

## **Faculty of Basic Sciences and Humanities**

- 1. Department of Mathematical Sciences**
- 2. Department of Physical Sciences**
- 3. Department of Social Sciences**

### **FACULTY OF BASIC SCIENCES AND HUMANITIES**

#### **➤ Vision, Mission Statement**

##### **Vision**

To be a world class department of Basic Sciences (natural and social) to inculcate technical knowledge, high moral values and soft skills in the students of Engineering and Sciences disciplines for the socioeconomic development of the country

##### **Mission**

The mission of the three Departments of Faculty of Basic Sciences and Humanities is to realize the above vision and those of the university by:

- Preparing undergraduate students to enter their specializations smoothly
- Providing students with the means for clear, creative, informed and critical scientific thinking
- Stimulating a passion for lifelong learning in various modes of engineering and sciences
- Promoting and utilizing the importance of effective Engineer-scientist's collaboration in national interest
- Promoting mathematics and physics within the context of a liberal education at postgraduate level particularly and undergraduate in general
- Grooming personalities with the principals of honesty, diligence and teamwork

#### **➤ Aims and Objectives**

##### **Aim**

The aims of the Departments are to strengthen the fundamentals of basic sciences by brushing up the concepts and knowledge in various subjects such as Physics, Math, Chemistry, English, Pakistan Studies and Islamic Studies for the students of Engineering and Sciences departments of the University. Today, the Faculty is responsible for covering 30-40 % of the curriculum of all the existing Engineering Programs in UET Taxila. In addition to playing a vital and primary role of supporting other Departments of Engineering faculties, the faculty has also started degree



# 1. Department of Mathematical Sciences

## About: Department of Mathematical Sciences

Department of Mathematical Sciences was previously a part the Department of Basic Sciences, which was established in 1975 as a part of the University College of Engineering, Taxila and is as old as the institution itself. With the inception of the institute as a University in 1993, the Department has been placed under the Faculty of Basic Sciences & Humanities. Now, the Basic Sciences Department has been re-structured and split into three independent departments, namely, (i) Department of Mathematical Sciences, (ii) Department of Physical Sciences, and (iii) Department of Humanities and Social Sciences.

The Department of Mathematical Sciences offers three degree programs: a four-year undergraduate program leading to BS degree in Mathematics, two-year postgraduate program leading to MS degree in Mathematics, and PhD Mathematics degree program. While MS and PhD programs are running since **2014**, the BS Mathematics is newly introduced by the Department at the University. The first intake of students in BS Mathematics is planned for the Fall-2022 session. In addition, the Department is also responsible to teach the mathematics and statistics courses to all undergraduate programs in each Engineering Faculty.

## Contact Information

### ***Faculty of Basic Sciences and Humanities***

#### ***Department of Mathematical Sciences***

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## **Faculty Profile:**

### **Dean**

Prof. Dr. Aftab Ahmad

### **Chairman**

Dr. Muhammad Muddassar

### **Associate Professors**

#### **Dr. Muhammad Muddassar**

PhD Mathematics (UET, Lahore)

#### **Dr. Nasir Siddiqui**

PhD Mathematics (QAU, Islamabad)

### **Assistant Professors**

#### **Ms. Safeera Batool**

M. Phil Mathematics (QAU, Islamabad)

#### **Dr. Zaffer Elahi**

PhD Mathematics (PU, Lahore)

#### **Dr. Azeem Shahzad**

PhD Mathematics (QAU, Islamabad)

#### **Dr. Muhammad Altaf**

PhD Statistics (USTC, China)

#### **Dr. Muhammad Touqeer**

PhD Mathematics (PU, Lahore)

### **Lecturers**

#### **Ms. Andleeb Abbasi**

M.Phil Mathematics (QAU, Islamabad)

#### **Ms. Sumaira Rashid**

M.Phil Mathematics (QAU, Islamabad)

#### **Mr. Syed Zulqarnain Haider**

M.Phil Mathematics (QAU, Islamabad)

#### **Dr. Syed Sabyel Haider**

PhD Mathematics (NUST, Islamabad)

#### **Ms. Haleema Sadia**

M.Phil Mathematics (QAU, Islamabad)

#### **Dr. Jawad Ahmed**

PhD Mathematics (QAU, Islamabad)

## Programs:

- **BS Mathematics**
- **MS Mathematics**
- **PhD Mathematics**

## Undergraduate Programs:

The course curriculum for BS Mathematics is designed in such a way that it contains a set of core courses and, in addition, and a set of non-disciplinary and general education courses. The core courses allow the student to specialize in the subject of mathematics. The aim of the non-core courses is to develop several soft skills and moral/ethical values in the graduating students.

