

## Department of Mathematics

The Department of Mathematics at Sarhad University of Science & Information Technology, Peshawar, was established in 2022 and has quickly become a center of academic excellence. The department offers programs in applied, pure, and computational mathematics, leading to Bachelor of Science (BS) and Master of Philosophy (MPhil) degrees in Mathematics.

Covering a broad spectrum of mathematical disciplines, the department plays a leading role in research and teaching, supported by a highly qualified faculty. Most faculty members are actively engaged in research across various fields, including applied, pure, and computational mathematics, demonstrating a strong commitment to advancing mathematical knowledge. The department is equally dedicated to providing high-quality education and fostering a dynamic learning environment.

## Mission

The Mathematics Department aims to deliver top-quality education and research, equipping students with essential analytical skills for diverse careers and fostering an inclusive, innovative academic community.

## Program Offered

- ◆ Bachelor of Science in Mathematics



# Faculty Members, Department of Mathematics

## Dr. Azhar Ali

Head / Associate Professor,  
Ph.D Mathematics,  
Islamia College University, Peshawar

## Dr. Haroon-ur-Rasheed

Associate Professor,  
Ph.D Mathematics,  
Abdul Wali Khan University, Mardan

## Ms. Asmarah Kanwal

Assistant Professor,  
M.Sc Maths,  
University of Peshawar

## Dr. Tariq Abbas

Professor,  
Ph.D Mathematics,  
Islamia College University, Peshawar

## Dr. Muhammad Jebran Khan

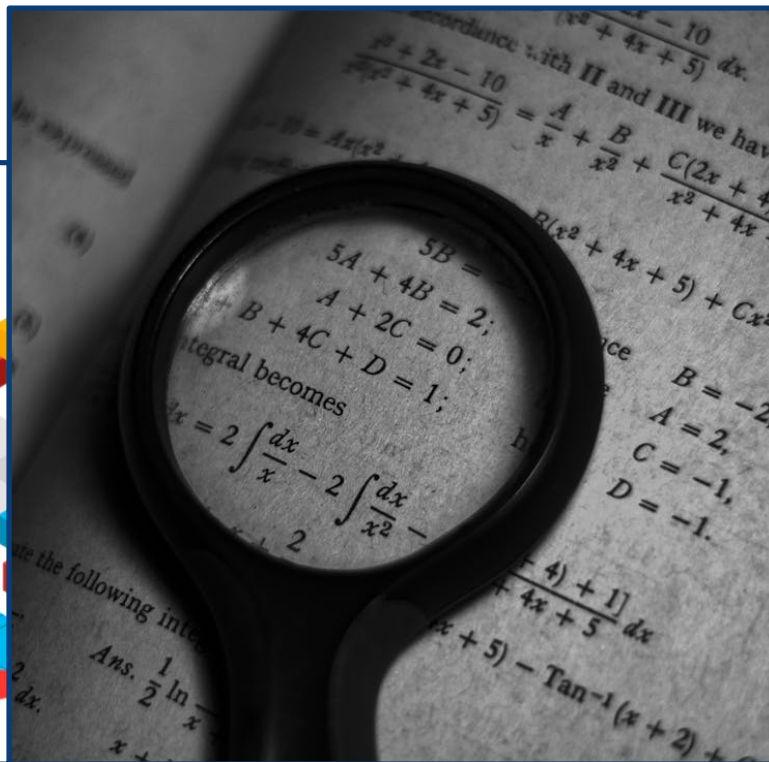
Assistant Professor,  
Ph.D (Applied Sciences),  
Lincoln University College, Malaysia

## Dr. Shahid Mahmood

Associate Professor,  
Ph.D Mathematics,  
Abdul Wali Khan University, Mardan

## Mr. Mumtaz Khan

Associate Professor,  
M.Phil Maths,  
Strathclyde University, UK



# Bachelor of Science in Mathematics

Recognized by Higher Education Commission (HEC)

## Program Details:

|                                      |                       |
|--------------------------------------|-----------------------|
| Program Code                         | 220                   |
| Number of Courses                    | 48 + FYP              |
| Credit Hours                         | 133                   |
| Minimum Duration                     | 8 Semesters, 4 Years  |
| Maximum Duration                     | 12 Semesters, 6 Years |
| Minimum CGPA Required To Earn Degree | 2.00                  |

## Eligibility Criteria:

Candidates having HSSC with a subject of Mathematics / General Mathematics in any group with at least 50% Marks or an equivalent qualification from any recognized institute or IBCC equivalent certificate are eligible to apply. Candidates need to pass an entry test/ aptitude interview conducted by the university.

