



WHY BS-MATHEMATICS AT IBA?

The BS Mathematics program at IBA equips students with strong analytical, computational, and problem-solving skills. With flexible concentrations in allied sciences, the program prepares graduates for diverse careers in data, actuarial & finance, and education. It emphasizes real-world application, interdisciplinary learning, and academic rigor aligned with global standards.

- 132 credit hours, research project
- 4-year degree program
- Flexible concentrations in allied sciences
- Strong analytical & computational training
- Focus on real-world problem solving
- Careers in data, actuarial & finance, and education



SCHOOL OF MATHEMATICS & COMPUTER SCIENCE



IBA Karachi is one of Pakistan's premier institutions, known for academic excellence, interdisciplinary learning, and cutting-edge research across diverse fields.

The School of Mathematics and Computer Science (SMCS) is a rapidly growing academic unit at IBA, offering excellence in computing and mathematical sciences. With a highly qualified faculty comprising researchers and industry experts, SMCS integrates rigorous academics with practical exposure. The school houses advanced labs in Artificial Intelligence, Web Science, Big Data, and Telecommunications. Its programs in Computer Science and Mathematics provide a solid foundation in theory and application—preparing students for research, higher education, and impactful careers in the tech and data-driven economy.

COURSE STRUCTURE

SEMESTER 1

- Calculus-1
- Discrete Mathematics
- Introduction to Programming
- Critical Reading and writing
- Islamic Scholarly Tradition or Philosophy, Logic, and Ethics

SEMESTER 2

- Calculus- II
- Linear Algebra
- Object Oriented Programming Techniques
- Speech Communication
- Fundamentals of Entrepreneurship

SEMESTER 3

- Multivariable Calculus
- Introduction to Differential Equations
- Fundamentals of Statistics
- Mechanics
- Civic & Community Engagement

SEMESTER 4

- Probability Theory
- Electricity, Magnetism & waves
- Differential Geometry
- Ideas in Mathematics
- Pakistan History

ELECTIVE COURSES

The BS Mathematics program at IBA offers students the flexibility to pursue optional concentrations in Computer Science, Data Analytics, or Physics by completing three additional 300-level courses in the chosen area. While these concentrations are not mentioned on the degree, they are reflected on the transcript, enabling students to broaden their academic profile through interdisciplinary study.

SCHOLARSHIPS, GRANTS & FINANCIAL ASSISTANCE

Installment Plan: The students can apply for 2-3 installments per semester. However, the installments must be paid within the same semester.

Need-based Financial Assistance: The IBA encourages aspiring students from diverse social backgrounds to enroll and study at the IBA.

Qarz-e-Hasna: The IBA facilitates its students in securing an interest-free loan (Qarz-e-Hasna) to pay their tuition fee during their study period.

Research & Teaching Assistantships (RA/TA): IBA offers part-time, paid opportunities for students to work as Research Assistants (RAs) or Teaching Assistants (TAs) as part of its financial assistance and academic enrichment initiatives.

SEMESTER 5

- Real Analysis
- Statistical Modeling
- Numerical Analysis
- Introduction to Quantum Mechanics
- Data Structures

SEMESTER 6

- Topology I
- Abstract Algebra
- Mathematical Methods
- Partial Differential Equations
- Restricted Elective
- Restricted Elective
- Personal Effectiveness

SUMMER SEMESTER : Internship

SEMESTER 7

- Restricted Elective
- Math Elective I
- Math Elective II
- University Breadth
- Free Elective
- Final Year Project

SEMESTER 8

- Math Elective III
- Math Elective IV
- University Breadth
- Free Elective
- Free Elective



ACADEMIC ENVIRONMENT

ADVANCED MATHEMATICAL FOUNDATIONS

At IBA, the BS Mathematics program emphasizes rigorous training in pure and applied mathematics. Students build a strong conceptual base in algebra, calculus, and statistics, developing logical reasoning and quantitative problem-solving skills essential for academic and professional success.

RESEARCH-INFORMED LEARNING

IBA cultivates a research-focused environment where mathematics students engage in faculty-led research and projects in mathematical modeling, data science, and interdisciplinary studies. Emphasis is placed on analytical thinking and innovative application of mathematical tools.

ANALYTICAL EDGE & INDUSTRY PREPAREDNESS

Through hands-on coursework, simulations, and elective concentrations, students are prepared for careers in finance, data science, education, and research. The program equips them with practical skills and cross-disciplinary knowledge to thrive in evolving academic and corporate settings.



CAREER OPPORTUNITIES

Graduates of the BS Mathematics program at IBA are equipped with analytical, quantitative, and problem-solving skills. With a strong foundation in mathematical theory and applied computation, students pursue careers in:

- Data Science & Analytics
- Research & Development
- Statistical Modeling
- Teaching & Academia
- Economic & Policy Analysis
- Computational Mathematics

ELIGIBILITY CRITERIA

Higher Secondary Certificate (Pre-Engineering or General with Math) with at least 60% or A Levels with 1 'B' and 2 'C's including Mathematics.

American High School Diploma with a minimum score of 80% or International Baccalaureate (IB) with a minimum of 24 out of 45 points.

APTITUDE TEST EXEMPTION

Minimum score of 600 on the GMAT, or a GRE score of 160 in quantitative and 150 in verbal.



FOR MORE INFORMATION



<https://mathematics.iba.edu.pk/bsmathematics/>

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BS - MATHEMATICS

NUMERICAL • ABSTRACT • INNOVATIVE

UNDERGRADUATE PROGRAM