SEMESTER III

Course Code	Course Title	CH	
ENVS6508	Field Experience/Internship	3 (0+3)	Major
ENVS 6503	Health, Safety & Environmental Management Systems	4 (3+1)	Major
ENVS 6502	Sustainable Development	3 (3+0)	Major
ENVS 6504	Environmental Toxicology	3 (3+0)	Major
BIO3507	Cell Biology	3 (2+1)	Interdisciplinary
	Credit hours	16	

SEMESTER IV			
Course Code	Course Title	CH	
ENVS6509	Capstone Project	3 (0+3)	Major
ENVS6510	Disaster Risk Reduction and Management	4 (3+1)	Major
ENVS 6506	GIS and Remote Sensing	4 (3+1)	Major
ENVS 6505	Project Management	4 (3+1)	Major
	Credit hours	15	

Fee Tariff

Item	Rates
Registration Fee (Once at time of admission)	Rs.650/-
Admission Fee (Once at time of admission)	Rs.1300/-
Degree Fee (Once at time of admission)	Rs.1500/-
Technology Fee	Rs.800/-
Per 1 Credit course 2600 x 18	Rs. 46800/-
LAB CHARGES	Rs.3300/-
Total	**Rs. 54350**/-

6.1 Medium of Instruction

The Medium of Instructions for BS Environmental Science will be English.

6.2 Study Material

Reprinted or compiled course books/lecture handouts will be provided by the University as per AIOU policy.

10.3   Mode of Teaching

a) University will provide face to face teaching to the students.

b) The schedule of classes and dates of submission of assignments will be handed over along with study material.

Assessment and Evaluation:

See page vi

i. **Chairperson,**
Department of Environmental Science
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Allama Iqbal Open University
Phone: 051 9057185

ii. **Dr. Samia Qadeer**
Program Coordinator (BS 4 Year)
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Allama Iqbal Open University
Phone: 051-9057726 /051-9575674

Faculty Members

i. **Dr. Sofia Khalid,**
Associate Professor/Chairperson
Ph: 051 9057185

ii. **Dr. Zahid Ullah**
Assistant Professor
Ph. 051-9057735

iii. **Dr. Samia Qadeer**
Assistant Professor
Ph: 051-9575674

DEPARTMENT OF CHEMISTRY

Department of Chemistry is a major department of the Faculty of Science. It was established in 1998 to offer postgraduate programs in Chemistry. In the beginning only MSc programme was started, which was later extended to include MPhil and PhD programs. The faculty of the department comprises of one Professor, three Associate Professors, four Assistant Professor and three Lecturers. In addition, the department also uses services of experienced professors as visiting faculty.

The department is situated in Science Block on the main campus where it occupies the ground floor and a portion of the lower floor. With the expansion of lab facilities, the department has extended its academic activities by launching the BS programme from Spring, 2009. BS programme is visualized in the new scheme of higher education as a fundamental step in improving the standard of graduate and postgraduate studies.

The study programs in chemistry have been developed by the Faculty according to the guidelines provided by the Higher Education Commission (HEC). Necessary changes have been made time to time to suit our students, but without deviating fundamentally from the principles set by the HEC. The Committee of Courses of the department comprising distinguished professors and scientists of the country thoroughly screened the proposed syllabi.

Chemistry is an experimental science. Students learn basic techniques in the labs. Therefore, it is essential to provide best lab facilities to students of various levels. The chemistry department takes pride in offering the most modern lab facilities in the country to its students in all branches of chemistry. Its research labs are equipped with CHNS Analyzer, Thermal Analyzer, UV-Visible, Fluorescence and FTIR Spectrophotometer, GC-MS, Flash Column Chromatography and HPLC units, Atomic Absorption Spectrometer, and Electrochemical work stations. Teaching labs are well equipped with routine apparatus and basic instruments. These lab facilities make us one of the leading teaching and research departments of the country.

The department firmly believes in the promotion of chemistry as a science and in maintaining the highest standards. The department is in mission to promote chemistry as a science and provide opportunities of professional growth and updating knowledge to chemistry graduates.

BS CHEMISTRY
(Programme Code 5044)

1   Introduction

There has been a continuous effort at the national level to upgrade the standard of college education. It is realized that our existing BSc programme does not meet international standards. The Higher Education Commission has recommended a four year BS programme to be followed by a two-year MS programme. The BS degree is considered equivalent to MSc Chemistry. However, BS degree holders are given preference for

the relevant job over MSc graduates as their knowledge is more focused on Chemistry. It is a major structural change in our existing educational system. The country will enormously benefit from the fruits of this change in terms of improved and balanced knowledge and skill.

The department of Chemistry offers the best facilities for this programme in the country. Its new labs and modern equipment together with qualified faculty makes it place to which students would like to be a part of it.

2 Objectives

The objectives of this programme are:

i) To provide a nurturing environment that facilitates and stimulate the active and explorative learning of Chemistry for the students.

ii) To provide chemical knowledge and laboratory skills required for professional chemist.

iii) To contribute to national effort in human resource development. Currently department of Chemistry is offering following programs.

3 BS Chemistry (4-year program)

3.1 Eligibility Criteria

i) FSc with Chemistry as one of the major subject.

ii) DAE (Diploma Holders) in Chemical Engineering / Chemical Technology from a Polytechnic Institute.

iii) "A"-Level with Chemistry or Equivalent.

3.2 Duration of Program

The minimum duration of BS Chemistry Programme is **Four years (8 Semesters)** and maximum duration to complete BS Chemistry Programme is **six years (12 Semesters).**

3.3 Scheme of Studies

The BS program is minimum of four years duration, split into eight semesters. In the first four semesters, the main emphasis will be on basic chemistry, general and compulsory subjects. In the 5th and 6th semesters, Physical, Inorganic, Organic and Analytical Chemistry will be offered as core courses. The specialized courses will be dealt in the 7th and 8th semester with specialization in Organic, Inorganic/Analytical and Physical Chemistry.

Total Credit Hours = 139

Title of Courses	Alphanumeric Course Code	CH	Category
Semester I			
Fundamentals of Chemistry	CHEM3505	4(3+1)	Major
Quantitative Reasoning	MATH3508	3(3+0)	General
Pakistani Adab-1	URD3503	2(2+0)	General
Ideology and Constitution of Pakistan	PKST3502	2(2+0)	General
Functional English	ENGL3505	3(3+0)	General
Islamic Studies/Ethics	ITHC3501 / HADH 3501	2(2+0)	General
Credits		**16**	
Semester II			
Inorganic Chemistry	CHEM3501	4(3+1)	Major
Quantitative Reasoning -II	MATH4505	3(3+0)	General
Application of information communication & Technologies	CS3503	3(2+1)	General
Expository English	ENGL3504	3(3+0)	General

Course	Code	Credits	Category
Civics and Community Engagement	SOC3503	2(2+0)	General
Basics of Environmental Sciences	ENVS4501	3(2+1)	Natural Sciences
Credits		**18**	

Semester III			
Organic Chemistry	CHEM3502	4(3+1)	Major
Basic Biochemistry	CHEM4501	4(3+1)	Major
Environmental Chemistry	ENVS5501	4(3+1)	Major
Entrepreneurship	MGT3503	2(2+0)	General
Pre-Calculus	MATH3501	3(3+0)	Interdisciplinary
Pakistan Studies	PKST 3501	2(2+0)	
Credits		**19**	

Semester IV			
Physical Chemistry	CHEM3503	4(3+1)	Major
Analytical Chemistry	CHEM3504	3(2+1)	Major
Statistics for Chemists	STAT3507	4(3+0)	Major
Calculus – I	MATH3502	3(3+0)	Interdisciplinary
Introduction to Sociology	SOC3506	2(2+0)	General
Credits		**16**	

Semester V			
Physical Chemistry – I	CHEM3507	3(3+0)	Major
Organic Chemistry – I	CHEM3508	3(3+0)	Major
Inorganic Chemistry – I	CHEM3509	3(3+0)	Major
Analytical Chemistry-I	Chem 3506	3(3+0)	Major
Mathematics for Chemists	CHEM3510	2(2+0)	Major
Chemistry Lab – I	CHEM3511	4(0+4)	Major
Fahm-e-Quran(Tajwid, Translation & Tafsir	TFSR3501	NC	
Credits		**18**	

Semester VI			
Analytical Chemistry – II	CHEM5501	3(3+0)	Major
Physical Chemistry – II	CHEM5502	3(3+0)	Major
Organic Chemistry – II	CHEM5503	3(3+0)	Major
Inorganic Chemistry – II	CHEM5504	3(3+0)	Major
Chemistry Lab – II	CHEM5505	4(0+4)	Major
Seerat-e-Tayyaba	SERT3501	NC	
Credits		**16**	

Semester VII (Specialization on: Organic Chemistry)			
Heterocyclic Chemistry	CHEM6501	3(3+0)	Major
Stereochemistry of Organic Compounds	CHEM6502	3(3+0)	Major
Spectroscopic Methods in Organic Chemistry	CHEM6503	3(3+0)	Major
Advanced Organic Chemistry Lab-I	CHEM6504	3(0+3)	Major
Field Experience/Internship	CHEM6531	3(0+3)	Major
Scientific Research and Report	ENVS 5509	3(2+1)	ID
Credits		**18**	

Semester VIII (Specialization On: Organic Chemistry)			
Chemistry of Natural Products	CHEM6516	3(3+0)	Major
Special Organic Reactions	CHEM 6517	3(3+0)	Major
Organic Synthesis	CHEM 6518	3(3+0)	Major
Advanced Organic Chemistry Lab-II	CHEM 6505	3(0+3)	Major
Capstone Project	CHEM 6532	3(0+3)	Major
Water and Wastewater Treatment	ENVS4506	3(2+1)	ID
Credit		**18**	

Semester VII (Inorganic/ Analytical Chemistry)			
Coordination Chemistry	CHEM6506	3(3+0)	Major
Non-Spectroscopic Instrumental Methods of Analysis	CHEM6507	3(3+0)	Major
Basic Instrumental Methods of Analysis	CHEM6508	3(3+0)	Major
Advanced Inorganic Chemistry Lab – I	CHEM6509	3(0+3)	Major

Field Experience/Internship	CHEM6531	3(0+3)	Major
Scientific Research and Report writing	ENVS 5509	3(2+1)	ID
Credits		**18**	
Organometallic Chemistry	CHEM6521	3(3+0)	Major
Group Theory for Chemist and Its Applications	CHEM6522	3(3+0)	Major
Advanced Environmental Chemistry	CHEM6523	3(3+0)	Major
Advanced Inorganic Chemistry Lab – II	CHEM6510	3(0+3)	Major
Capstone Project	CHEM6532	3(0+3)	Major
Water and Wast water Treatment	ENVS4506	3(2+1)	ID
Credits		**18**	

Chemical Kinetics	CHEM6511	3(3+0)	Major
Quantum Chemistry	CHEM6512	3(3+0)	Major
Electrochemistry	CHEM6513	3(3+0)	Major
Advanced Physical Chemistry Lab – I	CHEM6514	3(0+3)	Major
Field Experience/ Internship	CHEM6531	3(0+3)	Major
Scientific Research and Report Writing	ENVS 5509	3(2+1)	ID
Credits		**18**	
Molecular Spectroscopy	CHEM6526	3(3+0)	Major
Chemical Thermodynamics	CHEM6527	3(3+0)	Major
Surface Chemistry	CHEM6528	3(3+0)	Major

Advanced Physical Chemistry Lab – II	CHEM6515	3(0+3)	Major
Capstone Project	CHEM6532	3(0+3)	Major
Water and Wastwater Treatment	ENVS4506	3(2+1)	ID
Credits		**18**	

3.4 Fee Tariff

Item	
Registration Fee:	Rs.650/-
Admission Fee:	Rs.1300/-
Degree Fee (Once at time of admission)	Rs. 1500
Technology Fee (per semester)	Rs.800/-
Course Code / Lab	**Fee**
Per 1 Credit Hour Course Fee 2600 x 16	Rs.41600/-
Lab fee (per semester)	Rs.7800/-
First Semester Fee	**Rs.53650/-**

BS Chemistry (BSc Based) 2.5 years
(Programme Code 5577)

Eligibility Criteria for BS Programs (BSc/AD Based with less than 60 credit hours) with Bridging Semester:

1. Students holding a BSc degree with 45% marks shall be eligible for admission.
2. Students with an Associate degree with 50% marks (14 years of education) having less than 60 credit hours shall be eligible for admission.
3. Students with a discipline-specific Associate degree who wish to switch to another discipline shall also be eligible for admission.

4.2 Duration of Prgramme

The minimum duration of BS Chemistry Programme is 2.5 years 5 Semesters and maximum duration to complete BS program in **4 years.**

4.3 Scheme of Studies

The BS programme is minimum of 2.5 years duration, split into five semesters. In the bridging semester, the main emphasis will be on basic chemistry courses with one mathematic course. In the 2nd and 3rd semesters, Physical, Inorganic, Organic and Analytical Chemistry will be offered as core courses. The specialized courses will be dealt in the 4th and 5th semester with specialization in Organic, Inorganic/Analytical and Physical Chemistry.

SEMESTER WISE COURSE OFFERING
Total Credit Hours = 88

Bridging Semester				
	Analytical Chemistry	CHEM3504	3(2+1)	Major
	Inorganic Chemistry	CHEM3501	4(3+1)	Major
	Organic Chemistry	CHEM3502	4(3+1)	Major
	Physical Chemistry	CHEM3503	4(3+1)	Major
	Pre-Calculus	MATH3501	3(3+0)	ID
	Credits		18	
5 BS 5th	Analytical Chemistry – I	CHEM3506	3(3+0)	Major
	Physical Chemistry – I	CHEM3507	3(3+0)	Major
	Organic Chemistry – I	CHEM3508	3(3+0)	Major
	Inorganic	CHEM3509	3(3+0)	Major

	Chemistry – I			
	Mathematics for Chemists	CHEM3510	2(2+0)	Major
	Chemistry Lab – I	CHEM3511	4(0+4)	Major
	Fahm-e-Quran(Tajwid, Translation & Tafsir	TFSR3501	NC	
	Credits		**18**	
6 BS 6th	Analytical Chemistry – II	CHEM5501	3(3+0)	Major
	Physical Chemistry – II	CHEM5502	3(3+0)	Major
	Organic Chemistry – II	CHEM5503	3(3+0)	Major
	Inorganic Chemistry – II	CHEM5504	3(3+0)	Major
	Chemistry Lab – II	CHEM5505	4(0+4)	Major
	Seerat-e-Tayyaba	SERT3501	NC	
	Credits		**16**	
7th Specialization: Organic Chemistry	Heterocyclic Chemistry	CHEM6501	3(3+0)	Major
	Stereochemistry of Organic Compounds	CHEM6502	3(3+0)	Major
	Spectroscopic Methods in Organic Chemistry	CHEM6503	3(3+0)	Major
	Advanced Organic Chemistry Lab-I	CHEM6504	3(0+3)	Major
	Field Experience/Internship	CHEM6531	3(0+3)	Major
	Scientific Research and Report Writing	ENVS 5509	3(2+1)	ID
	Credits		**18**	
8th Specialization: Organic	Chemistry of Natural Products	CHEM6516	3(3+0)	Major
	Special Organic	CHEM6517	3(3+0)	Major

	Reactions			
Chemistry	Organic Synthesis	CHEM6518	3(3+0)	Major
	Advanced Organic Chemistry Lab – II	CHEM6505	3(0+3)	Major
	Capstone Project	CHEM6532	3(0+3)	Major
	Water and Wastwater Treatment	ENVS4506	3(2+1)	ID
	Credits		**18**	

7th Specialization: Inorganic / Analytical Chemistry	Coordination Chemistry	CHEM6506	3(3+0)	Major
	Non-Spectroscopic Instrumental Methods of Analysis	CHEM6507	3(3+0)	Major
	Basic Instrumental Methods of Analysis	CHEM6508	3(3+0)	Major
	Advanced Inorganic Chemistry Lab – I	CHEM6509	3(0+3)	Major
	Field Experience/Internship	CHEM6531	3(0+3)	Major
	Scientific Research and Report Writing	ENVS 5509	3(2+1)	ID
	Credits		**18**	
8th Specialization: Inorganic / Analytical Chemistry	Organometallic Chemistry	CHEM6521	3(3+0)	Major
	Group Theory for Chemist and Its Applications	CHEM6522	3(3+0)	Major
	Advanced Environmental Chemistry	CHEM6523	3(3+0)	Major
	Advanced Inorganic Chemistry Lab – II	CHEM6510	3(0+3)	Major
	Capstone Project	CHEM6532	3(0+3)	Major
	Water and Wastwater Treatment	ENVS4506	3(2+1)	ID
	Credits		**18**	

7th Specialization: Physical Chemistry	Chemical Kinetics	CHEM6511	3(3+0)	Major
	Quantum Chemistry	CHEM6512	3(3+0)	Major
	Electrochemistry	CHEM6513	3(3+0)	Major
	Advanced Physical Chemistry Lab – I	CHEM6514	3(0+3)	Major
	Field Experience/Internship	CHEM6531	3(0+3)	Major
	Scientific Research and Report Writing	ENVS 5509	3(2+1)	ID
	Credits		**18**	
8th Specialization: Physical Chemistry	Molecular Spectroscopy	CHEM6526	3(3+0)	Major
	Chemical Thermodynamics	CHEM6527	3(3+0)	Major
	Surface Chemistry	CHEM6528	3(3+0)	Major
	Advanced Physical Chemistry Lab – II	CHEM6515	3(0+3)	Major
	Capstone Project	CHEM6532	3(0+3)	Major
	Water and Wastwater Treatment	ENVS4506	3(2+1)	ID
	Credits		**18**	

4.4 Fee Tariff

Item	
Registration Fee:	Rs.650/-
Degree Fee (once at time of admission)	Rs. 1500/-
Admission Fee:	Rs.1300/-
Technology Fee (per semester)	Rs.800/-
Course Code / Lab	**Fee**
Per 1 Credit Course Fee 2600*18	Rs.46800/-
Lab fee (per semester)	Rs.7800/-
First Semester Fee	**Rs.58850/-**

BS Chemistry (AD Based) 2 years programme
(Programme Code 5583)

Eligibility Criteria

Students with an Associate degree with 50% marks in the relevant field with at least 60 credit hours shall be eligible for admission.

5.2   Duration of Program

The minimum duration of BS Chemistry Program is **2 years (4 Semesters) and maximum** duration to complete BS Chemistry (AD Based)program is 4 years (8 semester)

SEMESTER WISE COURSE OFFERING
Total Credit Hours = 70

5 BS 5th	Analytical Chemistry – I	CHEM3506	3(3+0)	Major
	Physical Chemistry – I	CHEM3507	3(3+0)	Major
	Organic Chemistry – I	CHEM3508	3(3+0)	Major
	Inorganic Chemistry – I	CHEM3509	3(3+0)	Major
	Mathematics for Chemists	CHEM3510	2(2+0)	Major
	Chemistry Lab – I	CHEM3511	4(0+4)	Major
	Fahm-e-Quran (Tajwid, Translation & Tafsir	TFSR3501	NC	
	Credits		**18**	
6 BS 6th	Analytical Chemistry – II	CHEM5501	3(3+0)	Major
	Physical Chemistry – II	CHEM5502	3(3+0)	Major
	Organic Chemistry – II	CHEM5503	3(3+0)	Major
	Inorganic Chemistry – II	CHEM5504	3(3+0)	Major
	Chemistry Lab – II	CHEM5505	4(0+4)	Major
	Seerat-e-Tayyaba	SERT3501	NC	
	Credits		**16**	
7th Specialization: Organic Chemistry	Heterocyclic Chemistry	CHEM6501	3(3+0)	Major
	Stereochemistry of Organic Compounds	CHEM6502	3(3+0)	Major
	Spectroscopic Methods in Organic Chemistry	CHEM6503	3(3+0)	Major
	Advanced Organic Chemistry Lab-I	CHEM6504	3(0+3)	Major
	Field Experience/Internship	CHEM6531	3(0+3)	Major
	Scientific Research and Report Writing	ENVS 5509	3(2+1)	ID
	Credits		**18**	
8th Specialization: Organic Chemistry	Chemistry of Natural Products	CHEM6516	3(3+0)	Major
	Special Organic Reactions	CHEM6517	3(3+0)	Major
	Organic Synthesis	CHEM6518	3(3+0)	Major
	Advanced Organic Chemistry Lab – II	CHEM6505	3(0+3)	Major
	Capstone Project	CHEM6532	3(0+3)	Major
	Water and Wastewater Treatment	ENVS4506	3(2+1)	ID
	Credits		**18**	
7th Specialization: Inorganic / Analytical Chemistry	Coordination Chemistry	CHEM6506	3(3+0)	Major
	Non-Spectroscopic Instrumental Methods of Analysis	CHEM6507	3(3+0)	Major
	Basic Instrumental Methods of Analysis	CHEM6508	3(3+0)	Major
	Advanced Inorganic	CHEM6509	3(0+3)	Major

Chemistry Lab – I			
Field Experience/Internship	CHEM6531	3(0+3)	Major
Scientific Research and Report Writing	ENVS 5509	3(2+1)	ID
Credits		**18**	
8th Specialization: Inorganic / Analytical Chemistry	Organometallic Chemistry	CHEM6521	3(3+0)	Major
	Group Theory for Chemist and Its Applications	CHEM6522	3(3+0)	Major
	Advanced Environmental Chemistry	CHEM6523	3(3+0)	Major
	Advanced Inorganic Chemistry Lab – II	CHEM6510	3(0+3)	Major
	Capstone Project	CHEM6532	3(0+3)	Major
	Water and Wastwater Treatment	ENVS4506	3(2+1)	ID
	Credits		**18**	

7th Specialization: Physical Chemistry	Chemical Kinetics	CHEM6511	3(3+0)	Major
	Quantum Chemistry	CHEM6512	3(3+0)	Major
	Electrochemistry	CHEM6513	3(3+0)	Major
	Advanced Physical Chemistry Lab – I	CHEM6514	3(0+3)	Major
	Field Experience/Internship	CHEM6531	3(0+3)	Major
	Scientific Research and Report Writing	ENVS 5509	3(2+1)	ID
	Credits		**18**	
8th Specialization: Physical Chemistry	Molecular Spectroscopy	CHEM6526	3(3+0)	Major
	Chemical Thermodynamics	CHEM6527	3(3+0)	Major
	Surface Chemistry	CHEM6528	3(3+0)	Major

Advanced Physical Chemistry Lab – II	CHEM6515	3(0+3)	Major
Capstone Project	CHEM6532	3(0+3)	Major
Water and Wastwater Treatment	ENVS4506	3(2+1)	ID
Credits		**18**	

Total Credit Hours: Semester 5 –84 = 64

5.4 Fee Tariff

Item	
Registration Fee:	Rs.650/-
Degree Fee (once at time of admission)	Rs. 1500/-
Admission Fee:	Rs.1300/-
Technology Fee (per semester)	Rs.800/-
Course Code / Lab	**Fee**
Per 1 Credit Course Fee 2600*18	Rs.46800/-
Lab fee (per semester)	Rs.7800/-
First Semester Fee	**Rs.58850/-**

6.1 Medium of Instruction

The Medium of Instructions for BS Chemistry will be English.

6.2 Study Material

The Class Teacher will provide the study material as per AIOU policy and will suggest reference books for further reading.

6.3 Mode of Teaching

In this programme, regular classes for all courses / practical work will be conducted at AIOU Main Campus in Face to Face mode. Minimum 70% attendance is required for all subjects as per AIOU rules. AIOU has adopted GPA/CGPA system from Spring Semester 2009 in all its four years Bachelor Degree programs.

6.4   Assessment and Evaluation
        See page vi
8   Contact Details
Chairperson
Department of Chemistry,
Science Block
Allama Iqbal Open University, H-8, Islamabad.
Contact Ph: 051-9057818
BS Programme Coordinator
Department of Chemistry,
Science Block
Allama Iqbal Open University, H-8, Islamabad.
Contact Ph: 051-9057262
9.   Faculty Members
1. **Dr. Uzma Yunus**
   Associate Professor /Chairperson
   Ph: 051–9575200
2. **Dr. Moazzam H. Bhatti**
   Professor
   Ph: 051–9575217
3. **Dr. Nasima Arshad**
   Associate Professor
   Ph: 051–9575218
4. **Dr. Muhammad Sher**
   Associate Professor
   Ph: 051-9575219
5. **Dr. Muhammad Zaman Ashraf**
   Assistant Professor
   Ph: 051-9575224
6. **Dr. Iqbal Ahmed**
   Assistant Professor
   Ph: 051-9575223
7. **Dr. Muhammad Naeem Khan**
   Assistant Professor
   Ph: 051-9575225

8. **Dr. Muhammad Saleem**
   Assistant Professor
   Ph: 051-9575226
9. **Dr. Mehwash Zia**
   Lecturer, Ph: 051-9575231
10. **Dr. Farzana Shaheen**
    Lecturer, Ph: 051-9575232
11. **Dr. Erum Jabeen**
    Lecturer, Ph: 051-9575234

DEPARTMENT OF MATHEMATICS

Our vision is to be among the leading Mathematics departments of the country, which provides quality education in Mathematics and is the center of active and innovative research. The department aspires to promote understanding of Mathematics through teaching and research and inculcate in students the attributes of logical and critical thinking. The Department of Mathematics has been established in June 2014. In June 2014, the Department of Mathematics & Statistics has been bifurcated as two independent departments.

Mathematical life at AIOU is very active. It comprises original investigations, discussions, lectures, and teaching at many levels. We are deeply committed to superior research in mathematics and the scientific excellence of our faculty is well recognized in the mathematical community.

The following degree programs are being offered in the Department of Mathematics. All these programs are approved by Higher Education Commission (HEC), Islamabad.
  i. PhD Mathematics
  ii. MPhil Mathematics
  iii. BS Mathematics

Presently, these degree programs are offered at main campus only. However, in near future, the Department intends to offer these degree programs at main regional headquarters.

The Department provides instructional support to all the faculties of the University in the teaching of courses related to Mathematical sciences. Presently, the Department is offering courses for post-graduate and graduate programs which are carefully designed with a thoughtful selection of courses from applied, pure, financial, and computational domains of mathematics in the light of guidelines provided by the HEC.

The Department offers programs in various specializations which include Pure, Applied, Computational and Financial Mathematics. Academia and students frequently participate in national, regional and international conferences. The research interests of the Department of Mathematical Sciences range from abstract to applied aspects of the discipline. Building on our current strength, our goal is to strengthen areas related to Pure and Applied Mathematics. We believe that it will help students keep pace with the latest trends in mathematics on the one hand and contribute to society at large on the other. A clearer idea of the exact areas engaging the Department's current interest can be formed from the list of the faculty and their individual areas of research.

BS MATHEMATICS
(Programme Code 5050)

1. **Introduction**

   BS Mathematics has been designed after consulting syllabi of national and international universities. BS Mathematics program will strengthen the mathematical concepts of the candidate and will enhance their logical thinking. This

program caters the needs of information Technology and other sciences disciplines.

To meet the challenging requirements of today's fast growing world, the department of Mathematics has planned to launch BS Mathematics Program. The BS degree is deemed equivalent to MSc Mathematics. BS degree holders are being preferred throughout the world as their knowledge is more focused on Mathematics. Our BS Mathematics program will produce well trained, highly numerate and computer literate graduates.

2. Objectives

After completing this program, students will acquire the necessary knowledge based in the area of Mathematics. The overall objective of this program is

i. To enhance the qualification of those who could not continue their education after F. Sc. through formal universities.

ii. To provide an opportunity to in service persons to improve their qualification and get promotion in their respective departments.

iii. To provide in-depth understanding of Mathematics and apply them in real life projects.

iv. To produce quality teacher/researchers of Mathematics at all levels.