## Courses:

<b>B.S. Mathematics Semester I</b>		<b>Credit Hrs.</b>	
		<b>Theory</b>	<b>Lab</b>
Gen Ed/Culture	Islamiat / Ethics	2	
Gen Ed/Language	Functional English	2	
Non-Disp/CS	Computing Fundamentals	2	1
Math	Calculus and Analytic Geometry	3	
Gen Ed/Nat Sc	History/Foundation of Mathematics	3	
Non-Disp/Physics	Physics-I (Basic Mechanics)	2	1
Qur'an	Qur'an Translation I (Imaniaat)	1	
	<b>Total</b>	<b>15</b>	<b>2</b>

<b>B.S. Mathematics Semester II</b>		<b>Credit Hrs.</b>	
		<b>Theory</b>	<b>Labs</b>
Gen Ed/Culture	Pakistan Studies	2	
Gen Ed/Language	Technical Report Writing	2	
Non-Disp/Physics	Physics –II (Electricity and Magnetism)	2	1
Math	Linear Algebra – I	3	
Math	Vectors and Tensor Analysis	3	
Gen Ed/ Nat Sc.	General Chemistry I	2	1
	<b>Total</b>	<b>14</b>	<b>2</b>

<b>B.S. Mathematics Semester III</b>		<b>Credit Hrs.</b>	
		<b>Theory</b>	<b>Labs</b>
Gen Ed/Language	Communication and Presentation Skills	2	
Non-Disp/Physics	Physics –III/ Modern Physics	2	1
Non-Disp/Statistics	Descriptive Statistics	3	
Math	Multivariable Calculus	3	
Gen edu	Quantitative Reasoning - I	2	1
Math	Infinite Series	3	
Qur'an	Qur'an Translation I (Ibadaat)	1	
<b>Total</b>		<b>16</b>	<b>2</b>

<b>B.S. Mathematics Semester IV</b>		<b>Credit Hrs.</b>	
		<b>Theory</b>	<b>Lab</b>
Math	Waves and Oscillations	3	
Math	Complex Analysis	3	
Math	Discrete Mathematics	3	
Non-Disp/Statistics	Inferential Statistics	3	
Math	Number Theory	3	
Gen Ed/SOC	Social Psychology	3	
<b>Total</b>		<b>18</b>	

<b>B.S. Mathematics Semester V</b>		<b>Credit Hrs.</b>	
		<b>Theory</b>	<b>Labs</b>
Math	Real Analysis-I	3	
Math	Numerical Methods with Programming	2	1
Math	Group Theory – I	3	
Math	Metrics and Topology	3	
Gen Ed/SOC	Professional Ethics	3	
Qur'an	Qur'an Translation I (Mua'amlaat)	1	
<b>Total</b>		<b>15</b>	<b>1</b>

<b>B.S. Mathematics Semester VI</b>		<b>Credit Hrs.</b>	
		<b>Theory</b>	<b>Labs</b>
Math	Mathematical Methods of Physics-I	3	
Math	Differential Geometry	3	
Math	Introductory Functional Analysis	3	
Math	Abstract Algebra – I	3	
Math	Operations Research/Math programming and Optimization	2	1
Gen Ed/MGT	Project Management	3	
<b>Total</b>		<b>17</b>	<b>1</b>



## 2. Department of Physical Sciences

The Department of Physical Sciences is a teaching and research department of the University of Engineering and Technology, Taxila. The Department was previously a part of the Department of Basic Sciences, which was established in 1975 as a part of the University College of Engineering, Taxila and is as old as the institution itself. With the inception of the institute as a University in 1993, the Department was placed under the Faculty of Basic Sciences & Humanities. Now, the Basic Sciences Department has been re-structured and split into three independent departments: the Department of Physical Sciences is one of them.

The Department of Physical Sciences offers two degree programs: a four-year undergraduate program leading to BS degree in Physics and two-year postgraduate program leading to MS degree in Physics. While MS Physics program is running since **2014**, the BS Physics is newly introduced by the department at the university. The first intake of students in BS Physics is planned for the Fall-2022 session. In addition, the Department is also responsible to teach the physics and chemistry courses to undergraduate programs in each Engineering Faculty.

### Contact Information

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### **Dean**

Prof. Dr. Aftab Ahmed

### **Chairman**

Dr. Muhammad Muddassar

### **Associate Professors**

#### **Dr. Malik Sajjad Mehmood**

PhD Physics (PIEAS, Islaabad)

### **Assistant Professors**

#### **Dr. Muhammad Sultan**

PhD Chemistry (QAU, Islamabd)

#### **Dr. Muhammad Nadeem Badani**

PhD Physics (UTM, Malaysia)

### **Lecturers**

#### **Dr. Kulsoom Rahim**

PhD Physics ( QAU, Islamabad)

#### **Dr. Muhammad Tariq**

PhD Physics (Germany)



## Programs:

- BS Physics
- MS Physics

## Undergraduate Programs:

The BS physics program prepares the students academically to pursue a scientific, academic, or technical career in all branches of physics. The course curriculum for BS Physics is designed in such a way that it contains a set of core courses and, in addition, and a set of non-disciplinary and general education courses. The core courses allow the student to specialize in the subject of physics. The aim of the non-core courses is to develop several soft skills and moral/ethical values in the graduating students.