## Program Educational Objectives (PEOs)

### PEO-1 Proficient Competence and Problem Solving:

Graduates will showcase strong analytical, critical and problem-solving abilities to succeed in various fields like education, finance, technology, and research.

**PEO-2 Ethics and Social Impact:** Graduates will ethically use their mathematical expertise to address real-world problems and contribute to sustainable societal development.

### PEO-3 Lifelong Learning and Professional Development:

Graduates will pursue continuous learning and professional growth to stay relevant in mathematics and related fields.

## Graduate Attributes:

**GA-01 Mathematical Proficiency:** Apply core mathematical and scientific knowledge to solve complex problems.

**GA-02 Critical Thinking:** Utilize logical reasoning and analytical skills to address mathematical and real-world challenges.

**GA-03 Problem Solving:** Formulate and solve problems using mathematical models and tools.

**GA-04 Research Skills:** Conduct independent research, interpret findings, and validate conclusions using mathematical methodologies.

**GA-05 Communication:** Effectively convey mathematical concepts, theories, and results to diverse audiences including professionals in science, engineering, business, and technology through clear writing, presentations, and visualization.

**GA-06 Technological Expertise:** Leverage software and technology for mathematical modeling, analysis, and interdisciplinary problem-solving in fields such as data science, finance, engineering, and computational sciences.

**GA-07 Individual and Collaborative Teamwork:** Function effectively as an Individual and Collaborate excellently in multi-disciplinary team working with peers on group projects, and problem-solving tasks.

**GA-08 Lifelong Learning:** Stay adaptable to new challenges and committed to ongoing learning in mathematics and interdisciplinary fields.

**GA-09 Ethical Awareness:** Understand the ethical implications of mathematical applications and their societal impact.

**GA-10 Global Perspective:** Recognize the universal role of mathematics across disciplines and connect concepts to real-world applications globally.

## Scheme of Studies

## 1st Semester

| Course Code | Course Title                                                             | Cr. Hrs. 18 |
|-------------|--------------------------------------------------------------------------|-------------|
| MAT 101     | Calculus-1                                                               | 3-0         |
| GS 107      | Introductory Mechanics                                                   | 2-1         |
| ENG 101     | Functional Communication (English-I)                                     | 3-0         |
| GS 123      | Islamic Studies                                                          | 2-0         |
| IT 107      | Applications of Information and Communication Technologies               | 2-1         |
| CS 112      | Computer Programming                                                     | 2-1         |
| QT 101      | Understanding of Holy Quran-I (only for Muslims)                         | 0-1         |
| MR 101      | Minority Rights in the Constitution of Pakistan-I (only for Non-Muslims) | 1-0         |

## 2nd Semester

| Course Code | Course Title                | Cr. Hrs.16 |
|-------------|-----------------------------|------------|
| MAT 107     | Calculus-II                 | 3-0        |
| MAT 109     | Discrete Mathematics        | 3-0        |
| CS 245      | Data Structure & Algorithm  | 3-0        |
| GS 201      | Islamic History             | 2-0        |
| GH 200      | Pakistan Studies            | 2-0        |
| ENG 290     | Report Writing (English-II) | 3-0        |

## 3rd Semester

| Course Code | Course Title                          | Cr. Hrs.18 |
|-------------|---------------------------------------|------------|
| MAT 202     | Calculus-III (Multivariable Calculus) | 3-0        |
| MAT 204     | Linear Algebra                        | 3-0        |
| GE 203      | Entrepreneurship                      | 2-0        |
| MAT 210     | Elementary Differential Equations     | 3-0        |
| MAT 209     | Elementary Statistics                 | 3-0        |
| MGT 106     | Principles of Management              | 2-0        |
| GH 301      | Ideology and Constitution of Pakistan | 2-0        |