There are three types of BS-Mathematics program being offered depending upon their eligibility criteria and duration of the program.

3. BS Mathematics (4-Year Program)

▪ **Eligibility Criteria**

Candidate must have FSc/HSSC certificate in HSSC with major Mathematics or equivalent exams approved/verified by Inter Board Committee of Chairmen (IBCC).

▪ **Duration of Program**

For the award of BS degree in Mathematics, the student will have to earn a total of 128 credit hours within a minimum period of **4 years (8 semesters).** The maximum period to complete program is **6 years (12 semesters).**

▪ **Scheme of Study (BS math 4years)**

S#	Course Title	Code	CH	Category: General Education Cluster (GE)
Semester I				
1.	Functional English	ENGL3505	3(3+0)	GE: Functional English
2.	Islamic	ITHC3501/	2(2+0)	
3.	Studies/Ethics	HADH3501	2(2+0)	GE: Islamic Studies
4.		PKST3502	3(3+0)	GE: Ideology and
5.	Ideology and	STAT3501	2(2+0)	Constitution of
6.	Constitution of	URD3503	3(3+0)	Pakistan
	Pakistan	MATH3502		Interdisciplinary
	Introductory			GE: Arts and
	Statistics			Humanities
	Pakistani Adab- I			Major
	Calculus-I			
				15 Credit Hours
Semester II				
1.	Expository Writing	ENGL3504	3(3+0)	GE: Expository
2.	Civics and	SOC3503	2(2+0)	English
3.	Community	CS3503	3(2+1)	GE: Civics and
4.	Engagement	SOC3506	2(2+0)	Community
5.	Application of	MATH3509	3(3+0)	Engagement
6.	Information	MATH3507	3(3+0)	GE: Applications of
	Communication &	PKST3501	2(2+0)	ICT
	Technologies			GE: Social
	Introduction to			Sciences
	Sociology			Major
	Calculus-II			Major
	Set Theory & Logic			

Left column

#	Course	Code	Credit Hours	Category
	Pakistan Studies			
			18 Credit Hours	
Semester III				
1.	Quantitative Reasoning-I	MATH3508	3(3+0)	GE: Quantitative Reasoning
2.	Entrepreneurship	MGT3503	2(2+0)	GE: Entrepreneurship
3.	Basics of Environmental Science	ENVS4501	3(2+1)	GE: Natural Sciences
4.	Linear Algebra	MATH3512	3(3+0)	Major
5.	Analytical Geometry	MATH4502	3(3+0)	Major
6.	**Discrete Mathematics-I**	**MATH3505**	3(3+0)	**Major**
			17 Credit Hours	
Semester IV				
1.	Quantitative Reasoning-II	MATH4505	3(3+0)	GE: Quantitative Reasoning
2.	Introduction to Probability and Probability Distributions	STAT3503	3(3+0)	Interdisciplinary
3.	Mathematical Methods	MATH4504	3(3+0)	Major
4.	Vector and Tensor Analysis	MATH4503	3(3+0)	Major
5.	Computer and Scientific Applications C++	MATH3510	3(2+1)	Major
6.	Group Theory	MATH 5503	3(3+0)	Major
			18 Credit Hours	
Semester V				
1.	Real Analysis-I	MATH3513		
2.	Ordinary	MATH3514		
3.	Differential	MATH5501		
4.	Equations	PHY3509		
5.	Differential	CS5501		

Right column

#	Course	Code	Credit Hours	Category
6.	Geometry Waves and Oscillations Machine Learning Fahm-e-quran (Tajwid, translation and Tafsir)	TFSR3501		
			15 Credit Hours	
Semester VI				
1.	Topology	MATH3511	3(3+0)	Major
2.	Complex Analysis	MATH5502	3(3+0)	Major
3.	Analytical Mechanics	MATH5504	3(3+0)	Major
4.	Real Analysis-II	MATH5505	3(3+0)	Major
5.	Applied Number Theory	MATH6510	3(3+0)	Major
6.	Seerat-e-Tayyaba	SERT3501	NC	Mandatory Non-credit Course
			15 Credit Hours	
Semester VII				
1.	Numerical Methods	MATH6501	3(2+1)	Major
2.	Partial Differential Equations	MATH6502	3(3+0)	Major
3.	Functional Analysis	MATH6503	3(3+0)	Major
4.	Theory of Rings	MATH6504	3(3+0)	Major
5.	Field Experience/Internship	**MATH6523**	3(0+3)	**Mandatory**
			15 Credit Hours	
Semester VIII				
1.	Capstone Project	MATH6524	3(0+3)	Mandatory
2.	Optional-I		3(3+0)	Major
3.	Optional-II		3(3+0)	Major
4.	Optional-III		3(3+0)	Major
5.	Optional-IV		3(3+0)	**Major**
			15 Credit Hours	

Optional Course		
MATH 6508	Operation Research	3(3+0)
MATH 6509	Combination	3(3+0)
MATH 6510	Applied Number Theory	3(3+0)
MATH 6511	Galois Theory	3(3+0)
MATH 6512	Mathematical Statistics-II	3(3+0)
MATH 6513	Optimization	3(3+0)
MATH 6514	Analytical Dynamics	3(3+0)
MATH 6515	Mathematical Modeling	3(3+0)
MATH 6516	Graph Theory	3(3+0)
MATH 6517	Algebraic Topology	3(3+0)
MATH 6518	Research Report	3(3+0)
MATH 6519	Mathematical Finance-I	3(3+0)
MATH 6520	Theory of Racks and Quandles	3(3+0)
MATH 6521	Research Project	3(3+0)
MATH 6522	Mathematical Methods For Statistics	3(3+0)

- **Fee Tariff**

Item	
Registration Fee (Once at time of admission)	Rs.650/-
Admission Fee (Once at time of admission)	Rs.1300/-
Degree Fee (Once at time of admission)	Rs. 1500/-
Technology Fee	Rs.800/-
Per 1 Credit hours fee: Rs. 2600*15	Rs. 39000/-
Lab Fee (Per Semester)	Rs.1000/-
Total	Rs. 44250/-

4. **BS Mathematics (BA/ BSC Based)**
   (Programme Code 5580)
Eligibility Criteria
   1. Students holding a BSc degree with 45% marks shall be eligible for admission.

2. Students with an Associate degree (14 years of education) having less than 60 credit hours shall be eligible for admission.
- Students with a discipline-specific Associate degree who wish to switch to another discipline shall also be eligible for admission.
- **Duration of Program**

The students would be allowed to continue with BS-Mathematics in 5th semester after completing bridging semester which comprises of 18 credit hours of foundation courses. The Student will have to earn a total of 78 credit hours within a minimum period of 2.5 years and maximum of 4 years.

Scheme of Study

S#	Bridging Semester		
1.	Set Theory & Logic	MATH3507	3(3+0)
2.	Linear Algebra	MATH3512	3(3+0)
3.	Introduction to Probability and Probability Distributions	STAT3503	3(3+0)
4.	Mathematical Methods	MATH4504	3(3+0)
5.	Vector and Tensor Analysis	MATH4503	3(3+0)
6.	Computer and Scientific Applications	MATH3510	3(2+1)
			18 Cradit Hours

	Semester V			
1.	Real Analysis-I	MATH3513	3(3+0)	Major
2.	Ordinary Differential Equations	MATH3514	3(3+0)	Major
			3(3+0)	Major
3.	Differential Geometry	MATH5501	3(3+0)	Interdisciplinary
4.	Waves and Oscillations	PHY3509	3(3+0)	Interdisciplinary
5.	Machine Learning	CS5501	NC	**Mandatory**
6.	Fahm-e-quran (Tajwid, translation and Tafsir)	TFSR3501		**Non-credit Course**

			15 Credit Hours	
Semester VI				
1.	Topology	MATH3511	3(3+0)	Major
2.	Complex Analysis	MATH5502	3(3+0)	Major
3.	Analytical Mechanics	MATH5504	3(3+0)	Major
4.	Real Analysis-II	MATH5505	3(3+0)	Major
5.	Applied Number	MATH6510	3(3+0)	Major
6.	Theory	SERT3501	NC	Mandatory
	Seerat-e-Tayyaba		15	Non-credit Course
			15 Credit Hours	
	Semester VII			
1.	Numerical Methods	MATH6501	3(2+1)	Major
2.	Partial Differential	MATH6502	3(3+0)	Major
3.	Equations	MATH6503	3(3+0)	Major
4.	Functional Analysis	MATH6504	3(3+0)	Major
5.	Theory of Rings	**MATH6523**	3(0+3)	**Mandatory**
	Field Experience/Internship			
			15 Credit Hours	
	Semester VIII			
1.	Capstone Project	MATH6524	3(0+3)	Mandatory
2.	Optional-I		3(3+0)	Major
3.	Optional-II		3(3+0)	Major
4.	Optional-III		3(3+0)	Major
5.	Optional-IV		3(3+0)	Major
			15 Credit Hours	

Optional Course			
MATH 6508	Operation Research		3(3+0)
MATH 6509	Combination		3(3+0)
MATH 6510	Applied Number Theory		3(3+0)
MATH 6511	Galois Theory		3(3+0)
MATH 6512	Mathematical Statistics-II		3(3+0)
MATH 6513	Optimization		3(3+0)

MATH 6514	Analytical Dynamics	3(3+0)
MATH 6515	Mathematical Modeling	3(3+0)
MATH 6516	Graph Theory	3(3+0)
MATH 6517	Algebraic Topology	3(3+0)
MATH 6518	Research Report	3(3+0)
MATH 6519	Mathematical Finance-I	3(3+0)
MATH 6520	Theory of Racks and Quandles	3(3+0)
MATH 6521	Research Project	3(3+0)
MATH 6522	Mathematical Methods For Statistics	3(3+0)

▪ **Fee Tariff**

Item	
Registration Fee (Once at time of admission)	Rs.650/-
Admission Fee (Once at time of admission)	Rs.1300/-
Degree Fee (Once at time of admission)	Rs. 1500/-
Technology Fee	Rs.800/-
Per 1 Credit hours fee: Rs.2600*18	Rs. 46800/-
Lab Fee (Per Semester)	Rs.1000/-
Total	Rs. 52050/-

5. BS Mathematics AD Based 2 years (Programme Code 5589)

Eligibility

Associate Degree in the relevant field with at least 60 credit hours.

	Semester I			
1.	Real Analysis-I	MATH3513	3(3+0)	Major
2.	Ordinary Differential Equations	MATH3514	3(3+0)	Major
3.	Differential Geometry	MATH5501	3(3+0)	Major
4.	Waves and Oscillations	PHY3509	3(3+0)	Interdisciplinary
5.	Machine Learning	CS5501	3(3+0)	Interdisciplinary
6.	Fahme-Quran (Tajwid, translation and tafsir)	TFSR3501	NC	Mandatory Non-credit Course
			15 Credit Hours	
	Semester II			
	Topology	MATH3511	3(3+0)	Major
	Complex Analysis	MATH5502	3(3+0)	Major
	Analytical Mechanics	MATH5504	3(3+0)	Major

Real Analysis-II	MATH5505	3(3+0)	Major
Applied Number Theory	MATH6510	3(3+0)	Major
Seerat-e-Tayyaba	TFSR3501	<u>NC</u> **15**	Mandatory Non-credit Course
		15 Credit Hours	

	Semester III			
1.	Numerical Methods	MATH6501	3(2+1)	Major
2.	Partial Differential	MATH6502	3(3+0)	Major
3.	Equations	MATH6503	3(3+0)	Major
4.	Functional Analysis	MATH6504	3(3+0)	Major
5.	Theory of Rings	**MATH6523**	3(0+3)	**Mandatory**
	Field Experience/Internship			
			15 Credit Hours	

	Semester IV			
1.	Capstone Project	MATH6524	3(0+3)	Mandatory
2.	Optional-I		3(3+0)	Major
3.	Optional-II		3(3+0)	Major
4.	Optional-III		3(3+0)	Major
5.	Optional-IV		3(3+0)	**Major**
			15 Credit Hours	

Optional Course		
MATH 6508	Operation Research	3(3+0)
MATH 6509	Combination	3(3+0)
MATH 6510	Applied Number Theory	3(3+0)
MATH 6511	Galois Theory	3(3+0)
MATH 6512	Mathematical Statistics-II	3(3+0)
MATH 6513	Optimization	3(3+0)
MATH 6514	Analytical Dynamics	3(3+0)
MATH 6515	Mathematical Modeling	3(3+0)
MATH 6516	Graph Theory	3(3+0)
MATH 6517	Algebraic Topology	3(3+0)
MATH 6518	Research Report	3(3+0)
MATH 6519	Mathematical Finance-I	3(3+0)
MATH 6520	Theory of Racks and Quandles	3(3+0)

MATH 6521	Research Project	3(3+0)
MATH 6522	Mathematical Methods For Statistics	3(3+0)

Item	
Registration Fee (Once at time of admission)	Rs.650/-
Admission Fee (Once at time of admission)	Rs.1300/-
Degree Fee (Once at time of admission)	Rs. 1500/-
Technology Fee	Rs.800/-
Per 1 Credit hours fee: Rs. 2600*15	Rs. 39000/-
Lab Fee (Per Semester)	Rs.1000/-
Total	**Rs. 44,250/-**

5. Medium of Instruction

The Medium of Instructions for BS Mathematics will be English.

▪ **Study Material**

Lecture handouts will be provided by the concerned resource person/department however, the students are advised to consult the other reference books recommended by the resource person.

▪ **Mode of Teaching**

The classes will be conducted face-to-face in the main campus of AIOU.

Student progress will be assessed based on the followings:

Continuous Assessment

Contact Details

For further information, contact:

i. **Chairman**
Department of Mathematics
Faculty of Sciences, Block # 7,
Allama Iqbal Open University
Phone: 051-9575700

ii. **Coordinator BS-Mathematics**
Department of Mathematics,

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Phone: 051-9575732
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9. **Faculty Members**
1. **Dr. Nasir Rehman**
   Associate Professor
   Chairman, Department of Mathematics
   Ph. 051-9575700
2. **Dr. Zahid Iqbal**
   Associate Professor
   Ph. 051-957571
3. **Dr. Irfan Mustafa**
   Assistant Professor
   Ph. 051-9575723
4. **Dr. Muhammad Nazam**
   Lecturer
   Ph. 051-9575731
5. **Dr. Bismah Jamil**
   Lecturer
   Ph. 051-957 5732
6. **Dr. Muhammad Faisal Iqbal**
   Lecturer
   Ph. 051-9575746
7. **Mr. Rizwan Salim Badar**
   Lecturer
   Ph. 051-9575746
8. **Dr. Irfan Younas**
   Research Associate
   Ph. 051-9575735
9. **Ms. Fouzia Rehman**
   Research Associate
   Ph. 051-9575736

DEPARTMENT OF PHYSICS

Realizing the need of technology and scientific education in Pakistan Department of Physics at AIOU was established in 1998 with technological needs in areas like Energy, Energy Efficiency, Climate, and Energy for Sustainable Development, Renewable Energy, Hydrogen Energy, Environment, Astronomy, Nanotechnology, Materials Science, Plasma Physics, Medical Physics, Cosmology, Geo Physics, Density Functional Theory (DFT), and Nuclear fields. A major emphasis of current research activities is on promotion of renewable energy and related areas in which the Department has led to innovations.

The Department is presently running BS 2-year, BS 2.5-year, BS 4-year, MPhil, and PhD degree programs with specialization in various disciplines. Apart from capacity development, activities Department of Physics has been involved in several international, national, and regional research projects. The Physics Department has developed research linkage with other National and International Universities and research organizations of repute to ensure two-way flow of knowledge.

BS PHYSICS
(Programme Code 5052)

Introduction

The Department of Physics offer 2-year, 2.5-year and 4- year BS Physics degree programs. These programs are designed according to the scheme of studies approved by the Higher Education Commission (HEC) of Pakistan to meet the national and international standards.

It covers all aspects of Physics ranging from its foundations to modern research. The offered courses have a flexible curriculum that is capable of preparing students for advanced studies in Physics as well as careers in teaching and research institutes. The Department encourages the students to participate in research projects and provides them with possible facilities and guidance. In addition, students could participate in the activities of different university societies, attend departmental seminars, workshops and conferences.

Objectives

The main educational objectives of BS degree programs are:

i. To impart students with a conceptual understanding of the fundamental principles of Physics, natural laws, and their interpretation, as well as mathematical formulation of the physical phenomena in nature.

ii. To develop critical skills necessary for solving unknown problems from our physical surroundings.

iii. To develop the capability of analyzing, addressing, and posing solutions to problems of natural importance and to instill a deep appreciation of the need for optimum utilization of natural resources and environment.

iv. To instill in students the habit of independent thinking, deep inquiry, and motivation for self-education.

v. To sharpen our students' mathematical prowess making them capable of modeling, analyzing, and predicting the behavior of physical processes.

vi. To enhance our students' skills in scientific communication and the ability to clearly present Physics and science in simple and clear language.

vii. To introduce students with the spirit of working in interactive groups with the necessary requirements of scientific and professional ethics.

viii. To develop hands-on experience in different laboratory techniques and modern instrumentation.

ix. To enhance students' competence in the design and conduct of experiments as well as analysis and presentation of experimental data and results.

x. To provide an in-depth understanding of some specialized areas of Physics through the option of elective courses.

xi. To equip students with the necessary skill set for pursuing careers in Physics education, research and industry in government or private organizations.

BS Physics (4-year)

3.1. Eligibility Criteria

FSc. (Pre-Engineering/Pre-Medical), ICS (Physics, Mathematics combination) / DAE.

3.2. Duration of Program

The minimum duration of BS Physics Program is **four years (8 Semesters)** and maximum duration to complete BS Physics Program is **six years (12 semesters).**

2.3. Scheme of Studies

SCHEME OF STUDIES BS PHYSICS

Revised Scheme of Studies			Category
Semester 1			
Code	**Title**	**Cr.H.**	
ENGL3505	Functional English	3(3+0)	GE/ENG
PKST3502	Ideology and Constitution of Pakistan	2(2+0)	GE/PKST
MATH3502	**Calculus-I**	**3(3+0)**	**GE/QR-I**
URD3503	Pakistani Adab-I	2(2+0)	GE/A&H
PHY3501	Mechanics	4(3+1)	MAJOR
ITHC3501/ HADH3501	Islamic Studies or Ethics (for non-Muslim students only)	2(2+0)	GE/IST
CS6505	**Computer Programming: C&C++**	**3(3+0)**	**ID**
Total		**19 Credit Hours**	
Semester 2			
MATH3509	Calculus-II	3(3+0)	GE/QR-II
ENGL3504	Expository Writing	3(3+0)	GE/ENG
PHY3505	Electricity & Magnetism	4(3+1)	MAJOR
CS3503	**Application of Information and Communication Technologies**	**3(2+1)**	**GE/ICT**
SOC3506	Introduction to Sociology	2(2+0)	GE/SS
SOC3503	Civics and Community Engagement Pak. Studies	2(2+0)	GE
PKST 3501		2(2+0)	GE
Total		**19 Credit Hours**	

Semester 3			
MATH3512	Linear Algebra	3(3+0)	ID
PHY3509	Waves and Oscillations	3(3+0)	MAJOR
MGT3503	Entrepreneurship	2(2+0)	GE
PHY3507	Heat and Thermodynamics	3(3+0)	MAJOR
ENVS4501	Basics of Environmental Sciences	**3(2+1)**	**GE/ID**
PHY4504	Laboratory for Thermodynamics and Waves	2(0+2)	MAJOR
PHY4505	Modern Physics-I	3(3+0)	MAJOR
Total		**19 Credit Hours**	
Semester 4			
PHY4506	Modern Physics-II	3(3+0)	MAJOR
MATH3514	Ordinary Differential Equations	3(3+0)	ID
PHY4507	Classical Mechanics-I	3(3+0)	MAJOR
STAT3503	Introduction to Probability & Probability Distribution	3(3+0)	ID
PHY4508	Laboratory for Geometrical Optics and Spectroscopy	2(0+2)	MAJOR
PHY3506	Optics	3(3+0)	MAJOR
Total		**17 Credit Hours**	
Semester 5			
PHY3512	Mathematical Methods in Physics-I	3(3+0)	MAJOR
PHY5507	Classical Mechanics-II	3(3+0)	MAJOR
PHY3516	Electronics	3(3+0)	MAJOR
PHY5503	Electromagnetic Theory-I	3(3+0)	MAJOR
PHY5504	Laboratory for Electronics	2(0+2)	MAJOR

PHY5502	Quantum Mechanics-I	3(3+0)	MAJOR
	Total		**17 Credit Hours**
Semester 6			
PHY5501	Mathematical Methods in Physics-II	3(3+0)	MAJOR
PHY5508	Laboratory for General Physics	2(0+2)	MAJOR
PHY6501	Electromagnetic Theory-II	3(3+0)	MAJOR
PHY5505	Computational Physics	3(3+0)	MAJOR
PHY6502	Quantum Mechanics-II	3(3+0)	MAJOR
PHY5509	Field Experience Internship	3(0+3)	INTERNSHIP
	Total		**17 Credit Hours**
Semester 7			
PHY6503	Solid State Physics-I	3(3+0)	MAJOR
PHY6508	Nuclear Physics	3(3,0)	MAJOR
PHY6512	Laboratory for Nuclear Physics	3(0+3)	MAJOR
PHY6513	Capstone Project	3(0+3)	PROJECT
PHY5506	Thermal & Statistical Physics	3(3+0)	MAJOR
TFSR3501	Fahm-e-Quran (Tajwid, translation and Tafsir)	NC	
	Total		**15 Credit Hours**
Semester 8			
PHY6516	Solid State Physics-II	3(3+0)	MAJOR
PHY6505	Digital & Computer Hardware Electronics	3(3+0)	MAJOR
PHY3515	Atomic & Molecular Physics	3(3+0)	MAJOR

PHY6514	Laboratory for Solid State Physics	3(0+3)	MAJOR
PHY6515	Lasers Physics	3(3+0)	MAJOR
SERT3501	Seerat-e-Tayyaba	NC	
	Total		**15 Credit Hours**

Item	
Registration Fee (Once at time of admission)	Rs.650/-
Admission Fee (Once at time of admission)	Rs.1300/-
Degree Fee (Once at time of admission)	Rs. 1500/-
Technology Fee	Rs.800/-
Tuition Fee (Rs. 2600/- per credit hour)*19	Rs.49400/-
Total	Rs.53650/-

4. BS Physics (BSc Based) (Total Credit Hours 83) (Programme Code 5581)

The bridging semester (1st Semester) or comprising (18 credit hours) of foundation courses will be offered.

4.1. Eligibility Criteria

Eligibility Criteria for BS Programs (BSc) with 45% marks with Bridging Semester:.

1. Students holding BSc degree with 45% marks shall be eligible for admission.
2. Students with an Associate degree (14 years of education) having less than 60 credit hours shall be eligible for admission.
3. Students with a discipline-specific Associate degree who wish to switch to this discipline shall also be eligible for admission.

4.2. Duration of Program

The minimum duration of BS Physics (2.5- year) Program is

2.5 years/ (5 Semesters) and maximum duration to complete BS Physics (2.5 year) program is 4 Years.

4.3. Scheme of Studies for BS Physics (BSc- Based)

Bridging Semester			
PHY3505	Electricity & Magnetism	4(3+1)	MAJOR
PHY4506	Modern Physics-II	3(3+0)	MAJOR
PHY4507	Classical Mechanics-I	3(3+0)	MAJOR
PHY3507	Heat and Thermodynamics	3(3+0)	MAJOR
PHY3509	Waves and Oscillations	3(3+0)	MAJOR
PHY3506	Optics	3(3+0)	MAJOR
	Total	**19 Credit Hours**	
Semester 1			
PHY3512	Mathematical Methods in Physics-I	3(3+0)	MAJOR
PHY5507	Classical Mechanics-II	3(3+0)	MAJOR
PHY3516	Electronics	3(3+0)	MAJOR
PHY5503	Electromagnetic Theory-I	3(3+0)	MAJOR
PHY5504	Laboratory for Electronics	2(0+2)	MAJOR
PHY5502	Quantum Mechanics-I	3(3+0)	MAJOR
	Total	**17 Credit Hours**	
Semester 2			
PHY5501	Mathematical Methods in Physics-II	3(3+0)	MAJOR
PHY5508	Laboratory for General Physics	2(0+2)	MAJOR
PHY6501	Electromagnetic Theory-II	3(3+0)	MAJOR
PHY5505	Computational Physics	3(3+0)	MAJOR

PHY6502	Quantum Mechanics-II	3(3+0)	MAJOR
PHY5509	Field Experience Internship	3(0+3)	INTERNSHIP
	Total	**17 Credit Hours**	
Semester 3			
PHY6503	Solid State Physics-I	3(3+0)	MAJOR
PHY6508	Nuclear Physics	3(3,0)	MAJOR
PHY6512	Laboratory for Nuclear Physics	3(0+3)	MAJOR
PHY6513	Capstone Project	3(0+3)	PROJECT
PHY5506	Thermal & Statistical Physics	3(3+0)	MAJOR
TFSR3501	Fahm-e-Quran (Tajwid, translation and Tafsir)	NC	
	Total	**15 Credit Hours**	
Semester 4			
PHY6516	Solid State Physics-II	3(3+0)	MAJOR
PHY6505	Digital & Computer Hardware Electronics	3(3+0)	MAJOR
PHY3515	Atomic & Molecular Physics	3(3+0)	MAJOR
PHY6514	Laboratory for Solid State Physics	3(0+3)	MAJOR
PHY6515	Lasers Physics	3(3+0)	MAJOR
SERT3501	Seerat-e-Tayyaba	NC	
	Total	**15 Credit Hours**	

4.4. Fee Tariff for 1st Semester Total Credit Hours 138

Item	
Registration Fee (Once at time of admission)	Rs.650/-
Admission Fee (Once at time of admission)	Rs.1300/-

Degree Fee (Once at time of admission)	Rs. 1500/-
Technology Fee	Rs.800/-
Tuition Fee (Rs. 2600/- per credit hour) *19	Rs.49400/-
Total	Rs.53650/-

The fee structure for remaining semesters will be provided in due course of time.

5. BS Physics (AD Based)
(Programme Code 5590)

5.1. Eligibility Criteria
1. Students with Associate degree in the relevant field with at least 60 credit hours shall be eligible for admission. With 50% marks.