## Courses:

<b>Semester I</b>		<b>Credit Hrs.</b>	
		<b>Theory</b>	<b>Lab</b>
Gen Ed/ Language	Functional English-I	3	
Non-Disp/Math	Calculus and Analytical Geometry-I	3	
Non-Disp/CS	Introduction to Computing	3	
Phy	Mechanics	3	
Non-Disp/Che	Chemistry-I	2	1
Gen Ed/Culture	Islamic Studies/Ethics	2	
Phy	Lab I - Mechanics		1
Qur'an	Qur'an Translation I (Imaniaat)	1	
<b>Total</b>		<b>17</b>	<b>2</b>

<b>Semester II</b>		<b>Credit Hrs.</b>	
		<b>Theory</b>	<b>Labs</b>
Gen Ed/Language	Technical Report Writing	3	
Non-Disp/Math	Calculus and Analytical Geometry-II	3	
Phy	Electricity & Magnetism	3	
Phy	Heat & Thermodynamics	3	
Gen Ed/Culture	Pakistan Studies	2	
Non-Disp/Che	Chemistry-II	2	1
Phy	Lab II - Electricity & Magnetism		1
<b>Total</b>		<b>16</b>	<b>2</b>

<b>Semester III</b>		<b>Credit Hrs.</b>	
		<b>Theory</b>	<b>Labs</b>
Gen Ed/Language	Communication and Presentation Skills	3	
Non-Disp/Math	Linear Algebra	3	
Phy	Waves & Oscillations	3	
Phy	Modern Physics	3	
Non-Disp/Eco	Economics	3	
Phys	Lab III – Heat, waves, and sound		1
Qur'an	Qur'an Translation I (Ibadaat)	1	
<b>Total</b>		<b>16</b>	<b>1</b>

<b>Semester IV</b>		<b>Credit Hrs.</b>	
		<b>Theory</b>	<b>Lab</b>
Non-Disp/Math	Differential Equations	3	
Non-Disp/Statistics	Probability & Statistics	3	
Phy	Optics	3	
Non-Disp/CS	Introduction to Programming	3	
Gen Ed/Mgt	Project Management	3	
Gen Ed/Soc	Introduction of Psychology	2	
Phy	Lab IV – Optics		1
<b>Total</b>		<b>17</b>	<b>1</b>

<b>Semester V</b>		<b>Credit Hrs.</b>	
		<b>Theory</b>	<b>Labs</b>
Phy	Mathematical Methods of Physics-I	3	
Phy	Electrodynamics-I	3	
Phy	Classical Mechanics	3	
Phy	Electronics-I	3	
Gen Ed/Soc	Professional Ethics	2	
Phy	Lab V – Electronics		2
Qur'an	Qur'an Translation I (Mua'amlaat)	1	
<b>Total</b>		<b>15</b>	<b>2</b>

<b>Semester VI</b>		<b>Credit Hrs.</b>	
		<b>Theory</b>	<b>Labs</b>
Phy	Mathematical Methods of Physics-II	3	
Phy	Electrodynamics-II	3	
Phy	Quantum Mechanics-I	3	
Phy	Electronics-II	3	
Phy	Statistical Physics	3	
Phy	Lab VI – Modern physics, spectroscopy		2
Qur'an	Qur'an Translation I (Ikhlaiqaaat)	1	
<b>Total</b>		<b>16</b>	<b>2</b>



### 3. Department of Social Sciences

Like Departments of Mathematical Sciences and Physical Sciences, the Department of Humanities & Social Sciences was also previously a part the Department of Basic Sciences, which was established in 1975 and is as old as the institution itself. The Department of Humanities and Social Sciences is responsible for teaching various humanities and social sciences courses to all undergraduate programs in each Engineering and Sciences Faculty.

Courses taught by the department are:

- Quran Translation
- English/Technical Report Writing
- Communications Skills
- Islamic Studies
- Pakistan Studies
- Management Sciences
- Social Sciences
- Professional Ethics
- Sociology

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### **Chairman**

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### **Assistant Professors**

#### **Dr. Sumaira Nawaz**

PhD Islamic Studies (AIOU, Islamabad)

#### **Dr. Naila Maqsood**

PhD Pakistan Studies (QAU, Islamabad)

#### **Ms. Fareeha Zaheer**

M. Phil. English (Air University, Islamabad)

### **Lecturers**

#### **Ms. Mariam Batool**

M. Phil. English (Air University, Islamabad)

#### **Ms. Tehmina Farrukh**

M. Phil. English (Air University, Islamabad)

#### **Dr. Syed Muhammad Abdur Rehman**

MA Islamiyat (UOS)

MSc Economics (QAU, Islamabad)

MS Islamics Banking and Finance (IIUI)

PhD Islamics Banking and Finance (IIUI)

#### **Dr. Sabahat Jaleel**

PhD Pakistan Studies (QAU, Islamabad)

#### **Mr. Muhammad Irfan**

M.Phil. Islamic Studies (IIU, Islamabad)