## 4th Semester

| Course Code | Course Title                      | Cr. Hrs.17 |
|-------------|-----------------------------------|------------|
| MAT 216     | Numerical Methods                 | 3-0        |
| GE 205      | Civics and Community Engagement   | 1-1        |
| MAT 206     | Statistics and Probability Theory | 3-0        |
| MAT 309     | Ordinary Differential Equations   | 3-0        |
| MAT 214     | Algebra-1 (Group Theory)          | 3-0        |
| CS 213      | Modeling and Simulations          | 2-1        |

## 5th Semester

| Course Code | Course Title                   | Cr. Hrs.15 |
|-------------|--------------------------------|------------|
| MAT 301     | Real Analysis-1                | 3-0        |
| MAT 316     | Partial Differential Equations | 3-0        |
| MAT 322     | Integral Equations             | 3-0        |
| ECO 315     | Econometrics                   | 3-0        |
| MAT 318     | Topology                       | 3-0        |

## 6th Semester

| Course Code | Course Title                                      | Cr. Hrs.18 |
|-------------|---------------------------------------------------|------------|
| MAT 312     | Real Analysis-II                                  | 3-0        |
| MAT 401     | Complex Analysis                                  | 3-0        |
| GS 341      | Electricity and Magnetism                         | 2-1        |
| AI 340      | Artificial Intelligence for Mathematical Sciences | 3-0        |
|             | Elective - I                                      | 3-0        |
| RES 350     | Internship                                        | 0-3        |

## 7th Semester

| Course Code | Course Title                                                              | Cr. Hrs.16 |
|-------------|---------------------------------------------------------------------------|------------|
| CS 448      | Introduction to Machine Learning                                          | 2-1        |
|             | Elective -II                                                              | 3-0        |
| MAT 405     | Differential Geometry                                                     | 3-0        |
| RES 412     | Scientific Writing & Research Methods                                     | 3-0        |
|             | Elective -III                                                             | 3-0        |
| QT 300      | Understanding of Holy Quran-II (only for Muslims)                         | 0-1        |
| MR 300      | Minority Rights in the Constitution of Pakistan-II (only for Non-Muslims) | 1-0        |

## 8th Semester

| Course Code | Course Title       | Cr. Hrs.15 |
|-------------|--------------------|------------|
|             | Elective - IV      | 3-0        |
|             | Elective - V       | 3-0        |
|             | Elective - VI      | 3-0        |
|             | Elective - VII     | 3-0        |
| RES 485     | Final Year Project | 0-3        |

## List of Electives

| Electives   |                                                           |          |
|-------------|-----------------------------------------------------------|----------|
| Course Code | Course Title                                              | Cr. Hrs. |
| MAT 220     | Vector and Tensor Analysis                                | 3-0      |
| MAT 214     | Affine and Euclidean Geometry                             | 3-0      |
| MAT 420     | Number Theory                                             | 3-0      |
| MAT 441     | Functional Analysis                                       | 3-0      |
| MAT 409     | Special Functions                                         | 3-0      |
| MAT 103     | Elements of Set Theory and<br>Mathematical Logics         | 3-0      |
| MAT 411     | Mathematical Statistics                                   | 3-0      |
| MAT 413     | Measure Theory & Integration-I                            | 3-0      |
| MAT 415     | Measure Theory & Integration-II                           | 3-0      |
| MAT 418     | Optimization Theory-I                                     | 3-0      |
| MAT 419     | Optimization Theory-II                                    | 3-0      |
| MAT 421     | Theory of Modules                                         | 3-0      |
| MAT 423     | Galois Theory                                             | 3-0      |
| MAT 425     | Introduction to Fixed Point Theory                        | 3-0      |
| MAT 427     | Fuzzy Set Theory and Applications                         | 3-0      |
| MAT 429     | Numerical Solutions of Ordinary<br>Differential Equations | 3-0      |
| MAT 431     | Statistical Inference                                     | 3-0      |
| MAT 433     | Graph Theory                                              | 3-0      |
| MAT 435     | Numerical Solutions of Partial<br>Differential Equations  | 3-0      |
| MAT 436     | Operation Research                                        | 3-0      |



# Faculty of Management Sciences

- Department of  
Business Administration