5.2. Duration of Program
The minimum duration of BS Physics AD Based (2- year) program is two years (4 semesters) and maximum duration to complete BS Physics (2-year) program is four years (8 semesters)

3.3. Scheme of Studies for BS Physics (2- year)

4. TOTAL CREDIT HOURS 64

	Semester 1		
PHY3512	Mathematical Methods in Physics-I	3(3+0)	MAJOR
PHY5507	Classical Mechanics-II	3(3+0)	MAJOR
PHY3516	Electronics	3(3+0)	MAJOR
PHY5503	Electromagnetic Theory-I	3(3+0)	MAJOR
PHY5504	Laboratory for Electronics	2(0+2)	MAJOR
PHY5502	Quantum Mechanics-I	3(3+0)	MAJOR
	Total	**17 Credit Hours**	

	Semester 2		
PHY5501	Mathematical Methods in Physics-II	3(3+0)	MAJOR
PHY5508	Laboratory for General Physics	2(0+2)	MAJOR
PHY6501	Electromagnetic Theory-II	3(3+0)	MAJOR
PHY5505	Computational Physics	3(3+0)	MAJOR
PHY6502	Quantum Mechanics-II	3(3+0)	MAJOR
PHY5509	Field Experience Internship	3(0+3)	INTERNSHIP
	Total	**17 Credit Hours**	

	Semester 3		
PHY6503	Solid State Physics-I	MAJOR	3(3+0)
PHY6508	Nuclear Physics	3(3,0)	MAJOR
PHY6512	Laboratory for Nuclear Physics	3(0+3)	MAJOR
PHY6513	Capstone Project	3(0+3)	PROJECT
PHY5506	Thermal & Statistical Physics	3(3+0)	MAJOR
TFSR3501	Fahm-e-Quran (Tajwid, translation and Tafsir)	NC	
	Total	**15 Credit Hours**	

	Semester 4		
PHY6516	Solid State Physics-II	3(3+0)	MAJOR
PHY6505	Digital & Computer Hardware Electronics	3(3+0)	MAJOR
PHY3515	Atomic & Molecular Physics	3(3+0)	MAJOR
PHY6514	Laboratory for Solid State Physics	3(0+3)	MAJOR

PHY6515	Lasers Physics	3(3+0)	MAJOR
SERT3501	Seerat-e-Tayyaba	NC	
	Total	**15 Credit Hours**	

Total Credit Hours = 64

5.4. Fee Tariff for 1st Semester

Item	
Registration Fee (Once at time of admission)	Rs.650/-
Admission Fee (Once at time of admission)	Rs.1300/-
Degree Fee (Once at time of admission)	Rs. 1500/-
Technology Fee	Rs.800/-
Tuition Fee (Rs. 2600/- per credit hour)*17	Rs.44200/-
Total	Rs. 48450/-

The fee structure for remaining semesters will be provided in due course of time.

6.1 Medium of Instruction

The Medium of Instructions for BS Physics will be English.

6.2 Study Material

The Department will provide course books

6.3 Mode of Teaching

a) University will provide opportunities face to face teaching to the students.

b) The schedule of classes and dates of submission of assignments/tests/quizzes/presentations will be announced by the department.

6.4 Assessment and Evaluation

See page vi

Note: If a student fails to pass in any of assessment component of a particular course, he / she will have to re-enroll in that course

BS Physics with DATA Science Minor (Programme Code 5069)

Degree Title: BS Physics
Transcript: BS Physics (Minor in DATA Science)
Duration   4 Years (8 Semester) 150 Credit Hours
Eligibility: Inter (Pre-medical/Pre-Engineering/Computer) A-Level/DAE with Physics as a course.
Admission: Selection on Merit Bases Based on Criteria laid down by the Department and University. Departmental Admission Committee to conduct an admission test/interview.

BS Physics with DATA Science (Minor)			
Code	**Title**	**Cr.H.**	**Category**
Semester 1			
ENGL3505	Functional English	3(3+0)	GE/ENG
PKST3502	Ideology and Constitution of Pakistan	2(2+0)	GE/PKST
MATH3502	Calculus-I	3(3+0)	GE/QR-I
URD3503	Pakistani Adab-I	2(2+0)	GE/A&H
PHY3501	Mechanics	4(3+1)	MAJOR
ITHC3501/ HADH3501	Islamic Studies or Ethics (for non-Muslim students only)	2(2+0)	GE/IST
CS6505	Computer Programming: C&C++	3(3+0)	ID
	Total	**19 Credit Hours**	
Semester 2			
MATH3509	Calculus-II	3(3+0)	GE/QR-II

ENGL3504	Expository Writing	3(3+0)	GE/ENG
PHY3505	Electricity & Magnetism	4(3+1)	MAJOR
CS3503	Application of Information and Communication Technologies	3(2+1)	GE/ICT
SOC3506	Introduction to Sociology	2(2+0)	GE/SS
SOC3503	Civics and Community Engagement Pak. Studies	2(2+0)	GE
PKST 3501		2(2+0)	GE
	Total	**19 Credit Hours**	

Semester 3

MATH3512	Linear Algebra	3(3+0)	ID
PHY3509	Waves and Oscillations	3(3+0)	MAJOR
MGT3503	Entrepreneurship	2(2+0)	GE
PHY3507	Heat and Thermodynamics	3(3+0)	MAJOR
ENVS4501	Basics of Environmental Sciences	3(2+1)	GE/ID
PHY4504	Laboratory for Thermodynamics and Waves	2(0+2)	MAJOR
PHY4505	Modern Physics-I	3(3+0)	MAJOR
Total		**19 Credit Hours**	

Semester 4

PHY4506	Modern Physics-II	3(3+0)	MAJOR
MATH3514	Ordinary Differential Equations	3(3+0)	ID
PHY4507	Classical Mechanics-I	3(3+0)	MAJOR

STAT3503	Introduction to Probability & Probability Distribution	3(3+0)	ID
PHY4508	Laboratory for Geometrical Optics and Spectroscopy	2(0+2)	MAJOR
PHY3506	Optics	3(3+0)	MAJOR
	Total	**17 Credit Hours**	

Semester 5

PHY3512	Mathematical Methods in Physics-I	3(3+0)	MAJOR
PHY5507	Classical Mechanics-II	3(3+0)	MAJOR
PHY3516	Electronics	3(3+0)	MAJOR
PHY5503	Electromagnetic Theory-I	3(3+0)	MAJOR
PHY5504	Laboratory for Electronics	2(0+2)	MAJOR
PHY5502	Quantum Mechanics-I	3(3+0)	MAJOR
CS 5520	Introduction to DATA Science	3(3+0)	Minor
	Total	**20 Credit Hours**	

Semester 6

PHY5501	Mathematical Methods in Physics-II	3(3+0)	MAJOR
PHY5508	Laboratory for General Physics	2(0+2)	MAJOR
PHY6501	Electromagnetic Theory-II	3(3+0)	MAJOR
PHY5505	Computational Physics	3(3+0)	MAJOR
PHY6502	Quantum Mechanics-II	3(3+0)	MAJOR
PHY5509	Field Experience Internship	3(0+3)	INTERNSHIP

CS 5501	Machine Learning	3(2+1)	Minor
	Total	**20 Credit Hours**	
	Semester 7		
PHY6503	Solid State Physics-I	3(3+0)	MAJOR
PHY6508	Nuclear Physics	3(3,0)	MAJOR
PHY6512	Laboratory for Nuclear Physics	3(0+3)	MAJOR
PHY6513	Capstone Project	3(0+3)	PROJECT
PHY5506	Thermal & Statistical Physics	3(3+0)	MAJOR
CS 6513	Artificial Neural Networks and Deep Learning	3(2+1)	Minor
TFSR3501	Fahm-e-Quran (Tajwid, translation and Tafsir)	NC	
	Total	**18 Credit Hours**	
	Semester 8		
PHY6516	Solid State Physics-II	3(3+0)	MAJOR
PHY6505	Digital & Computer Hardware Electronics	3(3+0)	MAJOR
PHY3515	Atomic & Molecular Physics	3(3+0)	MAJOR
PHY6514	Laboratory for Solid State Physics	3(0+3)	MAJOR
PHY6515	Lasers Physics	3(3+0)	MAJOR
CS 6514	Data Visualization	3(2+1)	Minor
SERT3501	Seerat-e-Tayyaba	NC	
	Total	**18 Credit Hours**	

Fee Tariff for 1st Semester of BS Physics (4-Year) DATA Science

Item	
Registration Fee (Once at time of admission)	Rs.650/-
Admission Fee (Once at time of admission)	Rs.1300/-
Degree Fee (Once at time of admission)	Rs.1500/-
Technology Fee	Rs.800/-
Tuition Fee (Rs. 2600/- per credit hour)*19	Rs.49400/-
Total	Rs.53650/-

7 **Contact Details**
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   3. Mr. Ather Hassan
   Assistant Professor

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DEPARTMENT OF STATISTICS

The Department of Statistics was established in 1988 in the faculty of Sciences, Allama Iqbal Open University. Since then, the faculty and students have shared a common goal of maturing the Department with sheer hard work and constant struggle. Statistical sciences have a significant impact on our lives and are a key to discoveries and innovation. Over time, with concerted efforts, the Department has grown to its full potential and is vigorously involved in participating in global efforts to drive a new era of growth, development, and productivity. Since, our world is becoming more quantitative and data focused, job opportunities in statistics are plentiful and projected to increase worldwide. Therefore, the alumni of the department of statistics have been working in various government departments and private sector.

The vision of the Department is to impart quality education that focuses on collaborative learning through innovative teaching and research methodologies. It aims to create an environment that enables students to effectively engage in making lasting contributions in diverse fields according to rapidly changing demands of not only the home country but the entire globe. The Department is determined to further develop a state-of-the-art model of learning and research, which will benefit the masses across the board.

The following degree programs are being offered in the Department of Statistics. All these programs are approved by the Higher Education Commission, Islamabad.
- PhD Statistics

- MPhil Statistics
- BS (4- years, 2.5 -year & 2 -year) Statistics

All the courses and contents of these programs are designed to meet the challenging statistical needs in life sciences, information technology, social sciences, and other allied disciplines. The course outlines of all level courses have been designed and updated recently after consulting the syllabi of national and international universities. It helps to strengthen the statistical concepts and logical thinking among our students.

Presently, these degree programs are offered at the main campus only. However, soon the Department also intends to offer these degree programs at the main regional headquarters.

BS STATISTICS PROGRAM

1.   Introduction

With the passage of time in the new era of globalization, significant changes have been made in almost all walks of life to keep in pace with the growing world. Among many other fields, improvement in the existing education system has become the topmost priority of many nations across the globe. Therefore, it is the need for time to modify our current education system to meet international standards. Having a vision of brighter future with compatible educated youth, the Department of Statistics is launching BS Statistics program from spring 2017. The BS Statistics would be sixteen years education equivalent to MSc Statistics and fulfilling the international standards of graduate degree.

2.   Objectives

- To enhance and up gradation of qualification of those potential candidates who have/do not have sufficient resources to continue their studies after intermediate.
- To enable the students to get a better insight regarding in-depth knowledge of Statistics.
- To produce quality teachers/ researchers of Statistics at all levels.
- To prepare well trained and skilled graduates to cater the future needs in the field of Statistics.
- To produce young and energetic minds in the field of Statistics to promote innovative research and critical thinking.

3.   BS Statistics (4-Year Program) (Programme Code 5049)

3.1   Eligibility Criteria

Candidate having HSSC or equivalent exams approved/verified by Inter Board Committee of Chairmen (IBCC).

3.2 Duration of the Programme

For the award of BS Statistics (4 years)degree, the student will have to qualify the 128 credit hours consisting 44 courses withing a minimum period of eight semesters (4 years) and maximum period of BS Statistics (4 years)

Scheme of Studies

The full programme of BS Statistics comprises eight semesters. The all courses are compulsory to qualify for the award of BS Statistics degree. The semester wise course offering is as under.

Scheme of studies BS Statistics (4 years)

Course Title	Code		CH
Semester I			
1. Functional English	ENGL3505	Gen. edu.	3(3+0)
2. Ideology and Constitution of Pakistan	PKST3502	Gen. Edu.	2(2+0)
3. Islamic Studies/ Ethics	ITH3501/ HAD3501	Gen. Edu.	2(2+0)
4. Calculus-I	MATH3502	Interdict	3(3+0)
5. Pakistan-Adab-I	URD3503	Gen.edu.	2(2+0)
6. Introductory Statistics	STAT3501	Major	3(3+0)
			15 Credit Hours
Semester II			
1. Expository Writing	ENGL3504	Gen. Edu.	3(3+0)
2. Civic and community Engagement	SOC3503	Gen. Edu.	2(2+0)
3. Calculus-II	MATH3509	Interdict	3(3+0)
4. Introduction to Regression and Time series Analysis	STAT 3508	Major	3(3+0)
5. Application of Information Communication & Technologies	CS3503	Gen. Edu.	3(2+1)
6. Introduction to Sociology	SOC3506	Gen. Edu. GE	2(2+0)
7. Pakistan Studies.	PKST 3501		2(2+0)
			18 Credit Hours

Semester III			
Semester III			
1. Quantitative Reasoning	MATH3508	Gen.edu.	3(3+0)
	STAT4504	Major	3(2+1)
2. Exploratory Data Analysis	STAT4503	Major	3(3+0)
3. Basic Design of Experiments	STAT3503	Major	3(3+0)
4. Introduction to Probability & Probability Distributions.	ENVS4501	Natural Science	3(2+1)
5. Basics of Environmental Science	MGT3503	Gen. Edu.	2(2+0)
6. Entrepreneurship			**17 Credit Hours**
Semester IV			
1. Basic Statistical Inference	STAT4501	Major	3(3+0)
2. Official Statistics	STAT4502	Major	3(3+0)
	MATH4505	Gen. Edu.	3(3+0)
3. Quantitative Reasoning-II	STAT4506	Major	3(3+0)
4. Data Analytic and Machine Learning	STAT4507	Major	3(3+0)
5. Sampling and Sampling Distributions	STAT4508	Major	3(3+0)
6. Vital Statistics			**18 Credit Hours**
Course Title	**Code**	**CH**	

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Semester V		
1. Sampling techniques I	STAT5502	3(3+0)
2. Design and Analysis of Experiments-I	STAT5503	3(3+0)
3. Probability & Probability Distributions-I	STAT5504 MATH4504 TFSR3501	3(3+0) 3(3+0) NC
4. Mathematical Methods	MATH3510	3(2+1)
Fahm-e-Quran (Tajwid, translation and Tafsir) 5. 6.Computer and Scientific Application		**15 Credit Hours**
Semester VI		
1. Data analysis and Statistical Packages	STAT5510	3(0+3)
2. Probability & Probability Distributions-II	STAT5506 STAT5507 STAT5508 SERT3501	3(3+0) 3(3+0) 3(3+0) NC
3. Regression Analysis	STAT5509	3(3+0)
4. Sampling Techniques-II		**15 Credit Hours**
5. Seerat -E-Tayyab		
6. Design and Analysis of Experiments-II		

Semester VII		
1. Statistical Inference- Estimation	STAT6501 STAT6502 STAT6514	3(3+0) 3(3+0) 3(3+0)
2. Econometrics		3(3+0)
3. Elective – I		3(0+3)
4. Elective-II Field Experience Internship		
		15 Credit Hours
Semester VIII		
1. Statistical Inference- Testing of Hypothesis	STAT6505	3(3+0)
2. Elective-III		3(3+0)
3. Elective-IV		3(3+0)
4. Capstone Project	STAT6515	3(0+3)
5. Operation research	STAT6507	3(3+0)
		15 Credit Hours

Elective Courses			
1	Reliability	STAT 6510	3(3+0)
2	Date Mining	STAT 6511	3(3+0)
3	Bayesian Statistic	STAT 6512	3(3+0)
4	Research Methodology	STAT 6509	3(3+0)
5	Total Quality Management	STAT 6503	3(3+0)
6	Applied Multivariate Analysis	STAT 6505	3(3+0)

Fee Tariff for 1st semester

Item	
Registration Fee:	Rs.650/-
Admission Fee:	Rs.1300/-
Degree Fee (Once at time of admission)	Rs. 1500/-
Technology Fee (per semester):	Rs.800/-
Course Code + Lab Fee	**Fee**
Per 1 Credit Hour Course Fee 2600*15	Rs.39000/-
Lab fee (per semester)	Rs.1000/-
Total Semester Fee	Rs.44250/-

Scheme of studies BS Statistics, (BA/BSc Based)
Eligibility Criteria for BS Programs (Programme Code 5579)
(BSc/BA Based with less than 60 Credit Hours)
With bridging semester:
1. Student: Holding a BSc degree with at least 45% marks shall be eligible for admission.
2. Student with an Associate Degree having less than 60 Credit Hours shall be eligible for admission.
3. Student with a discipline-Specific Associate Degree who wish to switch to another discipline shall also be eligible for admission.

PROPOSED SCHEME OF STUDIES BS B.SC BASED STATISTICS
TOTAL CREDIT HOURS 78

Bridging Semester		
1. Introductory Statistics	STAT3501	3(3+0)
2. Introduction to Probability and Probability Distributions	STAT3503	3(3+0)
3. Basic Design of Experiments	STAT4503	3(3+0)
4. Introduction to Regression and Time Series Analysis	STAT3508	3(3+0)
5. Calculus-I Sampling and Sampling	MATH3502	3(3+0)
6. Distributions	STAT 4507	3(3+0)
		18 Credit Hours
Course Title	**Code**	**CH**
Semester V		
1. Sampling techniques I	STAT5502	3(3+0)
2. Design and Analysis of Experiments-I	STAT5503	3(3+0)
3. Probability & Probability Distributions-I	STAT5504	3(3+0)
4. Mathematical Methods	MATH4504	3(3+0)
5. Fahm-e-Quran (Tajwid, translation and Tafsir)	TFSR3501	NC
6. Computer and Scientific	MATH3510	3(2+1)

	Application		**15 Credit Hours**

Semester VI			
7.	Data analysis and Statistical Packages	STAT5510	3(0+3)
8.	Probability & Probability Distributions-II	STAT5506 STAT5507 STAT5508	3(3+0) 3(3+0) 3(3+0)
9.	Regression Analysis	SERT3501 STAT5509	NC 3(3+0)
10.	Sampling Techniques-II		
11.	Seerat -E-Tayyab		
12.	Design and Analysis of Experiments-II		
			15 Credit Hours

Semester VII			
5.	Statistical Inference-Estimation	STAT6501 STAT6502	3(3+0) 3(3+0)
6.	Econometrics		3(3+0)
7.	Elective – I		3(3+0)
8.	Elective-II	STAT6514	3(0+3)
Field Experience Internship			
			15 Credit Hours

Semester VIII			
6.	Statistical Inference-Testing of Hypothesis	STAT6505	3(3+0)
7.	Elective-III		3(3+0)
8.	Elective-IV		3(3+0)
9.	Capstone Project	STAT6515	3(0+3)
10.	Operation research	STAT6507	3(3+0)
			15 Credit Hours

Elective Courses			
1	Reliability	STAT 6510	3(3+0)
2	Date Mining	STAT 6511	3(3+0)

3	Bayesian Statistic	STAT 6512	3(3+0)
4	Research Methodology	STAT 6509	3(3+0)
5	Total Quality Management	STAT 6503	3(3+0)
6	Applied Multivariate Analysis	STAT 6506	3(3+0)

Note: After completing bridging semester, students will continue their studies with BS Statics 5th semesters.

3.4 Fee Tariff for 1st semester

Item	
Registration Fee:	Rs.650/-
Admission Fee:	Rs.1300/-
Degree Fee (Once at time of admission)	Rs. 1500/-
Technology Fee (per semester):	Rs.800/-
Course Code + Lab Fee	**Fee**
Per 1 Credit Hour Course Fee 2600*18	Rs.46800/-
Lab fee (per semester)	Rs.1000/-
Total Semester Fee	Rs.52050/-

The fee structure for remaining semesters will be provided in due course of time.

Scheme of Studies BS Statistics (AD Based) 60 (Credit Hours) (Programme Code 5588)

Eligibility Criteria: Associate degree in the relevant field with at least 60 Credit Hours. With 50% marks.

Course Title	Code	CH
Semester V		
1. Sampling techniques I	STAT5502	3(3+0)
2. Design and Analysis of	STAT5503	3(3+0)

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Experiments-I		
3. Probability & Probability Distributions-I	STAT5504	3(3+0)
4. Mathematical Methods	MATH4504	3(3+0)
5. Fahm-e-Quran (Tajwid, translation and Tafsir)	TFSR3501	NC
6. Computer and Scientific Application	MATH3510	3(2+1)
		15 Credit Hours
Semester VI		
1. Data analysis and Statistical Packages	STAT5510	3(0+3)
2. Probability & Probability Distributions-II	STAT5506	3(3+0)
3. Regression Analysis	STAT5507	3(3+0)
4. Sampling Techniques-II	STAT5508	3(3+0)
5. Seerat -E-Tayyab	SERT3501	NC
6. Design and Analysis of Experiments-II	STAT5509	3(3+0)
		15 Credit Hours
Semester VII		

1. Statistical Inference-Estimation	STAT6501	3(3+0)
2. Econometrics	STAT6502	3(3+0)
3. Elective – I	STAT6514	3(3+0)
4. Elective-II		3(3+0)
5. Field Experience Internship		3(0+3)
		15 Credit Hours
Semester VIII		
1. Statistical Inference-Testing of Hypothesis	STAT6505	3(3+0)
		3(3+0)
		3(3+0)
2. Elective-III	STAT6515	3(0+3)
3. Elective-IV	STAT6507	3(3+0)
4. Capstone Project		
5. Operation research		
		15 Credit Hours

Elective Courses			
1	Reliability Analysis	STAT 6510	3(3+0)
2	Date Mining	STAT 6511	3(3+0)
3	Bayesian Statistic	STAT 6512	3(3+0)
4	Research Methodology	STAT 6509	3(3+0)
5	Total Quality Management	STAT 6503	3(3+0)
6	Applied Multivariate Analysis	STAT 6506	3(3+0)

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Fee Tariff for 1ˢᵗ semester

Item	
Registration Fee:	Rs.650/-
Admission Fee:	Rs.1300/-
Degree Fee (Once at time of admission)	Rs. 1500/-
Technology Fee (per semester):	Rs.800/-
Course Code + Lab Fee	**Fee**
Per 1 Credit Hour Course Fee 2600*15	Rs.39000/-
Lab fee (per semester)	Rs.1000/-
Total Semester Fee	Rs.44250/-

Mode of Study

6.1   Medium of Instruction

For each course, there would be 48 hours face to face teaching support to the students. Three-hour class/week for (3+0) credit hour course for a semester of sixteen weeks. The distribution of the lectures will be provided to the students in classes/workshop by consultation with the teachers/resource persons. The classes will be supplemented by computers where required. Over all 70% attendance would be compulsory to appear in sessional tests and final examinations.

6.2   Study Material

Books (soft copies) will be provided to the students, along with the list of recommended books for further reading. Two assignments for each course will be given.

Mode of Teaching: For each course, 45 hours face to face teaching at the main campus Islamabad will be required. In this regard, classes will be arranged by the Department at AIOU main campus Islamabad. The schedule of the lectures will be distributed to students at the start of classes during each semester at AIOU, Islamabad. A minimum of 70% attendance is necessary in all subjects as per AIOU rules.

6.3.1   Assessment and Evaluation

a.   Continuous Assessment

Classes/Workshops Schedule:

The classes/workshops will be arranged at Main Campus, AIOU, Islamabad only. However, the schedule is prepared according to the availability of qualified teaching faculty and convenience of the students.

Assessment:

See page vi

7. Guidelines for online Application

- Visit AIOU Website www.aiou.edu.pk
- Click on OAS (Online Admission. System) for Fresh Admission.
- Click 'Register'& fill details.
- Upon successful registration please click on login.
- Fill login details and login to the portal
- After login click on Step-1 and complete your profile.
  Note: All tabs should be filled in before applying for admissions.
- After completion of Step-1, click on Step-2 then click on "Download Challan" against program (s) you wish to apply.
- Pay the *admission form fee* as per AIOU prescribed criteria through selected bank branches or online payment methods.
- After admission fee confirmation, you will be called on through SMS to visit the department for the verification of your credentials.
- After the verification, you will be informed whether you are eligible for the admission in BS Program or not.

Note: Please use your own mobile no. in login so that you receive the SMS from university and updates throughout 4 years.

8. Contact details

Chairman office

Chairman,
Department of Statistics,
Lower Ground Floor, Science Block, Sector H-8,
AIOU Islamabad
Ph. No. 051-9057266, 9250062 Email:
statistics@aiou.edu.pk

BS Program Coordinator

Dr. Muhammad Yameen Danish
Assistant Professor
Ph: 051-9575631
Email: yameen.danish@aiou.edu.pk

9. Faculty Members

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5. **Mr. Sajid Hassan Shah**
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   Email: lubna.naz@aiou.edu.pk

DEPARTMENT OF NUTRITIONAL SCIENCES & ENVIRONMENTAL DESIGN

Pakistan is a developing country, and it is the need of the hour to improve standard of education in all disciplines especially in science and technology to better cope with the challenges of 21st century. The Department was first established in 1981. During last few decades the Department has developed a range of professional programs in Health and Nutrition, Environmental Design and Home Economics. Multipurpose teaching/ research labs for Environmental Design and Food and Nutrition programs have been set up to provide a comprehensive environment for imparting practical training and research at the main campus.

Health care in the whole world has changed substantially in the new millennium. New disciplines have emerged, and role of traditional health disciplines has broadened to keep pace with the changing emphasis from curative to preventive health care. The focus from curing nutritional deficiencies has shifted to searching the role of diet in the cause of chronic diseases and examining the importance of nutrients in maintaining good health. The objectives of department includes:

Aims and Objectives

1. To upgrade and update the skills & knowledge of professionals in various fields of applied sciences, engineering & architecture

2. To prepare learners for the career related disciplines considering the professional interests of individuals in the areas of Environmental Design, Engineering & Architecture, Health, Food Science, Nutrition, Dietetics, and Home Economics

3. To prepare the individuals/professionals for the development and up gradation of community & sustainable environment

4. To enable the individuals to integrate and apply knowledge and skills of Basic Sciences, Home Economics & Applied Sciences for their professional development.

The Department has produced scientific/value added and professional programs/courses in the areas of Environmental Design, Health, Food & Nutrition and Home Economics. The courses are being offered at undergraduate, postgraduate, MS and PhD level programs.

BS HUMAN NUTRITION AND DIETETICS
(Programme Code 5053)

The Bachelor of Science (BS) program in Human Nutrition and Dietetics is designed to provide students with a comprehensive understanding of the science of nutrition and the role of diet in health and disease prevention. Here are some salient features of this program:

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- The program offers a blend of courses in nutrition, food and health sciences and general education.
- Laboratory sessions and practical classes to develop skills in diet planning, nutritional assessment and food analysis.
- Emphasis on research methodologies and evidence-based practices in nutrition.
- Curriculum aligned with standards of relevant accrediting bodies.
- Internship opportunities in hospitals, clinics, community health centres, and food industries to gain real-world experience
- Final year capstone project to demonstrate acquired knowledge and skills

OBJECTIVES
The program objectives are:
- To equip students with a deep understanding of nutrition, food science, and dietetics
- To develop their abilities to assess nutritional needs and create effective dietary plans
- To prepare students for clinical practice in dietetics, including medical nutrition therapy, and for planning and evaluating public health nutrition programs

- To foster research skills and the application of evidence-based practices in nutrition and dietetics

Eligibility Criteria
F.Sc (Pre-medical) OR Equivalent "A" Level qualification with Biology as major subject. Foreign certificate holders will need to produce equivalence certificate from IBCC to seek admission in 4 years BS Human Nutrition and Dietetics.

Duration of the Programme
In order to be eligible for the award of BS in Human Nutrition and Dietetics, the student will have to earn a total of 138 credit hours within a minimum period of 4 years (8 semesters) failing which, a student can be given an extension of upto 2 years in maximum after completion of initial period.

Scheme of studies (BS Human Nutrition and Dietetics)

Sr. No.	Title of Course	Course Code	Course Contents	Credit Hours
1st Semester				
1	Fundamentals of Human Nutrition	EDHN 3502	APPROVED	3(3-0) Major
2	Functional English	ENGL 3505	NEW	3(3-0) General
3	Islamic studies/ Ethics	ITHC3501 HADH3501	NEW	2(2-0) General

#	Course	Course Code	Course Contents	
4	Ideology and constitution of Pakistan	PKST 3502		2(2-0) General
5	Quantitative reasoning	MATH 3508	NEW	3(3-0) General
6	Pakistan Adab-1	URD 3503	NEW	2(2-0) General
7	Biostatistics	STAT 3506	APPROVED	3(3-0) Interdisciplinary
			Credit Hours	**18**
2nd semester		**Course Code**	**Course Contents**	
1	Human Anatomy	EDHN 3503	APPROVED	3(2-1) Major
2	Expository writing	ENGL 3504	NEW	3(3-0) General
3	Quantitative reasoning-II	MATH 4505	NEW	3(3-0) General
4	Application of Information and Communication Technologies	CS3503	NEW	3(2-1) General
5	Civic and community engagement	SOC3503	NEW	2(2-0) General
6	Introduction to Sociology	SOC3506	NEW	2(2-0) General
7	Pak. Studies	PKST 3501		2(2-0)
			Credit Hours	**18**
3rd Semester		**Course**	**Course**	

#	Course	Code	Contents	
1	Macronutrients in Human Nutrition	EDHN 4501	APPROVED	3(3-0) Major
2	Dietetics-I	EDHN 4502	APPROVED	3(2-1) Major
3	Entrepreneurship	MGT 3503	NEW	2(2-0) General
4	Essentials of Food Science & Technology	EDHN 4503	APPROVED	3(2-1) Major
5	Basics of Environmental Sciences	ENVS 4501	APPROVED	3(2-1) Major
6	Food Toxins & Allergens	EDHN 4504	APPROVED	3(3-0) Major
			Credit Hours	**17**
4th semester		**Course Code**	**Course Contents**	
1	Food and Dairy Microbiology	BIO5527	APPROVED	3(2-1) Interdisciplinary
2	Dietetics-II	EDHN 4505	APPROVED	3(2-1) Major
3	Nutrition Through the Life Cycle	EDHN 4506	APPROVED	3(3-0) Major
4	Assessment of Nutritional Status	EDHN 4507	APPROVED	3(2-1) Major
5	Food Analysis	EDHN 4508	APPROVED	3(2-1) Major
6	Micronutrients	EDHN	APPROVED	3(3-0)

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#	Course	Course Code	Course Contents	
	in Human Nutrition	4509		Major
	Credit Hours			**18**
5th semester		**Course Code**	**Course Contents**	
1	Physiology-I	EDHN 5501	APPROVED	3(2-1) Major
2	Nutrition and Psychology	EDHN 5502	APPROVED	3(3-0) Major
3	Nutritional Education and Awareness	EDHN 5503	APPROVED	3(2-1) Major
4	Dietetics-III	EDHN 5504	APPROVED	3(2-1) Major
5	Public Health Nutrition	EDHN 5505	APPROVED	3(2-1) Major
6	Food and Drug Laws	EDHN 5506	APPROVED	2(2-0) Major
7	Fahm-e-Quran (tajwid, translation and tafseer)	TFSR 3501	NEW	Non-credit course
	Credit Hours			**17**
6th semester		**Course Code**	**Course Contents**	
1	Physiology-II	EDHN 5507	APPROVED	3(2-1) Major
2	Functional Foods and Nutraceuticals	EDHN 5508	APPROVED	3(3-0) Major
3	Drug-Nutrient Interactions	EDHN 5509	APPROVED	2(2-0) Major
4	Sports	EDHN	APPROVED	3(2-1)

#	Course	Course Code	Course Contents	
	Nutrition	5510		Major
5	Infant and Young Child Feeding	EDHN 5511	APPROVED	3(2-1) Major
6	Meal Planning and Management	EDHN 5512	APPROVED	3(2-1) Major
7	Seerat-e-Tayyaba	SERT 3501	NEW	Non-credit course
	Credit Hours			**17**
7th semester		**Course Code**	**Course Contents**	
1	Nutritional Biochemistry	BIO5531	APPROVED	3(2-1) Interdisciplinary
2	Global Food Issues	EDHN 6501	APPROVED	3(3-0) Major
3	General Pathology	EDHN 6502	APPROVED	3(3-0) Major
4	Nutritional Practices in Clinical Care	EDHN 6503	APPROVED	3(2-1) Major
5	Epidemiology	BIO6527	APPROVED	3(2-1) Interdisciplinary
6	Internship	EDHN6504		3(0-3)
	Credit Hours			**18**
8th semester		**Course Code**	**Course Contents**	
1	Research Methods	EDHN 6505	APPROVED	3(3-0) Major

2	Nutrition Through Social Protection	EDHN 6506	APPROVED	3(3-0) Major	
3	Nutrition in Emergencies	EDHN 6507	APPROVED	3(3-0) Major	
4	Nutrition policies and programs	EDHN 6508	APPROVED	3(3-0) Major	
5	Capstone project	EDHN 6509		3(0-3)	
			Credit Hours	**15**	

Total credit hours: 138
Fee Tariff for First semester

Items	Rates
Registration fee (once at time of admission)	Rs. 650/-
Admission fee (once at time of admission)	Rs. 1300/-
Degree Fee (Once at time of admission)	Rs. 1500/-
Technology fee	Rs. 800/-
Per credit hour fee: Rs 2600*18	Rs. 46800/-
Lab charges	Rs. 3900/-
Total	Rs. 54950/-

The fee structure for remaining semesters will be provided in due course of time.
Mode of Study:
i.   **Medium of Instruction**

The Medium of Instructions for BS Human Nutrition and Dietetics will be English.
ii.   **Study Material**

Lecture handouts will be provided by the department. The students are also advised to consult other reference books recommended by the department.
iii.   **Mode of Teaching**

a)   University will provide face to face teaching to the students.
b)   The schedule of classes and dates of submission of assignments will be announced by the department.
iv.   **Assessment and Evaluation**
    See page vi
For each course the student progress will be assessed on the basis of the followings:

DEPARTMENT OF COMPUTER SCIENCE

The Department of Computer Science (DCS) was established in the year 2000. The Department has received recognition nation-wide due to its quality education. The department had developed curricula of the academic programs at various levels to meet the national and international standards as defined by Higher Education Commission. The curricula include Ph. D (computer Science), MS (Computer Science), BS (Computer Science) and Postgraduate Diploma (PGD) in Computer Science. The department is equipped with computing facilities and services including a digital class room and multimedia courseware development lab. The department has its own library in addition to central library of the university. The Department of Computer Science practices the multi-method teaching methodology i.e. face-to-face regular classes for BS (Computer Science) and MS (Computer Science). The online methodology is practiced for PGD (Computer Science) and Foreign Language (French). The facilities of Video/Teleconferencing are also in use for lectures/consultations in research-oriented degree of MS/PhD (Computer Science). In addition, the department also has a flavor of distance teaching in selected courses of BS (Computer Science) program like English, Pakistan Studies, and Islamic Studies etc.

Besides graduate and undergraduate teaching, the department is actively involved in research and development. For this purpose, Multimedia Centre and Open Learning Institute of Virtual Education (OLIVE) have been established under the umbrella of the department. The Multimedia center is equipped with technology related to Audio/Video production. It has successfully developed multimedia courseware for more than 20 courses, whereas OLIVE provided a framework for electronic delivery of these courses in online mode. In addition to research activities in the area of software engineering communication, networking, and multimedia, the department focuses on the eLearning research in instruction design, communication, course management, e-assessment, mobile learning and web technologies integration. The University has also developed linkages with San Jose' State University (SJSU) USA and Kent State University, USA. KSU is located in the heart of Silicon Valley and Kent State has strong education college with Technology Research Centers.

The principal aim of the Department of Computer Science is to produce graduates with a professional education and to undertake quality research in Computer Science and Related Information Technology areas. The specific objectives are to:
i. Maintain an excellent reputation and professional accreditation for its taught degree programs.

ii. Disseminate an appreciation of the current state and future directions of technological advances in the areas of Computer Science, Information Technology and e-learning.

iii. Equip students with computer science knowledge and skills to cope with the social, economic, scientific, and technological challenges of the world outside.

iv. Develop platform and systems for e-learning/mechanism for electronic delivery of courses to increase outreach to rural and remote areas.

v. Conduct research in areas of e-learning, multimedia instructional design, web-based education, mobile learning and related areas in software engineering, information technology, and computer science.

vi. Assist other departments and individuals to implement modern ICT in educational delivery.

vii. Provide a leadership support in ICT based education in Pakistan.

BS COMPUTER SCIENCE (4-YEAR PROGRAM) (Programme Code 5032)

1. Introduction

The BS (CS) program is offered by the Department of Computer Science, AIOU. It is a four- years degree program, covering the recent trends in hardware, software and communication technologies. The program provides an understanding of the field through concepts, theory and techniques. The curriculum of the program has been developed and regularly updated to meet the national, international, social and economic needs. The curriculum revision is normally based on need of fast changing disciplines, emerging technologies and international standards. The structure and other details of the program are confined to HEC with focus on ACM and IEEE-CS recent development.

2. Objectives

The objectives of the program are to:

i. Develop professionals in the field of computer science.

ii. Provide high quality education at low cost.

iii. Provide knowledge to individuals seeking computer skills to increase their job opportunities in their current careers or to pursue new careers.

iv. Learn in-depth knowledge of computer languages, software engineering, computer architecture, large-scale system software and multimedia in the design.

v. Provide sufficient conceptual and skill based know how so that successful graduates could initiate IT career in industry and academia.

3. Eligibility

Minimum 50% marks in Intermediate/12 years schooling/A- Level (HSSC) or Equivalent with Mathematics are required for admission in BS(CS).

Equivalency certificate by IBCC will be required in case of education from some other country or system.
The departmental admission committee shall determine the eligibility accordingly.

4. Duration of Program

i. The BS (CS) is 133 credit hours' program and may be completed in minimum four years (eight semesters).

ii. Two semesters are offered in a year as Spring and Autumn.

iii. Duration of each semester is 16 weeks.

iv. The maximum time limit to complete the BS (CS) Program is Six Years from the date of first registration of the student in this program.

5. Scheme of Study

Semester-1

S#	Code	Title	Cre. Hrs.	Remarks
1	CS 3504	computer programming	4(3+1)	Core
2	CS3503	Applications of Information & Communication Technologies	3(2+1)	GER
3	MATH 3516	Discrete Mathematics	3(3+0)	GER-QR 1
4	MATH 3502	Calculus-I	3(3+0)	GER-QR 1
5	ENGL 3505	Functional English	3(3+0)	GER
			Total 16 (14+2) Credit Hours	

Semester-2

S#	Code	Title	Cre. Hrs.	Remarks
1	CS 3506	Object Oriented Programming	4(3+1)	Core
2	CS 3507	Database Systems	4(3+1)	Core
3	CS 3508	Digital Logic Design	3(2+1)	Core
4	MATH 3509	Calculus-II	3(3+0)	Maths
5	MATH 3512	Linear Algebra	3(3+0)	Maths
			Total 17 (14+3) Credit Hours	

Semester-3

S#	Code	Title	Cre. Hrs.	Remarks
1	CS 4521	Data Structures	4(3+1)	Core
2	CS 4522	Information Security	3(2+1)	Core
3	CS 4523	Artificial Intelligence	3(2+1)	Core
4	CS 4524	Computer Networks	3(2+1)	Core
5	CS 4525	Software Engineering	3(3+0)	Core
6	STAT 4509	Probability & Statistics	3(3+0)	Maths
			Total 19 (15+4) Credit Hours	

Semester-4

S#	Code	Title	Cre. Hrs.	Remarks
1	CS 4526	Computer Organization & Assembly Language	3(2+1)	Core
2	CS 4527	Theory of Automata	3 (3-0)	Domain Core
3	CS 4528	Advance Database Management Systems	3 (2-1)	Domain Core
4	PHY 4509	Applied Physics	3(2+1)	GER
5	ENGL3504	Expository Writing	3(3+0)	GER
6	ITHC3501/ HADH3501	Islamic Studies / Ethics	2(2+0)	GER
7	PKST 3501	Pakistan Studies	2(2+0)	GER
			Total 19 (14+3) Credit Hours	

Semester-5

S#	Code	Title	Cre. Hrs.	Remarks
1	CS 5502	Operating Systems	3(2+1)	Core
2	CS 5503	HCI & Computer Graphics	3 (2+1)	Domain Core
3	CS 5504	Computer Architecture	3 (2+1)	Domain Core
4	-	Domain Elective 1	3(2+1)	Domain Elective
5	-	Domain Elective 2	3(2+1)	Domain Elective
6	MGT3504	Introduction to Management	2(2+0)	GER
7	TFSR 3501	Fahm-E-Quran (Tajwid, Translation and Tafsir)	Non-Cre.	(NC)
			Total 17 (12+5) Credit Hours	

Semester-6

S#	Code	Title	Cre. Hrs.	Remarks
1	CS 5505	Compiler Construction	3 (2+1)	Domain Core
2	CS 5506	Parallel and Distributed Computing	3 (2+1)	Domain Core
3	-	Domain Elective 3	3 (2+1)	Domain Elective
4	-	Domain Elective 4	3 (2+1)	Domain Elective
5	-	Domain Elective 5	3 (2+1)	Domain Elective
6	-	Domain Elective 6	3 (2+1)	Domain Elective
7	SERT3501	Seerat-e-Tayyaba	Non-Cre.	(NC)
			Total 18 (12+6) Credit Hours	

Semester-7

S#	Code	Title	Cre. Hrs.	Remarks
1	CS 6501	Final Year Project – I	2(0+2)	**Core**
2	CS 6502	Analysis and Design of Algorithm	3(3+0)	Core
3	-	Domain Elective 7	3(2+1)	Domain Elective
4	CS 6503	IT Marketing Concepts	3(3+0)	SS
5	ENGL 3503	Technical and Business Writing	3(3+0)	Math's & Supp.
6	MGT3503	Entrepreneurship	2(2+0)	GER
7	CS 6507	Internship	3(0-3)	-
			Total 19 (13+6) Credit Hours	

Semester-8

S#	Code	Title	Cre. Hrs.	Remarks
1	CS 6504	Final Year Project – II	4(0+4)	**Core**
2	PKST3502	Ideology and Constitution of Pakistan	2(2+0)	**GER**
3	CS 6506	Professional Practices	2(2+0)	**GER**
4	SOC3503	Civics and Community Engagement	2(2+0)	**GER**
			Total 10 (6+4) Credit Hours	

The student can select seven courses from the list of elective courses.

List of electives offered in the BS(CS) Program:

Computer Science Elective List (Domain Electives):

Domain Elective (2.2)			
S#	Code	Course Title (Per HEC 2023)	Cr. Hrs.
1.	CS 5507	Web Technologies	3 (2-1)
2.	CS 5508	Mobile Application Development 1	3 (2-1)
3.	CS 5509	Visual Programming	3 (2-1)
4.	CS 5510	Numerical Computing	3 (2-1)
5.	CS 5511	Web Engineering	3 (2-1)
6.	CS 5512	Cyber Security	3 (2-1)
7.	CS 5513	Software Testing & Quality Assurance	3 (2-1)
8.	CS 5514	Mobile Application Development 2	3 (2-1)
9.	CS 5515	Cloud Computing	3 (2-1)
10.	CS 5516	Computer Graphics	3 (2-1)

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11.	CS 5517	Object Oriented Analysis & Design	3 (2-1)
		Credit Hours	**33**

The Department of Computer Science reserves the right to offer or may not offer listed particular course depending upon the available faculty/laboratory resources and viable student's enrollment.

Items	Rates
Registration fee (At the time of 01st Admission)	Rs. 650/-
Admission fee (once at time of admission)	Rs. 1300/-
Degree Fee (Once at time of admission)	Rs. 1500/-
Technology fee	Rs. 800/-
Per credit hour fee: Rs 2600*16	Rs. 41600/-
Lab charges	Rs. 7100/-
Total	Rs. 52950/-

6. Eligibility

Minimum 50% marks in Intermediate/12 years schooling/A-Level (HSSC) or Equivalent with Mathematics are required for admission in BS(CS). Equivalency certificate by IBCC will be required in case of education from some other country or system. The students who have not studied Mathematics at intermediate level have to pass deficiency courses of Mathematics in first two semesters.

The departmental admission committee shall determine the eligibility accordingly.

BS COMPUTER SCIENCE
(Programme Code 5070) (WDC)

Semester-1

S#	Code	Title	Cre. Hrs.	Remarks
1	CS 3504	computer programming	4(3+1)	Core
2	CS3503	Applications of Information & Communication Technologies	3(2+1)	GER
3	MATH 3516	Discrete Mathematics	3(3+0)	GER-QR 1
4	MATH 3502	Calculus-I	3(3+0)	GER-QR 1
5	ENGL 3505	Functional English	3(3+0)	GER
6	MATH 3517	Pre- Calculus-I	Deficiency Course	N/C
		Total 16 (14+2) Credit Hours		

Semester-2

S#	Code	Title	Cre. Hrs.	Remarks
1	CS 3506	Object Oriented Programming	4(3+1)	Core
2	CS 3507	Database Systems	4(3+1)	Core
3	CS 3508	Digital Logic Design	3(2+1)	Core
4	MATH 3509	Calculus-II	3(3+0)	Maths
5	MATH 3512	Linear Algebra	3(3+0)	Maths
6	MATH 3518	Pre- Calculus- 2	Deficiency Course	N/C
		Total 17 (14+3) Credit Hours		

Semester-3

S#	Code	Title	Cre. Hrs.	Remarks
1	CS 4521	Data Structures	4(3+1)	Core

2	CS 4522	Information Security	3(2+1)	Core
3	CS 4523	Artificial Intelligence	3(2+1)	Core
4	CS 4524	Computer Networks	3(2+1)	Core
5	CS 4525	Software Engineering	3(3+0)	Core
6	STAT 4509	Probability & Statistics	3(3+0)	Maths
		Total 19 (15+4) Credit Hours		

Semester-4

S#	Code	Title	Cre. Hrs.	Remarks
1	CS 4526	Computer Organization & Assembly Language	3(2+1)	Core
2	CS 4527	Theory of Automata	3 (3-0)	Domain Core
3	CS 4528	Advance Database Management Systems	3 (2-1)	Domain Core
4	PHY 4509	Applied Physics	3(2+1)	GER
5	ENGL3504	Expository Writing	3(3+0)	GER
6	ITHC3501/ HADH3501	Islamic Studies / Ethics	2(2+0)	GER
7	PAK 3501	Pakistan Studies	2(2+0)	GER
		Total 19 (16+3) Credit Hours		

Semester-5

S#	Code	Title	Cre. Hrs.	Remarks
1	CS 5502	Operating Systems	3(2+1)	Core
2	CS 5503	HCI & Computer Graphics	3 (2+1)	Domain Core
3	CS 5504	Computer Architecture	3 (2+1)	Domain Core
4	-	Domain Elective 1	3(2+1)	Domain Elective
5	-	Domain Elective 2	3(2+1)	Domain Elective
6	MGT3504	Introduction to Management	2(2+0)	GER
7	TFSR 3501	Fahm-E-Quran (Tajwid, Translation and Tafsir)	Non-Cre.	(NC)

		Total 17 (12+5) Credit Hours		

Semester-6

S#	Code	Title	Cre. Hrs.	Remarks
1	CS 5505	Compiler Construction	3 (2+1)	Domain Core
2	CS 5506	Parallel and Distributed Computing	3 (2+1)	Domain Core
3	-	Domain Elective 3	3 (2+1)	Domain Elective
4	-	Domain Elective 4	3 (2+1)	Domain Elective
5	-	Domain Elective 5	3 (2+1)	Domain Elective
6	-	Domain Elective 6	3 (2+1)	Domain Elective
7	SERT3501	Seerat-e-Tayyaba	Non-Cre.	(NC)
		Total 18 (12+6) Credit Hours		

Semester-7

S#	Code	Title	Cre. Hrs.	Remarks
1	CS 6501	Final Year Project – I	2(0+2)	**Core**
2	CS 6502	Analysis and Design of Algorithm	3(3+0)	Core
3	-	Domain Elective 7	3(2+1)	Domain Elective
4	CS 6503	IT Marketing Concepts	3(3+0)	SS
5	ENGL 3503	Technical and Business Writing	3(3+0)	Math's & Supp.
6	MGT3503	Entrepreneurship	2(2+0)	GER
7	CS 6507	Internship	3(0-3)	-
		Total 19 (13+6) Credit Hours		

Semester-8

S#	Code	Title	Cre. Hrs.	Remarks
1	CS 6504	Final Year Project – II	4(0+4)	**Core**
2	PKST3502	Ideology and Constitution of Pakistan	2(2+0)	**GER**
3	CS 6506	Professional Practices	2(2+0)	**GER**
4	SOC3503	Civics and Community Engagement	2(2+0)	**GER**

Total 10 (6+4) Credit Hours	

7. Fee Tariff

Items	Rates
Registration fee (At the time of 01st Admission)	Rs. 650/-
Admission fee (once at time of admission)	Rs. 1300/-
Degree Fee (Once at time of admission)	Rs. 1500/-
Technology fee	Rs. 800/-
Per credit hour fee: Rs 2600*16	Rs. 41600/-
Lab charges	Rs.7100/-
Total	Rs. 52950/-

8. Mode of Study

8.1 Medium of Instruction

The medium of instruction for BS (CS) Program is English.

7.2 Study Material

The class teacher will provide the study material. However, the students are advised to consult books from the list of recommended books.

7.3 Mode of Teaching

i. The BS (CS)program is a non-merit-based program which is offered in Face-to-Face Mode.

ii. The Department of Computer Science is offering BS (CS) Program at Main Campus, Islamabad.

iii. The BS (CS) Program is also being offered at selected Regional Centers of AIOU. Under this program, the course work will be conducted through video-conferencing/internet. Distance Education will be delivered by faculty members from Department of Computer Science, Main Campus. A local faculty member/staff will be provided to assist in administrative and lab assignments

7.4 Assessment and Evaluation
See Page vi

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BS (INFORMATION TECHNOLOGY)
4-YEAR PROGRAM
(Programme code 5068)

1. Introduction

In this era of technological revolution, education regarding Information Technology and its application is required. The Department of Computer Science, in keeping with the needs of the modern education requirement in technology, is revamping and reintroducing a Bachelors in Information Technology program. The BS (Information Technology) gives the students an in-depth knowledge of programming, system analysis and software testing. The curriculum of the BS (IT) program includes coursework in computing, mathematic, databases, software development and testing, modeling, introduction to classical Information Technology languages and case studies. The curricula is specifically designed to meet with the requirements of an expert software developer. The program also encourages students to take courses in ethics and social responsibility, with the opportunity to participate in long term projects in which Information Technology.

i. Objectives

i. Develop proficiency in programming languages used in Information Technology.

ii. Develop strong analytical skills to understand and to analyze the different paradigms of Information Technology.

iii. Learn to manipulate different programming language and frameworks.

iv. Develop an understanding related to usage of data ethics.
v. Learn to develop new frameworks including for solving different problems.

3. Eligibility

Minimum 50% marks in Intermediate/12 years schooling/A- Level (HSSC) or Equivalent with Mathematics are required for admission in BS(IT). Equivalency certificate by IBCC will be required in case of education from some other country or system. The students who have not studied Mathematics at intermediate level have to pass deficiency courses of Mathematics in first two semesters.

The departmental admission committee shall determine the eligibility accordingly.

4. Duration of Program

i. The BS (IT) is 135 credit hours' program and may be completed in minimum four years (eight semesters).
ii. Two semesters are offered in a year as Spring and Autumn.
iii. Duration of each semester is 16 weeks.
iv. The maximum time limit to complete the BS (IT) Program is Six Years from the date of first registration of the student in this program.

5. Scheme of Study

Semester-1

Course Code	Title	Credit Hours
CS 3504	Computer Programming	4(3+1)
CS3503	Applications of Information & Communication Technologies	3(2+1)

MATH 3516	Discrete Mathematics	3(3+0)
MATH 3502	Calculus-I	3(3+0)
ENGL3505	Functional English	3(3+0)
	Total Credit Hours	**16**

Semester-2

Course Code	Title	Credit Hours
CS 3506	Object Oriented Programming	4(3+1)
CS 3507	Database Systems	4(3+1)
CS 3508	Digital Logic Design	3(2+1)
MATH 3509	Calculus-II	3(3+0)
MATH 3512	Linear Algebra	3(3+0)
	Total Credit Hours	17

Semester-3

Course Code	Title	Credit Hours
CS 4521	Data Structures	4(3+1)
CS 4522	Information Security	3(2+1)
CS 5423	artificial Intelligence	3(2+1)
CS 4524	Computer Networks	3(2+1)
CS 4525	Software Engineering	3(3+0)
STAT 4509	Probability & Statistics	3(3+0)
	Total Credit Hours	**19**

Semester-4

Course Code	Title	Credit Hours
CS 4526	Computer Organization & Assembly Language	3(2+1)

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CS 5507	Web Technologies	3(2+1)
CS 5512	Cyber Security	3(2+1)
PHY 4509	Applied Physics	3(2+1)
ENGL3504	Expository Writing	3(3+0)
ITHC3501/ HADH3501	Islamic Studies/Ethics	2(2+0)
PKST 3501	Pak. Studies	2(2+0)
Total Credit Hours		**19**

Semester-5

Course Code	Title	Credit Hours
CS 5502	Operating Systems	3(2+1)
CS 5518	DB Administration & Management	3(2+1)
CS 5519	System & Network Administration	3(2+1)
CS 6502	Analysis and Design of Algorithms	3(3+0)
CS 5504	Computer Architecture	3(2+1)
MGT3504	Introduction to Management	2(2+0)
TESR 3501	Fahm-E-Quran (Tajwid, Translation and Tafsir)	(NC)
Total Credit Hours		17

Semester-6

Course Code	Title	Credit Hours
CS 6508	Information Technology Infrastructure	3(2+1)
CS 5506	Parallel & Distributed	3(2+1)

	Computing	
CS 6509	Network Security	3(2+1)
CS 6510	Enterprise Systems	3(2+1)
CS 6511	Web Engineering	3(2+1)
CS 4527	Theory of Automata	3(2+1)
SERT 3501	Seerat-e-Tayyaba	(NC)
Total Credit Hours		18

Semester-7

Course Code	Title	Credit Hours
CS 6501	Final Year Project - I	2(0+2)
CS 6511	Virtual Systems & Services	3(2+1)
CS 6512	Human Computer Interaction	3(2+1)
CS 6503	IT Marketing Concepts	3(3+0)
ENGL 3503	Technical & Business Writing	3(3+0)
MGT3503	Entrepreneurship	2(2+0)
CS 6507	Internship	3 (0+3)
Total Credit Hours		19

Semester-8

Course Code	Title	Credit Hours
CS 6504	Final Year Project -II	4 (0+4)
PKST3502	Ideology and Constitution of Pakistan	2(2+0)
CS 6506	Professional Practices	2(2+0)
SOC3503	Civics and Community Engagement	2(2+0)
Total Credit Hours		**10**

Fee Tariff

Item	-
Registration Fee: (At the time of 01st admission)	Rs. 650/-
Admission Fee: (At the time of 01st admission)	Rs. 1300/-
Degree Fee (Once at time of admission)	Rs. 1500/-
Technology Fee (Each semester)	Rs. 800/-
Fee for 1 Credit Hour Course 2600*16	RS. 41600/-
Lab Fee	Rs. 7100/-
Total Fee for First Semester	**Rs. 52950/-**

The Department of Computer Science reserves the right to offer or may not offer listed specialization area or a particular course depending upon the available faculty/laboratory resources and viable student's enrollment. The department may add other specialized areas or may add elective courses to any specialized defined area.

BS (INFORMATION TECHNOLOGY)
(WDC)
(Programme Code 5071)

Semester-1

Course Code	Title	Domain	Credit Hours
CS 3504	Computer Programming	Core	4(3+1)
CS3503	Applications of Information & Communication Technologies	GER	3(2+1)
MATH 3516	Discrete Mathematics	GER- QR 1	3(3+0)
MATH 3502	Calculus-I	GER- QR 2	3(3+0)
ENGL3505	Functional English	GER	3(3+0)
MATH 3517	Pre- Calculus- 1	Deficiency Course	N/C
Total Credit Hours			**16**

Semester-2

Course Code	Title	Domain	Credit Hours
CS 3506	Object Oriented Programming	Core	4(3+1)
CS 3507	Database Systems	Core	4(3+1)
CS 3508	Digital Logic Design	Core	3(2+1)
MATH 3509	Calculus-II	Maths	3(3+0)
MATH 3512	Linear Algebra	Maths	3(3+0)

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MATH 3518	Pre- Calculus-2	Deficiency Course	N/C
Total Credit Hours			17

Semester-3

Course Code	Title	Domain	Credit Hours
CS 4521	Data Structures	Core	4(3+1)
CS 4522	Information Security	Core	3(2+1)
CS 5423	artificial Intelligence	Core	3(2+1)
CS 4524	Computer Networks		3(2+1)
CS 4525	Software Engineering	Core	3(3+0)
STAT 4509	Probability & Statistics	Maths	3(3+0)
Total Credit Hours			**19**

Semester-4

Course Code	Title	Domain	Credit Hours
CS 4526	Computer Organization & Assembly Language	Core	3(2+1)
CS 5507	Web Technologies	Damian Core	3(2+1)
CS 5512	Cyber Security	Damian Core	3(2+1)
PHY 4509	Applied Physics	GER	3(2+1)
ENGL3504	Expository Writing	GER	3(3+0)
ITHC3501/ HADH3501	Islamic Studies/Ethics	GER	2(2+0)
PKST 3501	Pak. Studies	GER	2(2+0)
Total Credit Hours			**19**

Semester-5

Course Code	Title	Domain	Credit Hours
CS 5502	Operating Systems	Core	3(2+1)
CS 5518	DB Administration & Management	Damian Core	3(2+1)
CS 5519	System & Network Administration	Damian Core	3(2+1)
CS 6502	Analysis and Design of Algorithms	Core	3(3+0)
CS 5504	Computer Architecture	Damian Elective	3(2+1)
MGT3504	Introduction to Management	GER	2(2+0)
TESR 3501	Fahm-E-Quran (Tajwid, Translation and Tafsir)	Non-Credit	(NC)
Total Credit Hours			17

Semester-6

Course Code	Title	Domain	Credit Hours
CS 6508	Information Technology Infrastructure		3(2+1)
CS 5506	Parallel & Distributed Computing		3(2+1)
-	Domain Elective 2	Domain Elective	3(2+1)
-	Domain Elective 3	Domain Elective	3(2+1)
-	Domain Elective 4	Domain Elective	3(2+1)

Course Code	Title	Domain	Credit Hours
-	Domain Elective 5	Domain Elective	3(2+1)
SERT 3501	Seerat-e-Tayyaba	Non-Credit	(NC)
Total Credit Hours			18

Semester-7

Course Code	Title	Domain	Credit Hours
CS 6501	Final Year Project - I	Core	2(0+2)
-	Domain Elective 6	Domain Elective	3(2+1)
-	Domain Elective 7	Domain Elective	3(2+1)
CS 6503	IT Marketing Concepts	SS	3(3+0)
ENGL 3503	Technical & Business Writing	Math's & Supp.	3(3+0)
MGT3503	Entrepreneurship	GER	2(2+0)
CS 6507	Internship	-	3 (0+3)
Total Credit Hours			19

Semester-8

Course Code	Title	Domain	Credit Hours
CS 6504	Final Year Project -II	Core	4 (0+4)
PKST3502	Ideology and Constitution of Pakistan	GER	2(2+0)
CS 6506	Professional Practices	GER	2(2+0)
SOC3503	Civics and Community Engagement	GER	2(2+0)
Total Credit Hours			10

Bs (Information Technology) Elective Lists (Domain Electives)

Domain Elective 01		
	Code Course (HEC) 2023	**Cr.Hrs.**
CS 5504	Computer Architecture	3(2+1)
	Total Credit Hours	**3(2+1)**

Domain Elective 02-05		
Code	**Code Course (HEC) 2023**	**Cr.Hrs.**
CS 6509	Network Security	3(2+1)
CS 6510	Enterprise Systems	3(3+0)
CS 5511	Web Engineering	3(2+1)
CS 4527	Theory of Automata	2(2+0)
	Total Credit Hours	**12(8+4)**

Domain Elective 06-07		
Code	**Code Course (HEC) 2023**	**Cr.Hrs.**
CS 6511	Virtual Systems & Services	3(2+1)
CS 6512	Human Computer Interaction	3(2+1)
	Total Credit Hours	**6(4+2)**

6. Fee Tariff

Item	-
Registration Fee: (At the time of 01st admission)	Rs. 650/-
Admission Fee: (At the time of 01st admission)	Rs. 1300/-
Degree Fee (Once at time of admission)	Rs. 1500/-
Technology Fee	Rs. 800/-

(Each semester)	
Fee for 1 Credit Hour Course 2600*16	RS. 41600/-
Lab Fee	Rs. 7100/-
Total Fee for First Semester	**Rs. 52950/-**

7. Mode of Study

a. Medium of Instruction

The medium of instruction for BS (IT) Program is English.

7.2 Study Material

The class teacher will provide the study material. However, the students are advised to consult books from the list of recommended books.

7.3 Mode of Teaching

i. The BS (IT)program is a non-merit program which is offered in Face-to-Face Mode.

ii. The Department of Computer Science is offering BS (IT) Program at Main Campus, Islamabad.

iii. The BS (IT) Program is also being offered at selected Regional Centers of AIOU by using modern technologies. Under this program, the course work will be conducted through video-conferencing/internet. Distance Education will be delivered by faculty members from Department of Computer Science, Main Campus. A local faculty member/staff will be provided to assist in administrative and lab assignments. All assessments will be performed as per rules of the University.

7.4 Assessment and Evaluation

See page vi

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ii. Deputy Program Coordinator

Ms. Yusra Rehmat
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Phone # 051-9575391

iii. Admission Cell at DCS

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BS (Data Science) Program
(Programme Code 5090)

Introduction:

The Department of Computer Science, in keeping with the needs of the modern education requirement in technology, is introducing a Bachelors in Data Science program. The BS (Data Science) has a dual emphasis on basic principles of statistics and computer science, with foundational training in statistical and mathematical aspects of data analysis. This program develops a foundation on broad computer science principles, including algorithms, data structures, data management and machine learning. This program will prepare graduates for a career in data analysis, combining foundational statistical concepts with computational principles from computer science.

Program Objectives:

1. Develop proficiency in programming languages used in data science.
2. Develop strong mathematical and statistical skills to analyze data and draw insights from data.
3. Learn to use data visualization tools and techniques to communicate insights effectively.
4. Acquire knowledge of big data technologies and platforms for managing and processing large datasets.
5. Develop an understanding of data ethics and privacy issues in data science.
6. Learn to work with unstructured data such as text, images, and videos.

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Program Features:
1. The updated BS (DS) is a 133 credit hours program and may be completed in minimum four years (eight semesters).
2. Two semesters are offered in a year, Spring and Autumn.
3. Duration of each semester is 18 weeks.
4. Program is In-line with HEC.

Mode of Teaching:
The program is offered in Face-to-Face Mode in both main campus and regions.

Merit/Non-Merit:
The BS (DS) program is a merit-based program.

Assessment Criteria on page iv

The 70% percent attendance is mandatory in each course.

Eligibility:
Minimum 50% marks in Intermediate/12 years schooling/A-Level (HSSC) or Equivalent with Mathematics are required for admission in BS(DS). Equivalency certificate by IBCC will be required in case of education from some other country or system. The students who have not studied Mathematics at intermediate level have to pass deficiency courses of Mathematics ((non-credit)) in first two semesters.

Selection Criteria:
Admission will be given to all candidates satisfying the eligibility and merit criteria, subject to a viable group of students.

Award of BS (DS) Degree (Minimum CGPA/Pass Percentage Requirement):
1. A minimum 2.0 CGPA on a scale of 4.0 or 50% passing marks is required for the award of a BS Data Science Degree.
2. At a minimum, 135 credit hours are required for the award of BS degree in Data Science.
3. The minimum duration for completion of BS in Data Science is four years. The HEC allows maximum period of seven years to complete the BS degree requirements.

New Scheme of BS (DS) Program as Per HEC Recommendations 2023
1. Core means Computing Core.
2. Domain Core means Data Science Core.
3. Domain Elective means Data Science Elective.
4. GER means General Education Requirement.
5. Math's & Supporting means Mathematics and Supporting Courses.
6. SS means Social Science.

Scheme of Study:

S#	Code	Course Title	Domain	Cr hr
**Semester 1**				
1	CS3504	Computer Programming	Core	4 (3+1)
2	CS3503	Applications of Information & Communication Technologies	GER	3 (2+1)
3	MATH3516	Discrete Mathematics	GER-QR1	3 (3+0)
4	MATH3502	Calculus-I	GER-QR2	3 (3+0)
5	ENGL3505	Functional English	GER	3 (3+0)
			Total Credit Hours	**16(14+2)**

		Semester 2		
1	CS3506	Object Oriented Programming	Core	4 (3+1)
2	CS3507	Database Systems	Core	4 (3+1)
3	CS3508	Digital Logic Design	Core	3 (2+1)
4	MATH3509	Calculus-II	Maths	3 (3+0)
5	MATH3512	Linear Algebra	Maths	3 (3+0)
		Total Credit Hours		**17 (14+3)**

		Semester 3		
1	CS4521	Data Structures and Algorithms	Core	4 (3+1)
2	CS4522	Information Security	Core	3 (2+1)
3	CS4523	Artificial Intelligence	Core	3 (2+1)
4	CS4524	Computer Networks	Core	3 (2+1)
5	CS4525	Software Engineering	Core	3 (3+0)
6	STAT4509	Statistics & Probability	Maths	3 (3+0)
		Total Credit Hours		**19 (15+4)**

		Semester 4		
1	CS4526	Computer Organization & Assembly Language	Core	3 (2+1)
2	CS 4529	Introduction to Data Science	Domain Core	3 (2+1)
3	CS 4530	Advanced Statistics	Domain Core	3 (2+1)
4	PHY4509	Applied Physics	GER	3 (2+1)
5	ENGL3504	Expository Writing	GER	3(3+0)
6	ITHC3501/ HADH3501	Islamic Studies/Ethics	GER	2 (2+0)
7.	PKST 3501	Pakistan Studies	GER	2 (2+0)
		Total Credit Hours		**19 (15+4)**

		Semester 5		
1	CS5502	Operating Systems	Core	3 (2+1)
2	STAT6511	Data Mining	Domain Core	3 (2+1)
3	CS 6514	Data Visualization	Domain Core	3 (2+1)
4	CS6502	Analysis and Design of Algorithms	Core	3 (3+0)
5	-	Domain Elective 1	Domain Elective	3 (2+1)
6	MGT3504	Introduction to Management	GER	2 (2+0)
7	TFSR3501	Fahm-E-Quran (Tajwid, Translation and Tafsir)	Non-Credit	(NC)
		Total Credit Hours		**17 (13+4)**

		Semester 6		
1	CS 6513	Data Warehousing & Business Intelligence	Domain Core	3 (2+1)
2	CS5506	Parallel & Distributed Computing	Domain Core	3 (2+1)
3	-	Domain Elective 2	Domain Elective	3 (2+1)
4	-	Domain Elective 3	Domain Elective	3 (2+1)
5	-	Domain Elective 4	Domain Elective	3 (2+1)
6	-	Domain Elective 5	Domain Elective	3 (2+1)
7	SERT 3501	Seerat-e-Tayyaba	Non-Credit	(NC)
		Total Credit Hours		**18 (12+6)**

		Semester 7		
1	CS6501	Final Year Project - I	Core	2 (0+2)

2	-	Domain Elective 6	Domain Elective	3 (2+1)
3	-	Domain Elective 7	Domain Elective	3 (2+1)
4	CS6503	IT Marketing Concepts	SS	3 (3+0)
5	ENGL3503	Technical & Business Writing	Math's & Supp.	3 (3+0)
6	MGT3503	Entrepreneurship	GER	2 (2+0)
7	CS6507	Internship	-	3 (0+3)
			Total Credit Hours	19(12+7)
		Semester 8		
1	CS6504	Final Year Project -II	Core	4 (0+4)
2	PKST3502	Ideology and Constitution of Pakistan	GER	2 (2+0)
3	CS6506	Professional Practices	GER	2 (2+0)
4	SOC3503	Civics and Community Engagement	GER	2 (2+0)
			Total Credit Hours	10 (6+4)

BS (Data Science) Elective List (Domain Electives):

Domain Elective 01

S#	Code	Course Title (HEC) 2023	Cr. Hrs.
1.	CS 5521	Big Data Analytics	3(2+1)
		Total Credit Hours	**3(2+1)**

Domain Elective 02-05

S#	Code	Course Title (HEC) 2023	Cr. Hrs.
1.	CS 5501	Machine Learning	3(2+1)
2.	CS 6514	Artificial Neural Networks & Deep Learning	3(2+1)
3.	CS 4527	Theory of Automata	3(2+1)
4.	CS 6512	Human Computer Interaction	3(2+1)
		Total Credit Hours	**12(8+4)**

Domain Elective 06-07

S#	Code	Course Title (HEC) 2023	Cr. Hrs.
1.	CS 4528	Advance Database Management Systems	3(2+1)
2.	CS 6515	Topics in Data Science	3(2+1)
		Total Credit Hours	**6(4+2)**

BS (Data Science)
(Programme Code 5091) (WDC)

Introduction:

The Department of Computer Science, in keeping with the needs of the modern education requirement in technology, is introducing a Bachelors in Data Science program. The BS (Data Science) has a dual emphasis on basic principles of statistics and computer science, with foundational training in statistical and mathematical aspects of data analysis. This program develops a foundation on broad computer science principles, including algorithms, data structures, data management and machine learning. This program will prepare graduates for a career in data analysis, combining foundational statistical concepts with computational principles from computer science.

Program Objectives:

7. Develop proficiency in programming languages used in data science.
8. Develop strong mathematical and statistical skills to analyze data and draw insights from data.
9. Learn to use data visualization tools and techniques to communicate insights effectively.
10. Acquire knowledge of big data technologies and platforms for managing and processing large datasets.

11. Develop an understanding of data ethics and privacy issues in data science.
12. Learn to work with unstructured data such as text, images, and videos.

Program Features:
5. The updated BS (DS) is a 133 credit hours program and may be completed in minimum four years (eight semesters).
6. Two semesters are offered in a year, Spring and Autumn.
7. Duration of each semester is 18 weeks.
8. Program is In-line with HEC.

Mode of Teaching:
The program is offered in Face-to-Face Mode in both main campus and regions.

Merit/Non-Merit:
The BS (DS) program is a merit-based program.

Assessment Criteria on page iv

The 70% percent attendance is mandatory in each course.

Eligibility:
Minimum 50% marks in Intermediate/12 years schooling/A-Level (HSSC) or Equivalent with Mathematics are required for admission in BS(DS). Equivalency certificate by IBCC will be required in case of education from some other country or system. The students who have not studied Mathematics at intermediate level have to pass deficiency courses of Mathematics ((non-credit)) in first two semesters.

Selection Criteria:
Admission will be given to all candidates satisfying the eligibility and merit criteria, subject to a viable group of students.

Award of BS (DS) Degree (Minimum CGPA/Pass Percentage Requirement):
4. A minimum 2.0 CGPA on a scale of 4.0 or 50% passing marks is required for the award of a BS Data Science Degree.
5. At a minimum, 135 credit hours are required for the award of BS degree in Data Science.
6. The minimum duration for completion of BS in Data Science is four years. The HEC allows maximum period of seven years to complete the BS degree requirements.

New Scheme of BS (DS) Program as Per HEC Recommendations 2023
7. Core means Computing Core.
8. Domain Core means Data Science Core.
9. Domain Elective means Data Science Elective.
10. GER means General Education Requirement.
11. Math's & Supporting means Mathematics and Supporting Courses.
12. SS means Social Science.

Semester-1

Course Code	Title	Domain	Credit Hours
CS 3504	Computer Programming	Core	4(3+1)
CS3503	Applications of Information & Communication Technologies	GER	3(2+1)

MATH 3516	Discrete Mathematics	GER- QR 1	3(3+0)
MATH 3502	Calculus-I	GER- QR 2	3(3+0)
ENGL3505	Functional English	GER	3(3+0)
MATH 3517	Pre- Calculus- 1	Deficiency Course	N/C
Total Credit Hours			**16 (14+2)**

Semester-2

Course Code	Title	Domain	Credit Hours
CS 3506	Object Oriented Programming	Core	4(3+1)
CS 3507	Database Systems	Core	4(3+1)
CS 3508	Digital Logic Design	Core	3(2+1)
MATH 3509	Calculus-II	Maths	3(3+0)
MATH 3512	Linear Algebra	Maths	3(3+0)
MATH 3518	Pre- Calculus-2	Deficiency Course	N/C
Total Credit Hours			**17 (14+3)**

Semester-3

Course Code	Title	Domain	Credit Hours
CS 4521	Data Structures	Core	4(3+1)
CS 4522	Information Security	Core	3(2+1)
CS 5423	artificial Intelligence	Core	3(2+1)
CS 4524	Computer Networks		3(2+1)
CS 4525	Software Engineering	Core	3(3+0)
STAT 4509	Probability & Statistics	Maths	3(3+0)
Total Credit Hours			**19 (15+4)**

Semester-4

Course Code	Title	Domain	Credit Hours
CS 4526	Computer Organization & Assembly Language	Core	3(2+1)
CS 4529	Introduction to data science	Damian Core	3(2+1)
CS 4550	Advance Statistics	Damian Core	3(2+1)
PHY 4509	Applied Physics	GER	3(2+1)
ENGL3504	Expository Writing	GER	3(3+0)
ITHC3501/ HADH3501	Islamic Studies/Ethics	GER	2(2+0)
PKST 3501	Pak. Studies	GER	2(2+0)
Total Credit Hours			**19 (13+6)**

Semester-5

Course Code	Title	Domain	Credit Hours
CS 5502	Operating Systems	Core	3(2+1)
STAT6511	Data Mining	Damian Core	3(2+1)
CS 6514	Data Visualization	Damian Core	3(2+1)
CS 6502	Analysis and Design of Algorithms	Core	3(3+0)
	Domin Elective I	Damian Elective	**3(2+1)**
MGT3504	Introduction to Management	GER	2(2+0)
TESR	Fahm-E-Quran	Non-	(NC)

3501	(Tajwid, Translation and Tafsir)	Credit	
Total Credit Hours			**17 (13+4)**

Semester-6

Course Code	Title	Domain	Credit Hours
CS 6508	Information Technology Infrastructure		3(2+1)
CS 5506	Parallel & Distributed Computing		3(2+1)
-	Domain Elective 2	Domain Elective	3(2+1)
-	Domain Elective 3	Domain Elective	3(2+1)
-	Domain Elective 4	Domain Elective	3(2+1)
-	Domain Elective 5	Domain Elective	3(2+1)
SERT 3501	Seerat-e-Tayyaba	Non-Credit	(NC)
Total Credit Hours			**18 (12+6)**

Semester-7

Course Code	Title	Domain	Credit Hours
CS 6501	Final Year Project - I	Core	2(0+2)
-	Domain Elective 6	Domain Elective	3(2+1)
-	Domain Elective 7	Domain Elective	3(2+1)
CS 6503	IT Marketing	SS	3(3+0)
	Concepts		
ENGL 3503	Technical & Business Writing	Math's & Supp.	3(3+0)
MGT3503	Entrepreneurship	GER	2(2+0)
CS 6507	Internship	-	3 (0+3)
Total Credit Hours			**19 (12+7)**

Semester-8

Course Code	Title	Domain	Credit Hours
CS 6504	Final Year Project -II	Core	4 (0+4)
PKST3502	Ideology and Constitution of Pakistan	GER	2(2+0)
CS 6506	Professional Practices	GER	2(2+0)
SOC3503	Civics and Community Engagement	GER	2(2+0)
Total Credit Hours			**10 (6+4)**

Bs (Data Science) Elective Lists

Domain Elective 01

	Code Course (HEC) 2023	Cr.Hrs.
CS 5521	Big Data Analytics	3(2+1)
	Total Credit Hours	**3(2+1)**

Domain Elective 02-05

Code	Code Course (HEC) 2023	Cr.Hrs.
CS 5501	Machine Learning	3(2+1)
CS 6514	Artificial Neural Networks & Deep Learning	3(2+1)
CS 4527	Theory of Automata	3(2+1)

CS 6512	Human Couter Interaction	3(2+1)
	Total Credit Hours	**12(8+4)**

Domain Elective 06-07

Code	Code Course (HEC) 2023	Cr.Hrs.
CS 4528	Advance Database Management System	3(2+1)
CS 6515	Topics in Data Science	3(2+1)
	Total Credit Hours	**6(4+2)**

Fee Tariff

Item	-
Registration Fee: (At the time of 01st admission)	Rs. 650/-
Admission Fee: (At the time of 01st admission)	Rs. 1300/-
Degree Fee (Once at time of admission)	Rs. 1500/-
Technology Fee (Each semester)	Rs. 800/-
Fee for 1 Credit Hour Course 2600*16	RS.41600/-
Lab Fee	Rs.7100/-
Total Fee for First Semester	**Rs. 52950/-**

BS (Artificial Intelligence) Program
(Programme Code 5088)

Introduction:

In this era of machine intelligence and robotics, artificial intelligence is the need of the time. The Department of Computer Science, in keeping with the needs of the modern education requirement in technology, is introducing a Bachelors in Artificial Intelligence program. The BS (Artificial Intelligence) gives the students an in-depth knowledge they need to transform large and complex scenarios into actionable decisions. The program and its curriculum focus on how complex inputs such as knowledge, vision, language and huge databases can be used to make decisions to enhance human capabilities. The curriculum of the BS (AI) program includes coursework in computing, mathematics, automated reasoning, statistics, computational modeling, introduction to classical artificial intelligence languages and case studies, knowledge representation and reasoning, artificial neural networks, machine learning, natural language processing, vision and symbolic computation. The program also encourages students to take courses in ethics and social responsibility, with the opportunity to participate in long term projects in which artificial intelligence.

Program Objectives:

1. Develop proficiency in programming languages used in Artificial Intelligence.
2. Develop strong mathematical skills to understand and to analyze the different paradigms of Artificial Intelligence.
3. Learn to manipulate complex input such as knowledge, vision, language etc. to make decisions.

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4. Develop an understanding of data ethics and privacy issues in Artificial Intelligence.
5. Learn to develop new frameworks for solving different problems.

Program Features:
1. The updated BS(AI) is a 135 credit hours program and may be completed in minimum four years (eight semesters).
2. Two semesters are offered in a year, Spring and Autumn.
3. Duration of each semester is 18 weeks.
4. Program is In-line with HEC.

Mode of Teaching:
The program is offered in Face-to-Face Mode.

Merit/Non-Merit:
The BS(AI) program is a merit-based program.

Assessment Criteria on page IV

The 70% percent attendance is mandatory in each course.

Eligibility:
Minimum 50% marks in Intermediate/12 years schooling/A-Level (HSSC) or Equivalent with Mathematics are required for admission in BS(AI). Equivalency certificate by IBCC will be required in case of education from some other country or system. The students who have not studied Mathematics at intermediate level have to pass deficiency courses of Mathematics ((non-credit)) in first two semesters.

Selection Criteria:
Admission will be given to all candidates satisfying the eligibility and merit criteria, subject to a viable group of students.

Award of BS(AI) Degree(Minimum CGPA/Pass Percentage Requirement):

Scheme of Study:
1. A minimum 2.0 CGPA on a scale of 4.0 or 50% passing marks is required for the award of a BS Artificial Intelligence Degree.
2. At a minimum, 135 credit hours are required for the award of BS degree in Artificial Intelligence.
3. The minimum duration for completion of BS in Artificial Intelligence is four years. The HEC allows maximum period of seven years to complete the BS degree requirements.

New Scheme of BS(AI) Program as Per HEC Recommendations 2023
1. Core means Computing Core.
2. Domain Core means Artificial Intelligence Core.
3. Domain Elective means Artificial Intelligence Elective.
4. GER means General Education Requirement.
5. Math's & Supporting means Mathematics and Supporting Courses.
6. SS means Social Science.

S#	Code	Course Title	Domain	Cre. Hrs.
		Semester 1		
1	CS3504	Computer Programming	Core	4(3+1)
2	CS3503	Applications of Information & Communication Technologies	GER	3(2+1)
3	MATH3516	Discrete Mathematics	GER-QR1	3(3+0)
4	MATH3502	Calculus-I	GER-QR2	3(3+0)

5	ENGL3505	Functional English	GER	3(3+0)
		Total Credit Hours		**16(14+2)**

Semester 2				
1	CS3506	Object Oriented Programming	Core	4(3+1)
2	CS3507	Database Systems	Core	4(3+1)
3	CS3508	Digital Logic Design	Core	3(2+1)
4	MATH3509	Calculus-II	Maths	3(3+0)
5	MATH3512	Linear Algebra	Maths	3(3+0)
		Total Credit Hours		**17(14+3)**
Semester 3				
1	CS4521	Data Structures and Algorithms	Core	4(3+1)
2	CS4522	Information Security	Core	3(2+1)
3	CS4523	Artificial Intelligence	Core	3(2+1)
4	CS4524	Computer Networks	Core	3(2+1)
5	CS4525	Software Engineering	Core	3(3+0)
6	STAT4509	Statistics & Probability	Maths	3(3+0)
		Total Credit Hours		**19 (15+4)**
Semester 4				
1	CS4526	Computer Organization & Assembly Language	Core	3(2+1)
2	CS4531	Programming for AI	Domain Core	3(2+1)

3	CS5501	Machine Learning	Domain Core	3(2+1)
4	PHY4509	Applied Physics	GER	3(2+1)
5	ENGL3504	Expository Writing	GER	3(3+0)
6	ITHC3501/ HADH3501	Islamic Studies/Ethics	GER	2(2+0)
7	PKST 3501	Pak. Studies	GER	2(2+0)
		Total Credit Hours		**19 (13+4)**

Semester 5				
1	CS5502	Operating Systems	Core	3(2+1)
2	CS6514	Artificial Neural Networks & Deep learning	Domain Core	3(2+1)
3	CS5522	Knowledge Representation and Reasoning	Domain Core	3(2+1)
4	CS6502	Analysis and Design of Algorithms	Core	3(3+0)
5	-	Domain Elective 1	Domain Elective	3(2+1)
6	MGT3504	Introduction to Management	GER	2(2+0)
7	TFSR3501	Fahm-E-Quran (Tajwid, Translation & Tafsir)	Non-Credit	(NC)

Semester 6				
1	CS6516	Computer Vision	Domain Core	3(2+1)
2	CS5506	Parallel & Distributed Computing	Domain Core	3(2+1)
3	-	Domain Elective 2	Domain	3(2+1)

			Elective	
4	-	Domain Elective 3	Domain Elective	3(2+1)
5	-	Domain Elective 4	Domain Elective	3(2+1)
6	-	Domain Elective 5	Domain Elective	3(2+1)
7	SERT3501	Seerat-e-Tayyaba	Non-Credit	(NC)
		Total Credit Hours		**18 (12+6)**

Semester 7				
1	CS6501	Final Year Project - I	Core	2(0+2)
2	-	Domain Elective 6	Domain Elective	3(2+1)
3	-	Domain Elective 7	Domain Elective	3(2+1)
4	CS6503	IT Marketing Concepts	SS	3(3+0)
5	ENGL3503	Technical & Business Writing	Math's & Supp.	3(3+0)
6	MGT3503	Entrepreneurship	GER	2(2+0)
7	CS6507	Internship	-	3 (0+3)
		Total Credit Hours		**19(12+7)**

Semester 8				
1	CS6504	Final Year Project -II	Core	4 (0+4)
2	PKST3502	Ideology and Constitution of Pakistan	GER	2(2+0)
3	CS6506	Professional Practices	GER	2(2+0)
4	SOC3503	Civics and Community Engagement	GER	2(2+0)
		Total Credit Hours		**10(6+4)**

BS (Artificial Intelligence) Elective List (Domain Electives):

Domain Elective 01			
S#	Code	Course Title (HEC) 2023	Cr. Hrs.
1.	STAT6511	Data Mining	3(2+1)
		Total Credit Hours	**3(2+1)**

Domain Elective 02-05			
S#	Code	Course Title (HEC) 2023	Cr. Hrs.
1.	CS6517	Swarm Intelligence	3(2+1)
2.	CS6518	Fuzzy Systems	3(2+1)
3.	CS6519	Reinforcement Learning	3(2+1)
4.	CS6520	Advance Statistics	3(2+1)
		Total Credit Hours	**12(8+4)**

Domain Elective 06-07			
S#	Code	Course Title (HEC) 2023	Cr. Hrs.
1.	CS6521	Natural Language Processing	3(2+1)
2.	CS4527	Theory of Automata	3(2+1)
		Total Credit Hours	**6(4+2)**

Fee Tariff

Item	-
Registration Fee: (At the time of 01st admission)	Rs. 650/-
Admission Fee: (At the time of 01st admission)	Rs. 1300/-
Degree Fee (Once at time of admission)	Rs. 1500/-
Technology Fee (Each semester)	Rs. 800/-
Fee for 1 Credit Hour Course 2600*16	RS.41600/-
Lab Fee	Rs. 7100/-
Total Fee for First Semester	**Rs.52950/-**

BS (Artificial Intelligence)
(Program Code 5089) (WDC)

Introduction:

In this era of machine intelligence and robotics, artificial intelligence is the need of the time. The Department of Computer Science, in keeping with the needs of the modern education requirement in technology, is introducing a Bachelors in Artificial Intelligence program. The BS (Artificial Intelligence) gives the students an in-depth knowledge they need to transform large and complex scenarios into actionable decisions. The program and its curriculum focus on how complex inputs such as knowledge, vision, language and huge databases can be used to make decisions to enhance human capabilities. The curriculum of the BS (AI) program includes coursework in computing, mathematics, automated reasoning, statistics, computational modeling, introduction to classical artificial intelligence languages and case studies, knowledge representation and reasoning, artificial neural networks, machine learning, natural language processing, vision and symbolic computation. The program also encourages students to take courses in ethics and social responsibility, with the opportunity to participate in long term projects in which artificial intelligence.

Program Objectives:

6. Develop proficiency in programming languages used in Artificial Intelligence.
7. Develop strong mathematical skills to understand and to analyze the different paradigms of Artificial Intelligence.
8. Learn to manipulate complex input such as knowledge, vision, language etc. to make decisions.
9. Develop an understanding of data ethics and privacy issues in Artificial Intelligence.
10. Learn to develop new frameworks for solving different problems.

Program Features:

5. The updated BS(AI) is a 135 credit hours program and may be completed in minimum four years (eight semesters).
6. Two semesters are offered in a year, Spring and Autumn.
7. Duration of each semester is 18 weeks.
8. Program is In-line with HEC.

Mode of Teaching:

The program is offered in Face-to-Face Mode.

Merit/Non-Merit:

The BS(AI) program is a merit-based program.

Assessment Criteria on page IV

The 70% percent attendance is mandatory in each course.

Eligibility:

Minimum 50% marks in Intermediate/12 years schooling/A-Level (HSSC) or Equivalent with Mathematics are required

for admission in BS(AI). Equivalency certificate by IBCC will be required in case of education from some other country or system. The students who have not studied Mathematics at intermediate level have to pass deficiency courses of Mathematics ((non-credit)) in first two semesters.

Selection Criteria:

Admission will be given to all candidates satisfying the eligibility and merit criteria, subject to a viable group of students.

Award of BS(AI) Degree(Minimum CGPA/Pass Percentage Requirement):

Scheme of Study:

4. A minimum 2.0 CGPA on a scale of 4.0 or 50% passing marks is required for the award of a BS Artificial Intelligence Degree.
5. At a minimum, 135 credit hours are required for the award of BS degree in Artificial Intelligence.
6. The minimum duration for completion of BS in Artificial Intelligence is four years. The HEC allows maximum period of seven years to complete the BS degree requirements.

New Scheme of BS(AI) Program as Per HEC Recommendations 2023

7. Core means Computing Core.
8. Domain Core means Artificial Intelligence Core.
9. Domain Elective means Artificial Intelligence Elective.
10. GER means General Education Requirement.
11. Math's & Supporting means Mathematics and Supporting Courses.
12. SS means Social Science.

S#	Code	Course Title	Domain	Cre. Hrs.
		Semester 1		
1	CS3504	Computer Programming	Core	4(3+1)
2	CS3503	Applications of Information & Communication Technologies	GER	3(2+1)
3	MATH3516	Discrete Mathematics	GER-QR1	3(3+0)
4	MATH3502	Calculus-I	GER-QR2	3(3+0)
5	ENGL3505	Functional English	GER	3(3+0)
6	MAH 3517	Pre- Calculus-1	Deficiency Course	N/C
		Total Credit Hours		**16(14+2)**

		Semester 2		
1	CS3506	Object Oriented Programming	Core	4(3+1)
2	CS3507	Database Systems	Core	4(3+1)
3	CS3508	Digital Logic Design	Core	3(2+1)
4	MATH3509	Calculus-II	Maths	3(3+0)
5	MATH3512	Linear Algebra	Maths	3(3+0)
6	MATH 3518	Pre- Calculus-2	Deficiency Course	N/C
		Total Credit Hours		**17(14+3)**
		Semester 3		
1	CS4521	Data Structures and Algorithms	Core	4(3+1)
2	CS4522	Information Security	Core	3(2+1)

3	CS4523	Artificial Intelligence	Core	3(2+1)
4	CS4524	Computer Networks	Core	3(2+1)
5	CS4525	Software Engineering	Core	3(3+0)
6	STAT4509	Statistics & Probability	Maths	3(3+0)
		Total Credit Hours		**19 (15+4)**

4	CS6502	Analysis and Design of Algorithms	Core	3(3+0)
5	-	Domain Elective 1	Domain Elective	3(2+1)
6	MGT3504	Introduction to Management	GER	2(2+0)
7	TFSR3501	Fahm-E-Quran (Tajwid, Translation & Tafsir)	Non-Credit	(NC)

Semester 4				
1	CS4526	Computer Organization & Assembly Language	Core	3(2+1)
2	CS4531	Programming for AI	Domain Core	3(2+1)
3	CS5501	Machine Learning	Domain Core	3(2+1)
4	PHY4509	Applied Physics	GER	3(2+1)
5	ENGL3504	Expository Writing	GER	3(3+0)
6	ITHC3501/ HADH3501	Islamic Studies/Ethics	GER	2(2+0)
7	PKST 3501	Pak. Studies	GER	2(2+0)
		Total Credit Hours		**19 (13+4)**

Semester 6				
1	CS6516	Computer Vision	Domain Core	3(2+1)
2	CS5506	Parallel & Distributed Computing	Domain Core	3(2+1)
3	-	Domain Elective 2	Domain Elective	3(2+1)
4	-	Domain Elective 3	Domain Elective	3(2+1)
5	-	Domain Elective 4	Domain Elective	3(2+1)
6	-	Domain Elective 5	Domain Elective	3(2+1)
7	SERT3501	Seerat-e-Tayyaba	Non-Credit	(NC)
		Total Credit Hours		**18 (12+6)**

Semester 5				
1	CS5502	Operating Systems	Core	3(2+1)
2	CS6514	Artificial Neural Networks & Deep learning	Domain Core	3(2+1)
3	CS5522	Knowledge Representation and Reasoning	Domain Core	3(2+1)

		Semester 7		
1	CS6501	Final Year Project - I	Core	2(0+2)
2	-	Domain Elective 6	Domain Elective	3(2+1)
3	-	Domain Elective 7	Domain Elective	3(2+1)
4	CS6503	IT Marketing Concepts	SS	3(3+0)
5	ENGL3503	Technical & Business Writing	Math's & Supp.	3(3+0)
6	MGT3503	Entrepreneurship	GER	2(2+0)
7	CS6507	Internship	-	3 (0+3)
		Total Credit Hours		**19(12+7)**

		Semester 8		
1	CS6504	Final Year Project -II	Core	4 (0+4)
2	PKST3502	Ideology and Constitution of Pakistan	GER	2(2+0)
3	CS6506	Professional Practices	GER	2(2+0)
4	SOC3503	Civics and Community Engagement	GER	2(2+0)
		Total Credit Hours		**10(6+4)**

BS (Artificial Intelligence) Elective List (Domain Electives):

Domain Elective 01			
S#	Code	Course Title (HEC) 2023	Cr. Hrs.
2.	STAT6511	Data Mining	3(2+1)
		Total Credit Hours	**3(2+1)**
Domain Elective 02-05			

S#	Code	Course Title (HEC) 2023	Cr. Hrs.
5.	CS6517	Swarm Intelligence	3(2+1)
6.	CS6518	Fuzzy Systems	3(2+1)
7.	CS6519	Reinforcement Learning	3(2+1)
8.	CS6520	Advance Statistics	3(2+1)
		Total Credit Hours	**12(8+4)**
Domain Elective 06-07			
S#	Code	Course Title (HEC) 2023	Cr. Hrs.
3.	CS6521	Natural Language Processing	3(2+1)
4.	CS4527	Theory of Automata	3(2+1)
		Total Credit Hours	**6(4+2)**

4. Fee Tariff

Item	-
Registration Fee: (At the time of 01st admission)	Rs. 650/-
Admission Fee: (At the time of 01st admission)	Rs. 1300/-
Degree Fee (Once at time of admission)	Rs. 1500/-
Technology Fee (Each semester)	Rs. 800/-
Fee for 1 Credit Hour Course 2600*16	RS. 41600/-
Lab Fee	Rs. 7100/-
Total Fee for First Semester	**Rs. 52950/-**

BS CYBER SECURITY
Programme Code 5096

Introduction

The aim of the BS (Cyber Security) program is to train competent professionals who can grasp the procedures influencing information security, protect valuable information assets, gather and preserve digital evidence, analyze data, and detect and resolve security weaknesses. By impartins fundamental computer science knowledge crucial for the field, the program emphasizes hands-on learning through practical exercises in security-related courses. It's an advanced program merging Cyber Security expertise tise with contemporary technology and practical situations, geared towards ensuring graduates are well-prepared for immediate success in the industry.

Program Objective:

1. Contribute conmpetently in the computing industry by applying requisite technical skills.

2. Demonstrate advancement in computing profession by enhancing their knowledge and skills.

3. Demonstrate ethical values and contribute positively towards the society

Program Features

- Low-cost high-quality education.
- Highly qualified faculty.
- Curriculum in-line with HEC
- State of the art lab facility.

Mode of Teaching:

The program is offered in Face-to-Face Mode.

Merit/Non-Merit:

The BS (Cyber Security) program is a merit-based program.

Eligibility Criteria:

Minimum 50% marks in Intermediate/12 years schooling/A-Level (HSSC) or Equivalent with Mathematics are required for admission in BS(CySec). Equivalency certificate by IBCC will be required in case of education from some other country or system. The students who have not studied Mathematics at intermediate level have to pass deficiency courses of Mathematics ((non-credit)) in first two semesters.

The students who have not studied Mathematics at intermediate level have to pass deficiency courses of Mathematics (06 credits) in first two semesters.

Sr. No	Course Title	Remarks
1	Course No.1	NC
2	Course No.2	NC
These are noncredit courses their evaluation will be reflected in the final transcript as PASS/FAIL.		

The departmental admission committee shall determine the eligibility accordingly.

Selection Criteria:

Admission will be given to all candidates satisfying the eligibility and merit criteria, subject to a viable group of students.

Assessment Criteria: For General Course

Continuous (Pass Percentage is 50%)		Final (Pass percentage is 50%)
Assignment	Midterm	
20%	30%	50%

For Lab Course:

Continuous (Pass Percentage is 50%)			Final (Pass percentage is 50%)
Assignment	Midterm	Lab Practical	
20%	15%	15%	50%

The 70% percent attendance is mandatory in each course.

Award of BS (Cyber Security) Degree (Minimum CGPA/Pass Percentage Requirement):
1. A minimum 2.0 CGPA on a scale of 4.0 or 50% passing marks is required for the award of a BS Cyber Security Degree.
2. At a minimum, 133 credit hours are required for the award of BS degree in Cyber Security
3. The minimum duration for completion of BS in Cyber Security is four years. The HEC allows maximum period of seven years to complete the BS degree requirements.

New Scheme of BS (Cyber Security) Program as Per HEC Recommendations 2023
1. Core means Computing Core.
2. Domain Core means Cyber Security Core.
3. Domain Elective means Cyber Security Elective.
4. GER means General Education Requirement.

5. Math's & Supporting means Mathematics and Supporting Courses.
6. SS means Social Science.

Semester 1			
Code	**Title**	**Credit Hours**	**Remarks**
CS3504	Computer Programming	4 (3+1)	Core
CS3503	Application of Information & Communication Technology	3(2+1)	GOR
MATH3516	Discrete Mathematics	3(3+0)	GER-QR1
MATH3502	Calculus-1	3(3+0)	GER-QR2
ENGL3505	Functional English	3(3+0)	GER
Credit Hours		**16 (14+2)**	

Semester 2			
CS3506	Object Oriented Programming	4(3+1)	Core
CS3507	Database Systems	4(3+1)	Core
CS3508	Digital Logic Design	3(2+1)	Core
MATH3509	Calculus-11	3(3+0)	Maths
MATH3512	Linear Algebra	3(3+0)	Maths
	Credit Hours	**17 (14+3)**	

Semester 3			
CS4521	Data Structures and Algorithms	4(3+1)	Core
CS4522	Information Security	3(2+1)	Core
CS4523	Artificial Intelligence	3(2+1)	Core

CS4524	Computer Networks	3(2+1)	Core
CS4525	Software Engineering	3(3+0)	Core
STAT4509	Statistics & Probability	3(3+0)	Maths
Credit Hours	19 (15+4)		

	Management		
TFSR3501	Fahm-E-Quran (Tajwid, Translation and Tafsir)	Non-Credit	(NC)
	Credit Hours	**17 (13+04)**	

Semester 4			
CS35026	Computer Organization & Assembly Language	3(2+1)	Core
CS5512	Cyber Security	3(2+1)	Domain Core
CS4532	Information Assurance	3(2+1)	Domain Core
PHY4509	Applied Physics	3(2+1)	GER
ENGL3504	Expository Writing	3(3+0)	GER
ITHC3501/HADH3501	Islamic Studies/ Ethics	2(2+0)	GER
	Credit Hours	**17 (13+4)**	

Semester 6			
CS5525	Ditital Forensic	3(2+1)	Domain Core
CS5506	Parallel & Distributed Computing	3(2+1)	Domain Core
	Domain Elective 2	3(2+1)	Domain Core
	Domain Elective 3	3(2+1)	Domain Core
	Domain Elective 4	3(2+1)	Domain Core
	Domain Elective 5	3(2+1)	Domain Core
SERT3501	Seerat-E- Tayyaba	Non-Credit	(NC)
	Credit Hours	**18 (12+6)**	

Semester 5			
CS3502	Operating Systems	3(2+1)	Core
CS6500	Network Security	3(3+0)	Domain Core
CS6501	Secure Software Design & Development	3(2+1)	Domain Core
CS6502	Analysis & Design of Algorithms	3(3+0)	Core
	Domain Elective 1	3(2+1)	Domain Elective
MGT3504	Introduction to	2(2+0)	GER

Semester 7			
CS6501	Final Year Project-1	2(0+2)	Core
	Domain Elective 6	3(2+1)	Domain elective
	Domain Elective 7	3(2+1)	Domain elective
CS6503	It Marketing Concepts	3 (3+0)	SS

ENGL3503	Technical and Business Writing	3 (3+0)	Math,s & Su pp
MGT3503	Entrepreneurship	2(2+0)	GER
CS6507	Internship	3(0+3)	
	Credit Hours	**19 (12+7)_**	

Semester 8			
CS6504	Final Year Project - 11	4(0+4)	Core
PKST3502	Ideology and Constitution of Pakistan	2(2+0)	GER
CS6506	Professional Practices	2(2+0)	GER
SOC3503	Civics and Community Engagement	2(2+0)	GER
	Credit Hours	**10 (6+4)**	

Domain Elective 01		
	Code Course (HEC) 2023	**Cr.Hrs.**
CS 5524	Penetration Testing	3(2+1)
	Total Credit Hours	**3(2+1)**
Domain Elective 02-05		
Code	**Code Course (HEC) 2023**	**Cr.Hrs.**
CS 4527	Theory of Automata	3(2+1)
CS 5526	Cyber Law & Cyber Crime	3(3+0)
CS 5527	Wireless and Mobile Security	3(2+1)
CS 5504	Computer Architecture	2(2+0)
	Total Credit Hours	**12(8+4)**

Domain Elective 06-07		
Code	**Code Course (HEC) 2023**	**Cr.Hrs.**
CS 6522	Vulnerability assessment & Reverse Engineering	3(2+1)
CS 6523	Hardware Security	3(2+1)
	Total Credit Hours	**6(4+2)**

Fee Tariff

Item	Rates
Registration Fee (Once at time of admission)	Rs.650/-
Admission Fee (Once at time of admission)	Rs.1300/-
Degree Fee (Once at time of admission)	Rs.1500/-
Technology Fee	Rs.800/-
Per 1 Credit course 2600 x 16	41600/-
LAB CHARGES	7100/-
Total	**52950/-**

BS CYBER SECURITY
Programme Code 5097 (WDC)

Introduction

The aim of the BS (Cyber Security) program is to train competent professionals who can grasp the procedures influencing information security, protect valuable information assets, gather and preserve digital evidence, analyze data, and detect and resolve security weaknesses. By impartins fundamental computer science knowledge crucial for the field, the program emphasizes hands-on learning through practical exercises in security-related courses. It's an advanced program merging Cyber Security expertise with contemporary technology and practical situations, geared towards ensuring graduates are well-prepared for immediate success in the industry.

Program Objective:

1. Contribute conmpetently in the computing industry by applying requisite technical skills.

2. Demonstrate advancement in computing profession by enhancing their knowledge and skills.

3. Demonstrate ethical values and contribute positively towards the society

Program Features
- Low-cost high-quality education.
- Highly qualified faculty.
- Curriculum in-line with HEC
- State of the art lab facility.

Mode of Teaching:

The program is offered in Face-to-Face Mode.

Merit/Non-Merit:

The BS (Cyber Security) program is a merit-based program.

Eligibility Criteria:

Minimum 50% marks in Intermediate/12 years schooling/A-Level (HSSC) or Equivalent with Mathematics are required for admission in BS(CySec). Equivalency certificate by IBCC will be required in case of education from some other country or system. The students who have not studied Mathematics at intermediate level have to pass deficiency courses of Mathematics ((non-credit)) in first two semesters.

The students who have not studied Mathematics at intermediate level have to pass deficiency courses of Mathematics (06 credits) in first two semesters.

Sr. No	Course Title	Remarks
1	Course No.1	NC
2	Course No.2	NC
These are noncredit courses their evaluation will be reflected in the final transcript as PASS/FAIL.		

The departmental admission committee shall determine the eligibility accordingly.

Selection Criteria:

Admission will be given to all candidates satisfying the eligibility and merit criteria, subject to a viable group of students.

Assessment Criteria: For General Course

Continuous (Pass Percentage is 50%)		Final (Pass percentage is 50%)
Assignment	Midterm	
20%	30%	50%

For Lab Course:

Continuous (Pass Percentage is 50%)			Final (Pass percentage is 50%)
Assignment	Midterm	Lab Practical	
20%	15%	15%	50%

The 70% percent attendance is mandatory in each course.

Award of BS (Cyber Security) Degree (Minimum CGPA/Pass Percentage Requirement):

1. A minimum 2.0 CGPA on a scale of 4.0 or 50% passing marks is required for the award of a BS Cyber Security Degree.
2. At a minimum, 133 credit hours are required for the award of BS degree in Cyber Security
3. The minimum duration for completion of BS in Cyber Security is four years. The HEC allows maximum period of seven years to complete the BS degree requirements.

New Scheme of BS (Cyber Security) Program as Per HEC Recommendations 2023

1. Core means Computing Core.
2. Domain Core means Cyber Security Core.
3. Domain Elective means Cyber Security Elective.
4. GER means General Education Requirement.

5. Math's & Supporting means Mathematics and Supporting Courses.
6. SS means Social Science.

Semester 1			
Code	**Title**	**Credit Hours**	**Remarks**
CS3504	Computer Programming	4 (3+1)	Core
CS3503	Application of Information & Communication Technology	3(2+1)	GOR
MATH3516	Discrete Mathematics	3(3+0)	GER-QR1
MATH3502	Calculus-1	3(3+0)	GER-QR2
ENGL3505	Functional English	3(3+0)	GER
MATH 3517	Pre- Calculus 1	Deficiency Course	N/C
	Credit Hours	**16 (14+2)**	

Semester 2			
CS3506	Object Oriented Programming	4(3+1)	Core
CS3507	Database Systems	4(3+1)	Core
CS3508	Digital Logic Design	3(2+1)	Core
MATH3509	Calculus-11	3(3+0)	Maths
MATH3512	Linear Algebra	3(3+0)	Maths
MATH 3518	Pre-Calculus 2	Deficiency Course	N/C
	Credit Hours	**17 (14+3)**	

Semester 3			
CS4521	Data Structures and Algorithms	4(3+1)	Core
CS4522	Information Security	3(2+1)	Core

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CS4523	Artificial Intelligence	3(2+1)	Core
CS4524	Computer Networks	3(2+1)	Core
CS4525	Software Engineering	3(3+0)	Core
STAT4509	Statistics & Probability	3(3+0)	Maths
	Credit Hours	**19 (15+4)**	

Semester 4			
CS 4526	Computer Organization & Assembly Language	3(2+1)	Core
CS5512	Cyber Security	3(2+1)	Domain Core
CS4532	Information Assurance	3(2+1)	Domain Core
PHY4509	Applied Physics	3(2+1)	GER
ENGL3504	Expository Writing	3(3+0)	GER
ITHC3501/HADH 3501	Islamic Studies/ Ethics	2(2+0)	GER
	Credit Hours	**17 (13+4)**	

Semester 5			
CS3502	Operating Systems	3(2+1)	Core
CS6509	Network Security	3(3+0)	Domain Core
CS 5523	Secure Software Design & Development	3(2+1)	Domain Core
CS6502	Analysis & Design of Algorithms	3(3+0)	Core
	Domain Elective 1	3(2+1)	Domain Elective
MGT3504	Introduction to Management	2(2+0)	GER
TFSR3501	Fahm-E-Quran	Non-Credit	(NC)

	(Tajwid, Translation and Tafsir)		
	Credit Hours	**17 (13+04)**	

Semester 6			
CS5525	Ditital Forensic	3(2+1)	Domain Core
CS5506	Parallel & Distributed Computing	3(2+1)	Domain Core
	Domain Elective 2	3(2+1)	Domain Core
	Domain Elective 3	3(2+1)	Domain Core
	Domain Elective 4	3(2+1)	Domain Core
	Domain Elective 5	3(2+1)	Domain Core
SERT3501	Seerat-E- Tayyaba	Non-Credit	(NC)
	Credit Hours	**18 (12+6)**	

Semester 7			
CS6501	Final Year Project-1	2(0+2)	Core
	Domain Elective 6	3(2+1)	Domain elective
	Domain Elective 7	3(2+1)	Domain elective
CS6503	It Marketing Concepts	3 (3+0)	SS
ENGL3503	Technical and Business Writing	3 (3+0)	Math,s & Su pp
MGT3503	Entrepreneurship	2(2+0)	GER
CS6507	Internship	3(0+3)	
	Credit Hours	**19 (12+7)_**	

Semester 8			
CS6504	Final Year Project - 11	4(0+4)	Core
PKST3502	Ideology and Constitution of Pakistan	2(2+0)	GER
CS6506	Professional Practices	2(2+0)	GER
SOC3503	Civics and Community Engagement	2(2+0)	GER
	Credit Hours	10 (6+4)	

Domain Elective 01

	Code Course (HEC) 2023	Cr.Hrs.
CS 5524	Penetration Testing	3(2+1)
	Total Credit Hours	3(2+1)

Domain Elective 02-05

Code	Code Course (HEC) 2023	Cr.Hrs.
CS 4527	Theory of Automata	3(2+1)
CS 5526	Cyber Law & Cyber Crime	3(3+0)
CS 5527	Wireless and Mobile Security	3(2+1)
CS 5504	Computer Architecture	2(2+0)
	Total Credit Hours	12(8+4)

Domain Elective 06-07

Code	Code Course (HEC) 2023	Cr.Hrs.
CS 6522	Vulnerability assessment & Reverse Engineering	3(2+1)
CS 6523	Hardware Security	3(2+1)
	Total Credit Hours	6(4+2)

Fee Tariff

Item	Rates
Registration Fee (Once at time of admission)	Rs.650/-
Admission Fee (Once at time of admission)	Rs.1300/-
Degree Fee (Once at time of admission)	Rs.1500/-
Technology Fee	Rs.800/-
Per 1 Credit course 2600 x 16	41600/-
LAB CHARGES	7100/-
Total	**52950/-**

BS SOFTWARE ENGINEERING
(Programme Code 5092)

Assessment Criteria:
As per AIOU AP&CP Notification No.F.21-171/2024-Reg/377 Dated 9 August 2024.

Attendance:
As per AIOU define criteria.

Eligibility:
- Minimum 50% marks in Intermediate/12 years schooling/A-Level (HSSC) or Equivalent with Mathes are required for admission in BS (SE).
- Equivalency certificate by IBCC will be required in case of education from some other country or sy
- The students who have not studied Mathematics at intermediate level have to pass deficiency course Mathematics (non-credits) in first two semesters.

Selection Criteria:
Admission will be given to all candidates satisfying the eligibility, subject to a viable group of students.

Award of BS (SE) Degree (Minimum CGPA/Pass Percentage Requirement);
1. The degree will be issued as per AIOU implemented criteria
2. At a minimum, 133 credit hours are required for the award of BS degree in Software Engineering 3 The minimum duration for completion of BS in Software Engineering is four years. The HEC allows maximum period of seven years to complete the BS degree requirements.

Domains Abbreviations and their meanings in BS (SE)
1. Core means Computing Core subject.
2. Domain Core means Software Engineering Core.
3. Domain Elective means Software Engineering Elective.
4. GER means General Education Requirement.
5. Math's & Supporting means Mathematics and Supporting Courses.
6. SS means Social Science.

Scheme of Study BS (SE):

Code	Course Title	Domain	Credit Hours		
			Theory	Lab	Total
Semester 1					
CS3503	Applications of Information & communication Technology	GER	2	1	3
PKST3502	Ideology and constitution of Pakistan	GER	2	0	2
ENGL3505	Functional English	GER	3	0	3
ITHC3501/HADH3501	Islamic Studies/Ethics	GER	2	0	2
MATH3516	Discrete Mathematics	GER-QRI	3	0	3
PHY4509	Applied Physics	GER	2	1	3
Credit Hours			Non Credit		
		Total	14	2	16

	Semester 2				
CS3504	Computer Programming	Core	3	1	4
CS4525	Software Engineering	Core	3	0	3
CS3508	Digital Logic Design	Core	2	1	3
ENGL3503	Technical & Business Writing	Math,s & Supp	3	0	3
MATH3502	Calculus-1	Ger-QR2	3	0	3
			Non Credit		
		Total	**14**	**2**	**16**

	Semester 3				
CS3506	Object Oriented Programming	Core	3	1	4
CS4537	Software Quality Engineering	Dom.core	2	1	3
CS4526	Computer Organization & Assembly Language	Core	2	1	3
CS55007	Web Technologies	Dom.Elec.	2	1	3
CS4512	Statistics & Probability	Math,s &* Supp	3	0	3
SOC3503	Civics and Community engagement	GER	2	0	2
		Total	14	4	18

	Semester 4				
CS3507	Database System	Core	3	1	4
CS5517	Object Oriente4d Analysis & Design	Dom,Elec.	2	1	3
CS4521	Data Structured and	Core	3	1	4

	Algorithms				
MGT3504	Introduction to Management	GER	2	1	3
CS5503	HCI n& Computer Graphics	Dom.Elec.	2	1	3
MATH3509	Calculus-11	Math,s & Supp	3	0	3
		Total	15	4	19

	Semester 5				
CS5502	Operating System	Core	2	1	3
CS4522	Software Design & Architecture	Dom. Core	3	0	3
CS5508	Mobile Application Development 1	Dom. Elec.	2	1	3
CS4524	Computer Networks	Core	2	1	3
CS4523	Artificial Intelligence	Core	2	1	3
MATH3512	Linear Algebra	Math,s & Supp	3	0	3
SERT3501	Seerat-e-Tayyaba	Non Credit			
		Total	14	4	18

	Semester 6				
CS5521	Software Construction & Development	Dom.Core	2	1	3
CS5522	Software Requirement Engineering	Dom.Core	2	1	3
CS6502	Analysis and Design of Algorithms	Core	3	0	3
CS5504	Computer Architecture	Dom. Elec	2	1	3
CS4527	Theory of Automata	Dom. Elec	2	1	3

CS4522	Information Security	Core	2	1	3
TFSR3501	Fahm-E-Quran (Tajwid, Translation & Tafsir)	N/C			
		Total	13	5	18

Semester 7					
CS 6501	Final Year Project-1	Core	0	2	2
CS 5615	Software Project Management	Dom.Core	2	1	3
CS 5506	Parallel & Distributed Computing	Dom.Core	2	1	3
ENGL 3504	Expository Writing	GER	3	0	3
MGT 3503	Entrepreneurship	GER	2	0	3
CS 6507	Internship		0	3	3
		Total	9	7	16

Semester 8					
CS 6504	Final Year Project-II	Core	0	4	4
CS 6516	Software re-Engineering	Dom Dlec.	2	1	3
CS 6503	IT Marketing Concepts	SS	3	0	3
CS 6506	Professional Practices	GER	2	0	2
		Total	7	5	12

Fee Tariff

Item	Rates
Registration Fee (Once at time of admission)	Rs.650/-
Admission Fee (Once at time of admission)	Rs.1300/-
Degree Fee (Once at time of admission)	Rs.1500/-
Technology Fee	Rs.800/-
Per 1 Credit course 2600 x 16	41600/-

LAB CHARGES	7100/-
Total	**52950/-**

BS SOFTWARE ENGINEERING
(Programme Code 5093) (WDC)

Assessment Criteria:
As per AIOU AP&CP Notification No.F.21-171/2024-Reg/377 Dated 9 August 2024.

Attendance:
As per AIOU define criteria.

Eligibility:
- Minimum 50% marks in Intermediate/12 years schooling/A-Level (HSSC) or Equivalent with Mathes are required for admission in BS (SE).
- Equivalency certificate by IBCC will be required in case of education from some other country or sy
- The students who have not studied Mathematics at intermediate level have to pass deficiency course Mathematics (non-credits) in first two semesters.

Selection Criteria:
Admission will be given to all candidates satisfying the eligibility, subject to a viable group of students.

Award of BS (SE) Degree (Minimum CGPA/Pass Percentage Requirement);
1. The degree will be issued as per AIOU implemented criteria
2. At a minimum, 133 credit hours are required for the award of BS degree in Software Engineering 3 The minimum duration for completion of BS in Software Engineering is

four years. The HEC allows maximum period of seven years to complete the BS degree requirements.

Domains Abbreviations and their meanings in BS (SE)
1. Core means Computing Core subject.
2. Domain Core means Software Engineering Core.
3. Domain Elective means Software Engineering Elective.
4. GER means General Education Requirement.
5. Math's & Supporting means Mathematics and Supporting Courses.
6. SS means Social Science.

Scheme of Study BS (SE):

Code	Course Title	Domain	Credit Hours		
			Theory	Lab	Total
Semester 1					
CS3503	Applications of Information & communication Technology	GER	2	1	3
PKST3502	Ideology and constitution of Pakistan	GER	2	0	2
ENGL3505	Functional English	GER	3	0	3
ITHC3501/HADH3501	Islamic Studies/Ethics	GER	2	0	2
MATH3516	Discrete Mathematics	GER-QRI	3	0	3
PHY4509	Applied Physics	GER	2	1	3
MATH 3517	Pre-Calculus-1	Def. Course	2	1	3
Credit Hours			Non Credit		
		Total	**14**	**2**	**16**

Semester 2					
CS3504	Computer Programming	Core	3	1	4
CS4525	Software Engineering	Core	3	0	3
CS3508	Digital Logic Design	Core	2	1	3
ENGL3503	Technical & Business Writing	Math,s & Supp	3	0	3
MATH3502	Calculus-1	Ger-QR2	3	0	3
MATH 3518	Pre- Calculus-2	Def. Course	NC	0	0
			Non Credit		
		Total	**14**	**2**	**16**

Semester 3					
CS3506	Object Oriented Programming	Core	3	1	4
CS4537	Software Quality Engineering	Dom.core	2	1	3
CS4526	Computer Organization & Assembly Language	Core	2	1	3
CS55007	Web Technologies	Dom.Elec.	2	1	3
CS4512	Statistics & Probability	Math,s &* Supp	3	0	3
SOC3503	Civics and Community engagement	GER	2	0	2
		Total	**14**	**4**	**18**

Semester 4					
CS3507	Database System	Core	3	1	4
CS5517	Object Oriente4d Analysis & Design	Dom,Elec.	2	1	3
CS4521	Data Structured and Algorithms	Core	3	1	4
MGT3504	Introduction to Management	GER	2	1	3
CS5503	HCI n& Computer Graphics	Dom.Elec.	2	1	3
MATH3509	Calculus-11	Math,s & Supp	3	0	3

		Total	**15**	**4**	**19**

		Semester 5			
CS5502	Operating System	Core	2	1	3
CS4522	Software Design & Architecture	Dom. Core	3	0	3
CS5508	Mobile Application Development 1	Dom. Elec.	2	1	3
CS4524	Computer Networks	Core	2	1	3
CS4523	Artificial Intelligence	Core	2	1	3
MATH3512	Linear Algebra	Math,s & Supp	3	0	3
SERT3501	Seerat -e- Tayyaba	Non Credit			
		Total	**14**	**4**	**18**
		Semester 6			
CS5521	Software Construction & Development	Dom.Core	2	1	3
CS5522	Software Requirement Engineering	Dom.Core	2	1	3
CS6502	Analysis and Design of Algorithms	Core	3	0	3
CS5504	Computer Architecture	Dom. Elec	2	1	3
CS4527	Theory of Automata	Dom. Elec	2	1	3
CS4522	Information Security	Core	2	1	3
TFSR3501	Fahm-E-Quran (Tajwid, Translation & Tafsir)	N/C			
		Total	**13**	**5**	**18**

		Semester 7			
CS 6501	Final Year Project-1	Core	0	2	2
CS 6515	Software Project Management	Dom.Core	2	1	3
CS 5506	Parallel & Distributed Computing	Dom.Core	2	1	3
ENGL 3504	Expository Writing	GER	3	0	3
MGT 3503	Entrepreneurship	GER	2	0	3

CS 6507	Internship		0	3	3
		Total	**9**	**7**	**16**
		Semester 8			
CS 6504	Final Year Project-II	Core	0	4	4
CS 6516	Software re-Engineering	Dom Dlec.	2	1	3
CS 6503	IT Marketing Concepts	SS	3	0	3
CS 6506	Professional Practices	GER	2	0	2
		Total	**7**	**5**	**12**

Fee Tariff

Item	Rates
Registration Fee (Once at time of admission)	Rs.650/-
Admission Fee (Once at time of admission)	Rs.1300/-
Degree Fee (Once at time of admission)	Rs.1500/-
Technology Fee	Rs.800/-
Per 1 Credit course 2600 x 16	41600/-
LAB CHARGES	7100/-
Total	**52950/-**

DEPARTMENT OF AGRICULTURAL SCIENCES

Department of Agricultural Sciences (DAS) is making earnest efforts aiming at supplementing, supporting and re-enforcing extension services and offering agriculture related programs at different levels. Agriculture progress in most developing countries has mainly involved an increase in the production of staple crops, the introduction of industrial crops and development of livestock production. One cannot deny the importance of livestock because it produces a huge quantity of food, such as beef, mutton, poultry meat, milk, yogurt and lot of other milk, and animal byproducts. Millions of acres are still being cultivated with the help of farm animals in this mechanized era. At present, higher education in agriculture is imparted by four formal agricultural universities in Pakistan, which are not catering in-service personnel. The AIOU conducted a survey to get an idea about the higher education in Livestock Management Agricultural Extension, Forestry Extension and Rural Development and received a positive response from candidates who could not improve their qualification from formal Agricultural Universities for one or other reason and are now working in different governmental departments and NGOs. DAS has decided to offer MSc (Hons) Rural Development through distance teaching system, especially for those who could not enhance their qualification through formal system.

Objectives

To help literate farmers and rural communities generally to improve their everyday farming operations and basic skills; to improve the level of knowledge and skills of field extension staff by drawing on the latest research findings and expertise at the national and international levels; to help in adoption and diffusion of improved technology among the farming population. To promote human resource development in agriculture and its related fields. Supplementing, supporting and reinforcing extension services and offering agriculture related programs at different levels.

Scheme of studies of B.Sc. (Hons.) Agriculture (Programme Code 5067)

Salient Features of the Program

- **Eligibility Criteria**: Pre-medical & Pre-engineering or diploma holders (3-year Diploma of field assistant or in field of agriculture) from national and international HEC recognized institutions.
- **Program Duration**: 08 semesters spread over 04 years
- **Medium of Instruction**: The medium of instructions and examinations will be in English
- **Mode of Learning**: This program shall be offered on Face to Face Mode
- **Degree Requirement**: 128 Credit Hours (After completing the four semesters, the students will have the option to opt one discipline from Horticulture, Agronomy and Soil Science.

Scheme of Studies

Semester 1

Name of Subject	Academic Cluster	Credit Hours	Course Code
Functional English	Functional English	3(3+0)	ENGL3505
Ideology and Constitution of Pakistan	Ideology and Constitution	2(2+0)	PKST3502
Quantitative Reasoning	Quantitative Reasoning-I	3(3+0)	MATH3508
Islamic Studies	Islamic Studies /	2(2+0)	ITHC3501/HADH

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/ Ethics	Ethics		3501
Pakistani Adab-1	Arts and Humanities	2(2+0)	URD3503
Cell Biology	Interdisciplinary	3 (2+1)	BIO 3507
Total		**15**	**Credit Hours**

Semester 2

Name of Subject	Academic Cluster	Credit Hours	Course Code
Quantitative Reasoning-II	Quantitative Reasoning-II	3(3+0)	MATH4505
Application of Information Communication & Technologies	ICT	3(2+1)	CS3503
Expository Writing	Expository Writing	3(3+0)	ENGL3504
Civics and Community Engagement	Civics and Community Engagement	2(2+0)	SOC3503
Introduction to sociology	Social Sciences	2(2+0)	SOC3506
Introduction to Agriculture Extension	Major	3 (3+0)	AGSI3506
Pak. Studies	GE	2(2+0)	PKST 3501
Total		**18**	**Credit Hours**

Semester 3

Name of Subject	Academic Cluster	Credit Hours	Course Code
Entrepreneurship	Entrepreneurship	2(2+0)	MGT3503
Basics of	Natural Sciences	3(2+1)	ENVS4501

Environmental Science			
Basic Agriculture	Major	3(2+1)	AGSI3501
Introduction to Plant Breeding and Genetics	Major	3(2+1)	AGSI4507
Introduction to Animal Husbandry	Interdisciplinary	3(2+1)	AGSI3502
Introductory Horticulture	Major	3(2+1)	AGSI4508
Total		**17**	**Credit Hours**

Semester 4

Name of Subject	Academic Cluster	Credit Hours	Course Code
Horticultural Crop Production	Major	3(2+1)	AGSI4504
Field Crop Production	Major	3(2+1)	AGSI4509
Introductory Entomology	Major	3(2+1)	AGSI4510
Introduction to Soil Science	Major	3(2+1)	AGSI4511
Introductory Plant Pathology	Major	3(2+1)	AGSI4512
Forestry and Range Management	Major	3(2+1)	AGSI4513
Total		**18**	**Credit Hours**

Major Horticulture 5th Semester

Name of Subject	Academic Cluster	Credit Hours	Course Code
Principles of Fruit Production	Major	3(2+1)	AGSI5513
Principles of	Major	3(2+1)	AGSI5514

Vegetable Production			
Principles of Ornamental Crop Production	Major	3(2+1)	AGSI5515
Propagation and Nursery Management	Major	3(2+1)	AGSI5516
In Vitro Propagation	Major	3(2+1)	AGSI5517
Breeding of Horticultural Crops	Major	3(2+1)	AGSI5518
Fahm-e- Quran, Tajwid Translation and Tafsir	Compulsory course	Noncredit	TFSR3501
		18	**Credit Hours**

6th Semester

Name of Subject	Academic Cluster	Credit Hours	Course Code
Tropical and Sub-Tropical Fruits	Major	3(2+1)	AGSI5519
Summer Vegetables	Major	3(2+1)	AGSI5520
Landscape Horticulture	Major	3(2+1)	AGSI5521
Medicinal and Aromatic Plants	Major	3(2+1)	AGSI5522
Post-Harvest Horticulture	Major	3(2+1)	AGSI5523
Mushroom Culture	Major	3(2+1)	AGSI5524
Seerat-e-Tayyaba	Compulsory course	Noncredit	SERT3501
		18	**Credit Hours**

7th Semester

Name of Subject	Academic Cluster	Credit Hours	Course Code
Research and Scientific Writing	Interdisciplinary	3(2+1)	AGSI6508
Temperate Fruits	Major	3(2+1)	AGSI6509
Winter Vegetables	Major	3 (2+1)	AGSI6510
Commercial Flower Production	Major	3 (2+1)	AGSI6511
Vegetable and Flower Seed Production	Major	3(2+1)	AGSI6512
Agribusiness, Marketing, and Trade	Interdisciplinary	3(3+0)	AGSI6513
		18	**Credit Hours**

8th Semester

Name of Subject	Academic Cluster	Credit Hours	Course Code
Internship	Major	3(0+3)	AGSI6514
Capstone Project	Major	3(0+3)	AGSI6515
		6	**Credit Hours**
Grand Total		**130 Credit Hours**	

Major Agronomy
5th Semester

Name of Subject	Academic Cluster	Credit Hours	Course Code
Plant Nutrients and Growth Regulators	Major	3(2+1)	AGSI5525
Agro-technology of Major Field Crops	Major	3(2+1)	AGSI5526

Name of Subject	Academic Cluster	Credit Hours	Course Code
Irrigation Agronomy	Major	3(2+1)	AGSI5527
Field Crop Physiology	Major	3(2+1)	AGSI5528
Agro-Ecology	Major	3(3+0)	AGSI5529
Arid and Rainfed Agriculture	Major	3(2+1)	AGSI5530
Fahm-e- Quran, Tajwid Translation and Tafsir	Compulsory course	Noncredit	TFSR3501
		18	**Credit Hours**

6th Semester

Name of Subject	Academic Cluster	Credit Hours	Course Code
Crop Management under stressful Environments	Major	3(2+1)	AGSI5531
Seed Production Technology	Major	3(2+1)	AGSI5532
Introduction to Weed Science	Major	3(2+1)	AGSI5533
Conservation Agronomy	Major	3(2+1)	AGSI5534
Climate Change and Crop Production	Major	3(2+1)	AGSI5535
Climate Smart Agriculture in Pakistan	Major	3(3+0)	AGSI5512
Seerat-e-Tayyaba	Compulsory course	Noncredit	SERT3501
		18	**Credit Hours**

7th Semester

Name of Subject	Academic Cluster	Credit Hours	Course Code
Forage and Fodder Production	Major	3(2+1)	AGSI6516
Research and Scientific Writing	Interdisciplinary	3(2+1)	AGSI6517
Principles of Weed Science	Major	3(2+1)	AGSI6518
Farming system and Record Management	Major	3(2+1)	AGSI6519
Agribusiness, Marketing, and Trade	Interdisciplinary	3(3+0)	AGSI6520
Organic Farming	Major	3(2+1)	AGSI6521
		18	**Credit Hours**

8th Semester

Name of Subject	Academic Cluster	Credit Hours	Course Code
Internship	Major	3(0+3)	AGSI6514
Capstone Project	Major	3(0+3)	AGSI6515
		6	**Credit Hours**
		130 Credit Hours	

Major Soil Science
5th Semester

Name of Subject	Academic Cluster	Credit Hours	Course Code
Trace Elements in Agriculture	Major	3(2+1)	AGSI5536
Physical Properties of Soil	Major	3(2+1)	AGSI5537

Chemical Properties of Soil	Major	3(2+1)	AGSI5538
Instrumentation and Laboratory Techniques	Major	3(1+2)	AGSI5539
Soil Genesis and Morphology	Major	3(2+1)	AGSI5540
Municipal and Agro Waste Management	Major	3(3+0)	AGSI5508
Fahm-e- Quran, Tajwid Translation and Tafsir	Compulsory course	Noncredit	TFSR3501
		18	**Credit Hours**

6th Semester

Name of Subject	Academic Cluster	Credit Hours	Course Code
Salt-Affected Soils and Water Quality	Major	3(2+1)	AGSI5541
Soil Fertility and Fertilizer Use	Major	3(2+1)	AGSI5542
Soil Survey and Land Evaluation	Major	3(2+1)	AGSI5543
Soil and Water Conservation	Major	3(2+1)	AGSI5544
Plant Resource Utilization	Major	3(2+1)	AGSI5509
Climate Smart Agriculture in Pakistan	Major	3(3+0)	AGSI5512
Seerat-e-Tayyaba	Compulsory course	Noncredit	SERT3501
		18	**Credit Hours**

7th Semester

Name of Subject	Academic Cluster	Credit Hours	Course Code
Soil Microbiology	Major	3(2+1)	AGSI6522
Research and Scientific Writing	Interdisciplinary	3(2+1)	AGSI6523
Soil - Water - Plant Relationship	Major	3 (3+0)	AGSI6524
Land Degradation and Management	Major	3 (3+0)	AGSI6525
Agribusiness, Marketing, and Trade	Interdisciplinary	3 (3+0)	AGSI6526
Carbon Sequestration in Soil	Major	3(2+1)	AGSI6527
		18	**Credit Hours**

8th Semester

Name of Subject	Academic Cluster	Credit Hours	Course Code
Internship	Major	3(0+3)	AGSI6514
Capstone Project	Major	3(0+3)	AGSI6515
Total		**6**	**Credit Hours**
Grand Total		**130 Credit Hours**	

Evaluation and Assessment
See page vi

Fee Tariff

Registration Fee	Rs. 650/-
Admission Fee	Rs. 1300/-
Degree Fee (Once at time of admission)	Rs. 1500/-
Technology Fee	Rs. 800/-
Fee for per 1 credit hour2600 x 15	Rs. 39000/-
Lab Fee	Rs. 3300/-
Total Fee	**Rs. 46550/-**

FACULTY OF EDUCATION

The origin of the Faculty of Education pre-dates the university itself. The National Institute of Education was established in 1973 under the Federal Ministry of Education. It became part of the university in June, 1975 as Institute of Education in the then Faculty of Social Sciences. The progressively extending functions of the institute brought the needs for structural change and in 1984 it got the status of Faculty of Education.

DEPARTMENTS OF THE FACULTY

Faculty of Education Comprises of the following Six Departments:
1.   Distance, Non-Formal and Continuing Education
2.   Educational Planning, Policy Studies and Leadership
3.   Early Childhood Education and Elementary Teacher Education
4.   Secondary Teacher Education
5.   Science Education
6.   Special Education

Distance, Non Formal Education and Continuing Education

The department was established in 1984 and was later renamed as Distance, Non Formal and Continuing Education This department offers PhD, MPhil, Masters and specialized courses in B.Ed 1.5 program. The department also offers certificate courses in literacy and non-formal education.

Educational Planning, Policy Studies and Leadership (EPPSL)

The department was established in 1976 was renamed as EPPSL in 2008. It offers programs in educational planning management and leadership. These programs are aimed at producing a managerial cadre of professionals for the educational institutions and organizations in the country. Programs of EPPSL include B.Ed, Postgraduate Diploma, MA (EPM), MPhil and PhD in Educational Planning and Management as well as online courses. The courses of these programs are in accordance with the field requirements of target personnel in the areas of educational planning, management and leadership.

Secondary Teacher Education

The Department of Teacher Education was established in 1985 and was bifurcated into Secondary and Elementary Teacher Education Departments in July 2003. Its programs aim at imparting academic and professional knowledge and training to in-services and pre service teachers and scholars.

The programs/courses of this department comprise MA, MEd BEd (4 years) and BS Instructional Design and Technology as professional degree programs. The department also offers MPhil and PhD in Education, which are aimed to prepare highly skilled professionals and leaderships in the field of teacher education.

Early Childhood Education and Elementary Teacher Education

The Department of Elementary Teacher Education was established in 2003. In April 2008, the name of Elementary

Teacher Education Department was changed as Early Childhood Education and Elementary Teacher Education Department. The Department offers Associate Degree in Education, Post Graduate Diploma in ECE, BEd (1.5 year), BEd (2.5), BEd (4 years), MPhil and PhD program, it also offers "Education" as subject at Matric, Intermediate and Graduate level. The department is planning to launch, BS (ECCE) and Certificate of Entrepreneurship in ECCE. The department also plans to offer non-credit research courses and postgraduate diploma for teaching in higher education.

Science Education

The Department of Science Education was established in 1988. The programs and courses of the department are mainly focused on education and training of mathematics and science teachers. Presently the department offers specialized courses in science education at undergraduate and postgraduate level. Specialized courses provide conceptual framework and insight into the teaching of science. The department offers BEd (4 year) BEd (2.5 year) and specialization of Science Education in BEd (1.5 year) and MEd. MPhil and PhD programs; in science education are also offered at the department.

Special Education

The Department was established in 1985. The department imparts education and training to teachers for the special children in four specializations namely visual impairment, hearing impairment, intellectual disabilities, physical disabilities and mental retardation with particular emphasis to facilitate inclusive education. Parents of the special children are also admitted to these programs. Present programs/courses

of this department comprise B.Ed (4 years), MEd, MA, MPhil and PhD in the field of Special Education.

BS HEALTH AND PHYSICAL EDUCATION (5063)

Program Name:	BS Health and Physical Education
Duration of Program:	4 Years (8 Semesters)
Admission Criteria	FA/F.Sc or equivalent
Semester Duration:	16-18 Weeks
Total Credit Hours:	136 (Theory= 113 & Practical= 23)
Medium of Instruction:	English
Mode of Delivery:	Face to Face
Passing Marks (Assignment/Exam):	50% / As per AIOU policy

Rationale

The Program in BS Health and Physical Education is an essential need of Pakistan in the current socio-political scenario. The program will indirectly contribute to promoting tolerance and mutual co-existence in society. Therefore, the government of Pakistan has introduced the

program as per National Policy and one compulsory seat of physical education instructor/ teacher has also been created in every school and college.

Allama Iqbal Open University in collaboration with the Pakistan Sports Board had already successful experience of offering the diploma, graduate, and postgraduate programs in Physical Education in 2006, which were accordingly approved by all the Statutory bodies of AIOU. The program provided face-to-face education and intensive practical training at the multifarious sports infrastructure spread over the vast Pakistan sports complex.

STED plans to launch BS Health and Physical Education, initially, the program was approved on blended mode and the scheme of studies was approved by all statuary bodies. Based upon HEC Undergraduate Policy 2023 Scheme of Studies has been revised.

All the modalities related to admission, fee structure, hiring study center (human and physical resources), formative and summative assessment, and certification will be as per the BS policy of AIOU.

Objectives of the Program
In the era of the educational revolution, the main objective of the BS (4-Years) program in Health and Physical Education is to prepare graduates to have a deep knowledge of the subjects as well as the ability to analyze a given situation and draw conclusions. The program aims to produce a broad base of graduates able to face the challenges of the modern world.

The Educational objectives of the program are:

- BS Health and Physical Education is designed to produce graduates with sound knowledge of the theoretical and practical subject matter.
- Along with the knowledge of the subject they would also have a broader view of other disciplines of social as well as physical sciences. It will enable the students to interact with other branches of knowledge and strengthen their understanding of society.
- The graduates are equipped with essential tools and techniques of research. It will enable them to analyze any given situation/ issue and suggest possible solutions.
- The graduates are to be empowered to establish and develop a viable and forceful line between theory/concepts and practice in Physical Education and Sport Sciences.
- The collective efforts behind this course are to create cohesiveness among the institutions and personnel of sports and physical education.
  - The similarity among the outlines has been developed to interrelate the discipline in the global perspective creating an environment of healthy competition and equal opportunities for all at national and international levels.

Modus Operandi:

The program will be offered initially in collaboration with PSB/Regional Directors/Relevant Institutions.

- Physical classes of practical courses will be held at the institutions/ practical centers with indoor and outdoor sports facilities.
- Regional directors may arrange the study centers with the availability of sports infrastructures to run the program in their regions.
- The department will monitor classes/practicals to ensure and maintain program quality.

Entry Qualification and Selection Criteria for Admission

FA/F.Sc or Equivalent is the eligibility criteria.

Semester-wise Break-up of Scheme of Studies

Course Code	Course Title	Credit Hours	Nature
SEMESTER 1			
ENGL3505	Functional English	3+0	GC
MATH3508	Quantitative Reasoning-I	3+0	GC
5950	Philosophical Basis of Physical Education	3+0	MC
5951	Rules And Techniques of Games	3+0	MC
5952	Games-I	1+1	MC
5953	Athletics-I	1+1	MC
Total Credit Hours (Theory + Practical) 14+2 =16			
SEMESTER 2			
ENGL3504	Expository Writing	3+0	GC
ITHC3501/ HADH3501	Islamic Studies/Ethics	2+0	GC
ENVS4501	Basics of Environmental Sciences	2+1	GC
5955	Sports Bio Mechanics	3+0	MC
5956	Games-II	1+1	MC
5957	Athletics-II	1+1	MC
5958	Gymnastic-I	0+1	MC
Total Credit Hours (Theory + Practical) 12+4 =16			
SEMESTER 3			
PKST3502	Ideology and Constitution of Pakistan	3+0	GC
CS3503	Application of Information and Communication Technologies	2+1	GC
5959	Talent Identification in Sports	3+0	MC
5961	Games-III	1+1	MC
5962	Athletics-III	1+1	MC
MATH4505	Quantitative Reasoning II	3+0	GC
URD3503	Urdu Adab-1	2+0	GC
Total Credit Hours (Theory + Practical) 15+3=18			
SEMESTER 4			
SOC3503	Civics and Community Engagement	2+0	GC
5976	Sport Psychology	3+0	MC

Code	Course	Credit Hours	Category
5964	Administration and Management in Sports	3+0	MC
SOC3506	Introduction to Sociology	3+0	GC
5967	Games IV	0+1	MC
5968	Practical Athletics-IV	0+1	MC
MGT3503	Entrepreneurship	2+0	GC
PKST 3501	Pak. Studies	2+0	
Total Credit Hours (Theory + Practical)13+2=15+2=17			

SEMESTER 5

Code	Course	Credit Hours	Category
5969	Science of Sports Training	3+0	MC
6413	Introduction to Inclusive Education	3+0	IDC
5971	Physical Education for Special Population	3+0	MC
5970	Sports Nutrition	3+0	MC
5966	Basics of Human Physiology	3+0	MC
5963	Gymnastic-II	1+1	MC
TFSR3501	Fahm-e-Quran (Tajwid, Translation and Tafsir)	-	Non-Credit
Total Credit Hours (Theory + Practical) 16+ 1 =17			

SEMESTER 6

Code	Course	Credit Hours	Category
5972	Specialization in one group of Track and Field	1+2	MC
9452	Introduction to Social Work	3+0	IDC

Code	Course	Credit Hours	Category
5973	Research Methodology in Physical Education	3+0	MC
5954	Biochemistry	3+0	MC
5975	Test, Measurement, and Evaluation in Sports	3+0	MC
SERT3501	Seerat-e-Tayyaba	-	Non-Credit
5947	Internship	0+3	Internship
Total Credit Hours (Theory + Practical) 13+5=18			

SEMESTER 7

Code	Course	Credit Hours	Category
5978	Common Sports Injuries & Common Treatment and Rehabilitation	3+0	MC
5980	Role of Media in Sports	3+0	MC
5974	Planning Sports Facilities	3+0	MC
8611	Critical Thinking & Reflective Practices	3+0	IDC
5981	Scientific Sport Coaching	3+0	MC
5982	Specialization in one game	1+2	MC
Total Credit Hours (Theory + Practical) 16+2=18			

SEMESTER 8

Code	Course	Credit Hours	Category
5984	Sports Medicines	3+0	MC
5979	Exercise Physiology	2+1	MC
8255	Organizational Behavior	3+0	IDC
5985	Curriculum Development in Physical Education	3+0	MC

5986	Wellness and Fitness /Fitness	3+0	MC
5948	Capstone Project	0+3	CP
Total Credit Hours (Theory + Practical) **14+4=18**			

GC= General Education Cluster = 12 Courses offered in first 4 semesters

MC= Major Course= 33 Courses (15 in first 4 semesters and 18 in the last 4 semesters)

IDC= Interdisciplinary Course=   4
Courses offered in last 4 semesters

Non Credit=   2
Courses offered in 5th and 6th Semesters

Internship
        Offered in 6th Semester

CP= Capstone Project
        Offered in 8th Semester

Assessment Criteria

Fee Tariff

Registration Fee	Rs. 650/-
Admission Fee	Rs. 1300/-
Degree Fee (Once at time of admission)	Rs. 1500/-
Technology Fee	Rs. 800/-
Fee for per 1 credit hour 2600*16	Rs. 41600/-
Total Fee	**Rs. 45850/-**

BS INSTRUCTIONAL DESIGN AND TECHNOLOGY PROGRAMME (5062)

Secondary Teacher Education Department (STED)

Introduction

In increasingly technology-driven educational landscape, it is imperative that 21st century learners upgrade their skills and become proficient in the use of technology in every walk of life and to effectively facilitate the learning process. Educators and other professionals therefore must be able to design, deliver and manage learning environments both face-to-face and online. While embracing this paradigm shift of technology, Secondary Teacher Education Department (STED) has launching BS Education in Instructional Design and Technology Program. Overall this program focuses on instructional design process, learning theories, models, strategies, media, communication delivery models and interactive technologies, web designing and programming etc. Therefore, using the principles and practices of adult education, this program concentrates on following three areas:

- Building a foundation and conceptual framework for educational and instructional design process.
- Developing instructional strategies and skills to facilitate adult learning.
- Using media, web and other ICTs to support learning.

Program Name   B.S Instructional Design and Technology

Programme Duration: 4 years (8 Semesters)

Admission Criteria   FA/F.Sc or equivalent

Semester Duration: 16-18 weeks

Total Programme Credit Hours   **134 Credit Hours**

Total Number of courses: 47 courses including Internship and Research Project

Medium of Instruction: English

Delivery Mode: Face to Face

Pass Marks: 50%

Semester-wise Break-up of BS Instructional Design and Technology Program for Face to Face Offering

SEMESTER 1

Sr. No	Course Code	Courses	Nature of Course	Credit Hours (Theory + Practical)
1.	ENGL3505	Functional English	GE1	3+0
2.	PKST3502	Ideology and Constitution of Pakistan	GE 2	2+0
3.	MATH3508	Quantitative Reasoning-I	GE 3	3+0
4.	8247	Educational Psychology & Guidance	D 1	3+0
5.	8248	Technology and Learning	D 2	3+0
6.	CS3503	Application of Information and Communication Technologies	D 3	2+1
Total Credit Hours				**16+01=17**

SEMESTER 2				
Sr. No	Course Code	Courses	Nature of Course	Credit Hours (Theory + Practical)
1.	8257	Introduction to Instructional Design	D 4	3+0
2.	8252	Learning Styles and Learning Environment	D5	3+0
3.	8253	Curriculum and Instruction	D 6	3+0
4.	ENVS 4501	Basics of Environmental Sciences	GE4	2+1
5.	8254	Classroom Management	D7	3+0
6.	8334	Introduction to Web Based Instructions	D8	3+0
Total Credit Hours				**17+1=18**

SEMESTER 3

Sr. No	Course Code	Courses	Nature of Course	Credit Hours (Theory + Practical)
1.	6900	Computer Programming	GE9	2+0
2.	MATH 4505	Quantitative Reasoning II	D11	3+1
3.	8263	Instructional Strategies and Assessment Methods	D12	3+0
4.	ENGL 3504	Expository Writing	GE 11	2+0
5.	MGT 3503	Entrepreneurship	GE12	2+0
6.	MGT 3504	Introduction to Management		2+0
		Total Credit Hours		**16+01=17**

SEMESTER 4

Sr. No	Course Code	Courses	Nature of Course	Credit Hours (Theory + Practical)
1	ITHC/3501 HADH3501	Islamic Studies/Ethics	GE9	2+0
2	6902	Object Oriented Programming	D11	3+1
3	8251	Introduction to Open Educational	D12	3+0

		Resources		
4	SOC3503	Civics & Community Engagement	GE 11	2+0
5	URD3503	Pakistani Adab -I	GE12	2+0
6	PKST 3501	Pakistan Studies	GE12	2+0
		Total Credit Hours	**14+1=15**	

SEMESTER 5

Sr. No	Course Code	Courses	Nature of Course	Credit Hours (Theory + Practical)
1.	8261	Educational Research and Statistics	D13	3+0
2.	8262	Education in Pakistan	D14	3+0
3.	5908	Web Design-I (website design & development)	IDI	3+1
4.	8269	Learning Management Systems and Organizations	D12	
5.	3499	Mobile Application Development	ID2	2+1
6.	8270	Developing Instructional Media	D15	3+0
7.	TFSR3501	Fahm-e-Quran (Tajwid,	Compulsory	0+3

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Sr. No	Course Code	Courses	Nature of Course	Credit Hours (Theory + Practical)
		Translation and Tafsir)		
		Total Credit Hours	**17+ 02=19**	

SEMESTER 6				
Sr. No	Course Code	Courses	Nature of Course	Credit Hours (Theory + Practical)
1.	5914	Web Design-II (Advanced design & development skills)	ID3	3+1
2.	8335	Trends and Issues in Instructional Design	D16	3+0
3.	8330	Visual and Verbal Communication in Instructional Design	D17	3+0
4.	8264	Ethical use of Instructional Material (proper usage of resources)	D18	3+0
5.	8265	Internship (Institution)	Internship/ Field Experience	0+3
6.	SERT3501	Seerat-e-Tayyaba	Compulsory	**Non-credit**
		Total Credit Hours	**12+04=16**	

SEMESTER 7				
Sr. No	Course Code	Courses	Nature of Course	Credit Hours (Theory + Practical)
1.	8266	Instructional Designs: Theories and Models	D23	3+0
2.	8331	Systems Approach to Designing Instructional Materials	D24	3+0
3.	8259	Educational Measurement and Evaluation	D25	3+0
4.	8255	Organizational Behavior	ID26	3+0
5.	8332	Multi-media Applications in Education	D27	3+1
6.	5915	Internship (Software house)	D28	0+3
		Total Credit Hours	**15+04=19**	

SEMESTER 8				
Sr. No	Course Code	Courses	Nature of Course	Credit Hours (Theory + Practical)
1.	8267	Higher Education	D29	3+0
2.	8268	Future Challenges in Education	D30	3+0
3.	8333	Capstone Project	D31	0+3
4.	8258	Foundations in	D32	3+0

		Education		
		Total Credit Hours	**9+3=12**	

Fee Tariff

Registration Fee	Rs. 650/-
Admission Fee	Rs. 1300/-
Degree Fee (Once at time of admission)	Rs. 1500/-
Technology Fee	Rs. 800/-
Fee for per 1 credit hour 2600*17	Rs. 44200/-
Total Fee	**Rs. 48450/-**

Note: Department has right to change the offering of courses as per requirement.
GE= General Education   D=Major Courses from Discipline   ID=Inter disciplinary
Lab Charges will be applicable only the semester in which lab work will be involved.
Assessment Criteria
See page vi

GENERAL INFORMATION

i. The certificates/degrees of AIOU are equivalent to any other recognized Board/University.

ii. A candidate is required to submit complete admission form and upload scan documents through online system before or on the closing date.

iii. If an applicant of post-graduate/research level programme does not receive any information regarding admission within three months from submission of application, he/she should presume non-selected.

iv. A course taken by any student cannot be changed during the semester.

v. The address of a student will not be changed during the semester.

vi. Admission to courses for both the Spring and Autumn semesters are generally being offered in the months of January and July, respectively, whereas, examinations commenced in November and May respectively. The and deposit fee within due date.

vii. On payment of the registration fee, each student will be issued a student ID. This number must be quoted in all the future correspondence along with the Student, course(s), code numbers and semester.

viii. Study material shall be available on university website. University will not provide hard copy of books.

ix. Rules and regulations framed, enhanced and changed from time to time by the authorities, bodies of the university will be effective as deemed necessary. The student will have to abide by all such rules and regulations from the date of their implementation.

x. A student who fails in continuous assessment component is not eligible to reappear but will be allowed to re-enroll for the same course at its next offering semester by the university.

xi. It is the responsibility of the student to remain in touch with the department regarding the selected programme.

xii. A student already admitted to a programme or a specialization of a programme shall not be allowed to transfer or to get admission to another programme unless he/she formally postpones, it till the completion of the new programme or withdraw from the previous programme.

xiii. After completion of a programme successfully, a student has to apply to Controller of Examinations for issuance of certificate/degree.

xiv. The university reserves the right to change contents of this prospectus without any prior notice as per university policy.

xv. In case of discrepancies in the name of student/ Father's name of the student or difference in name mentioned in his/her other educational certificates, the name on the Matric certificate of the student will be considered as correct name. The Examination Department shall also issue certificate/ degree on the said name.

xvi. In case provision of forged documents for admission, not only the admission will be refused to the applicant but the fee deposited by him/her will also be forfeited. The university may proceed further in the matter.

xvii. If any mistake found in compilation or declaration of result at any stage.

xviii. If any candidate found ineligible for a degree/diploma/certificate during the cross verification process of result and documents at any stage.

xix. If found that candidate submitted forged/fake illegal documents(s) in the University at any stage.

Note: Withdrawal/ Invalid/ Revoke/ Quash of degree/ diploma/ certificate for the reasons listed above (xvii-xix) shall be made any time with no legal restriction of time period. This action shall not be challengeable in the court(s) or at any legal forum.

PROCEDURE FOR DEPOSITING FEE

- **BANKS OR THROUGH TELCOS.**
- Eligible candidates are required to deposit admission fee in any branch of the following banks:
1. First Women Bank Limited (FWBL)
2. Allied Bank Limited (ABL)
3. Muslim Commercial Bank (MCB)
4. National Bank of Pakistan (NBP)
- Fee can also be Deposited through Jazz Cash, Easy Paisa and Upaisa Mobile App/USSD String *786#, Retailer Agent, Franchise and Branches of Mobilink, Telenor and Ubank. For more detail please visit university website.
- The Banks/Mobile App/Retailer Agents/Franchise/Branches will provide Transaction ID of deposited fee.

Note: Beware that University has not authorized any person or private institute to collect payment/forms. All the students are instructed to deposit fee by themselves in designated bank branches. In case of any discrepancy in admission fee/admission form the University will not be responsible and the student will have to face the consequences.

PROCEDURE OF FEE DEPOSIT THROUGH TELECOS

Easypaisa
Through Easypaisa App

The account may be created after downloading the Easypaisa Mobile App from Playstore. For using this mode, student must have balance equal to his/her payable fee in Easypaisa mobile account. There are **no transactions charges**, if student use this mode to pay his/her fee. Following is the procedure of fee payment through Easypaisa App.

1. Login to Easypaisa App
2. Press "View All"
3. In "Payment" Section, select "Fee Collection"
4. Select "AIOU"
5. Enter "Challan Number"
6. Easypaisa App will show the payable amount & due date
7. Press "Pay Now"
8. Fee will be Paid and student will receive confirmation SMS from 3737
9. Student will write **Transaction ID** and **"Paid via Easypaisa App"** on the challan and admission form. Students are advised to keep the confirmation SMS save in phone until the receipt of intimation of admission confirmation from AIOU.

Upaisa
Through Upaisa App

The account may be created after downloading the Upaisa Mobile App from Playstore. For using this mode, student must have balance equal to his/her payable fee in Upaisa mobile account. There are **no transactions charges**, if student use this mode to pay his/her fee. Following is the procedure of fee payment through Upaisa App.

1. Login to Upaisa App
2. Please click on "Payments"
3. Click on "AIOU"
4. Enter "Challan Number"
5. Upaisa App will show the payable amount
6. Press "Pay Now"
7. Fee will be Paid and student will receive confirmation SMS
8. Student will write **Transaction ID** and **"Paid via Upaisa App"** on the challan and admission form. Students are advised to keep the confirmation SMS save in phone until the receipt of intimation of admission confirmation from AIOU.

Through USSD String *786#
The Upaisa mobile wallet account may be created by dialing *786#. For using this mode, student must have balance equal to his/her payable fee in Upaisa mobile account. There are **no transactions charges**, if student use this mode to pay his/her fee. Following is the procedure of fee payment through USSD string *786#

1. Dial *786#
2. Select "Payments"
3. Select "AIOU"
4. Enter Challan No.
5. Screen will show the payable amount
6. Student will enter his/her Mobile Number and PIN
7. Fee will be Paid &student will receive confirmation SMS

8. Student will write **Transaction ID** and **"Paid via Upaisa786 String"** on the challan and admission form. Students are advised to keep the confirmation SMS save in phone until the receipt of intimation of admission confirmation from AIOU

Jazz Cash (Through Jazzcash App)

The account may be created after downloading the Jazzcash Mobile App from Playstore. For using this mode, student must have balance equal to his/her payable fee in Jazzcash mobile account. There are **no transactions charges**, if student use this mode to pay his/her fee. Following is the procedure of fee payment through Jazzcash App.

1. Login to Jazzcash App
2. Please click on "Education Fee"
3. Select "Universities" from the Menu
4. Select "AIOU" from the Sub Menu
5. Enter "Challan Number"
6. Jazzcash App will show the payable amount and due date
7. Enter MPIN
8. Fee will be Paid &student will receive confirmation SMS
9. Student will write **Transaction ID** and **"Paid via Jazzcash App"** on the challan and admission form. Students are advised to keep the confirmation SMS save in phone until the receipt of intimation of admission confirmation from AIOU.

Through USSD String *786#

The Jazzcash mobile wallet account may be created by dialing *786#. For using this mode, student must have balance equal to his/her payable fee in Jazzcash mobile account. There are **no transactions charges**, if student use

this mode to pay his/her fee. Following is the procedure of fee payment through
USSD string *786#

1. Dial *786#
2. Select "Payments"
3. Select "Education Payments"
4. Select "AIOU"
5. Enter Challan No.
6. Screen will show the payable amount
7. Enter MPIN
8. Fee will be Paid &student will receive confirmation SMS
9. Student will write **Transaction ID** and **"Paid via Jazzcash786 String"** on the challan and admission form. Students are advised to keep the confirmation SMS save in phone until the receipt of intimation of admission confirmation from AIOU.

Through Jazzcash Agent Shop/Jazz Franchise /Mobilink Microfinance Bank Branches

Fee can also be paid by visiting any Jazzcash Agent shop, Jazz franchise and Mobilink Microfinance Bank branch. For using this mode, student has to pay **Rs.20 per transaction** in addition to the payable fee. Following is the fee payment procedure through this mode.

1. Student may visit any nearest Jazzcash Retailer (Agent) Shop, Jazz Franchise or Mobilink Microfinance Bank branch
2. Student will inform the retailer/franchisee/teller that he/she wish to pay fee of AIOU
3. Retailer/Franchisee/Teller will ask the student to share CNIC number, Mobile Number & Challan Number

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4. Retailer/Franchisee/Teller will enter the Challan Number in his Jazzcash Tab/system
5. Tab/System will show the payable amount & due date
6. Student will hand-over the fee amount to retailer/ franchisee/teller
7. Once the fee amount is handed over, the retailer/ franchisee/teller will process the fee transaction
8. Fee will be paid and student will receive confirmation SMS on mobile number. Transaction charges will be mentioned in the confirmation SMS
9. Student will write **Transaction ID** and **"Paid via Jazzcash Agent/Franchisee/Teller"** on the challan and admission form. Bank stamp will be embossed only in case the fee is paid through Mobilink Microfinance Bank branches. Students are advised to keep the confirmation SMS save in phone until the receipt of intimation of admission confirmation from AIOU.

REGULATIONS FOR REFUND OF ADMISSION FEE

i. The Applicant/candidate/student who has submitted his/her fee for Admissions but does not wish to continue and applied for refund of fee before the start of his/her study period as per Academic Calendar available on the AIOU website corresponding to his/her respective semester i.e Autumn or Spring, the fees will be refunded after the deduction @ 10% of the total fee.

ii. The Applicant/Candidate who was not eligible but deposited the fee for admission and applied for refund within one year from the date of fee deposit, the fee shall be refunded after deduction @15% of total fee.

iii. The student who has deposited his/her fee in excess of due fee that total excess amount shall be refunded or adjusted as the case may be.

iv. The Treasurer Department shall verify the fee of students and shall send the case to the Audit Department for pre-audit.

v. The cheque will be issued to the candidate by the Campus Payment Section (CPS), Treasurer's Department.

vi. In the case of death, the full fee will be refunded through crossed cheque in favour of the Blood Relative of deceased student, after fulfilling all the codal formalities. The refund case must be submitted within one year of fee deposit.

vii. In case the students who are not allowed/granted admission to a program offered by the University due to less enrollment/non formation of viable group/non offering of courses, full fee will be refunded to them.

viii. If the admission of an Applicant/Candidate is not matured due to any reason beyond the control of the

ix. University or due to unforeseen issues, the whole paid fee, without any deductions shall be refunded to the respective applicant/candidate. The refund case must be submitted within one year of fee deposit.

DISABILITY COORDINATORS:

In compliance with Higher Education Commission (HEC) revised policy i.e., "Policy for students with disabilities at HEIs in Pakistan 2021", the following Officers have been appointed as Disability Coordinators to facilitate the students with disabilities at AIOU.

Sr.#	Name of the Officer	Telephone Nos.
1.	Dr. Hira Ibrahim Medical Officer	051-9571110
2.	Mr. Umair Bin Nadeem, Assistant Director Press & Media, Directorate of Public Relations	051-9571372

IMPORTANT TELEPHONE NUMBERS

Sr.#	Name	Telephone Nos.
1.	Director Admissions	051-9250043 051-9250162 (Fax)
2.	Controller of Examinations	051-9250012
3.	Director Students Affairs	051-9250174
4.	Admission (Postgraduate)	051-9571547
Helpline: (051) 111 112 468 **Help Desk: support.aiou.edu.pk**		

PTRC ADDRESSES

S.#	Region	Regional Coordinators	Mobile #
1	Gilgit	Mr. Imtiaz Hussain, Regional Coordinator, Allama Iqbal Open University, SST, Govt. Boys High School Tehsil Danyor District Gilgit	0346-5260815
2	Gilgit	Mr. Niamatullah, Regional Coordinator, Allama Iqbal Open University, SST, Govt. Boys High School Tehsil & District Astore	0315-7331152
3	Gilgit	Mr. Mahfuzullah, Regional Coordinator, Allama Iqbal Open University, Principal, Govt.Higher Secondary School, Tehsil Darel, District Diamir	0355-5355009
4	Gilgit	Mr. Ahmad Raza, Regional Coordinator, Allama Iqbal Open University, SST, Govt.Girls High School, Tehsil Chalt, District Nagar	0346-9239995
5	Hyderabad	Mr. Khalid Nadeem, Regional Coordinator, Allama Iqbal Open University, HST, Govt. Boys High School Sanghar Tehsil Sanghar	0333-2911690
6	Hyderabad	Mr. Rasheed Ahmad, Regional Coordinator, Allama Iqbal Open University, HST, Govt. Shah Abdul Latif High School Tando Adam Tehsil Tando Adam	0333-2881340
7	Hyderabad	Mr. Muhammad Mobin, Regional Coordinator, Allama Iqbal Open University, Head Master (R), House No.B546, Qaim Khani Mohallah, Ward No. 06, Jhudo Tehsil Jhudo	0331-3891884
8	Rawalpindi	Mr. Muhammad Raza Vaince, Regional Coordinator, Allama Iqbal Open University, Senior Headmaster (Rtd.), Rakh Printing Press, Pindi Road, Tehsil Kallar Syedan, District Rawalpindi.	0300-9700563
9	Rawalpindi	Mr. Rashid Shahzad, Regional Coordinator, Allama Iqbal Open University, S.S.S., KRL Model College for Boys Tehsil Kahuta District Rawalpindi	0300-9143860
10	Rawalpindi	Mr. Ayaz Qureshi, Regional Coordinator, Allama Iqbal Open University, Incharge/Headmaster, Govt. High School PAF Base Lower Topa, Tehsil Muree District Muree.	0314-9517902
11	Rawalpindi	Mr.Danish Majeed, Regional Coordinator, Allama Iqbal Open University, Incharge/Headmaster, Govt.High School,Anwali, Tehsil Kotli Sattian, District Rawalpindi	0334-5097767

12	Rawalpindi	Dr. Muhammad Anwar, Regional Coordinator, Allama Iqbal Open University, Headmaster, Govt. High School, Bhabra Tehsil Wah Cantt District Rawalpindi.	0300-5363883
13	Rawalpindi	Mr. Shakeel Ahmed, Regional Coordinator, Allama Iqbal Open University, EST, Village & Post Office Rupper Kalan, Sub Tehsil Chakbeli Khan, District Rawalpindi.	0334-5290864
14	D.M.Jamali	Mr.Faisal Nawaz, Regional Coordinator, Allama Iqbal Open University, SST, Govt Boys High School,Mohib Ali Khabn Khosa, Dera Allah Yar Khan District Jaffarabad	0333-7342922
15	D.M.Jamali	Mr. Muhammad Yousaf Khajjak,Regional Coordinator, Allama Iqbal Open University, SST, Govt.Boys High School, Railway Colony, District Sibi	0333-7717125
16	Skardu	Mr. Mehboob Ali Abbas, Regional Coordinator, Allama Iqbal Open University, SST, Govt Boys High Tehsil & District Shigar	0321-5400098
17	Skardu	Mr. Muhammad Tayyib, Regional Coordinator, Allama Iqbal Open University, Dy.DEO, Dy.District Education Office, Tehisl & District Kharmang	0346-8116172
18	Skardu	Mr. Muhammad Ali, Regional Coordinator, Allama Iqbal Open Univesity, Principal, Govt.Model High School, Shout Tehsil Roundu Disttt.Skardu	0355-524609
19	Skardu	Mr. Ghulam Nabi, Regional Coordinator, Allama Iqbal Open Unviersity, SST, Govt.Boys High School,Tehsil Mashabrum District Ghancha	0346-1158637
20	Skardu	Mr.Muhammad, Regional Coordinator, Allama Iqbal Open University, Assistant Headmaster, Govt.Girls High School,Shgari Bala Tehsil Bamba District Skardu	0346-9555658
21	Skardu	Mr.Muhammad Ilyas Noori, Regional Coordinator, Allama Iqbal Open University,Dy.HM,Govt.Boys High School, Tehsil,Keris, District Ghanche	0312-9905901
22	Skardu	Mr.Inayat Hussain,Regional Coordinator, Allama Iqbal Open University,Principal,Govt.Boys Higher Sec.School,Tehsil Daghoni, District Ghanche	0355-4104368
23	Skardu	Mr.Ghulam Nabi,Regional Coordinator, Allama Iqbal Open University,Headmaster,Govt.High School,Hatchi,Khaplu Bala Tehsil Khaplu District Ghanche	0355-5657393

24	Skardu	Mr. Muhammad Ali, Regional Coordinator, Allama Iqbal Open Univesity, Vice Principal,Shining Star Public School, Ghursay,Tehsil Mashbroom,Distric Ghanche	0355-4115448
25	Muzaffarabad	Mr.Naseer Ahmed, Regional Coordinator, Allama Iqbal Open University, SST, C/O Zahoor Shopkeeper,Main Bazar,Pattika P/O & Tehsil Patika, Muzaffarabad	0343-5791465
26	Muzaffarabad	Mr. Zia Arif Awan, Regional Coordinator,Allama Iqbal Open University, Headmaster, C/O Hamdani Block Depot, Huttian Bala, Tehsil & District Huttian Bala	0333-2333327
27	Muzaffarabad	Mr. Naqaash Mehmood, Regional Coordiantor, Allama Iqbal Open University, SST, Govt.Boys High School,Chakothi P/o Chakothi, Tehsil Huttian Bala,Distt.Jhelum Valley	0312-8600098
28	Muzaffarabad	Mr.Malik Mushtaq Ahmed, Regional Coordiantor, Allama Iqbal Open University, AP,Govt.Boys Degree College,Leepa Tehsil Leepa,District Jhelum Valley	0355-8155551
29	Muzaffarabad	Mr.Mushtaq Ahmed Mughal,Regional Coordinator, Allama Iqbal Open University, Librarian, Govt. Boys Degree College, Authmuqam, Tehsil Authmuqm,District Neelum	0355-8152453
30	Muzaffarabad	Mr.Muhammad Iqbal,Regional Coordinator, Allama Iqbal Open University,Senior Teacher, Govt.Boys High School,Sharda,Tehsil Sharda District Neelum	0355-8111812
31	Muzaffarabad	Mr.Sajid Qayyum,Regional Coordinator,Allama Iqbal Open University,Lecturer, Govt Boys Inter College,Kel,Tehsil Sharda District Neelum	0355-8129706
32	Muzaffarabad	Mr.Abdul Hameed, Regional Coordinator, Allama Iqbal Open University, SST, Village Sardari, P/O Halmat Tehisl, Sharda, District Neelum	0355-7179695

ALLAMA IQBAL OPEN UNIVERSITY, REGIONAL NETWORK

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KHYBER PAKHTUNKHWA

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Ph: 0937-841030
Email: rd_mardan@aiou.edu.pk

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Ph: 091-9217603
Email: rd_peshawar@aiou.edu.pk

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