Abdullah Ahmed

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EDUCATION

Lahore University of Management Sciences, August 2020 – May 2024   Lahore, Pakistan
Bachelor of Science in Mathematics, Minor in Physics   *CGPA: 3.98/4.00*

The Lahore Alma, August 2018 – May 2020   Lahore, Pakistan
A Levels, Cambridge International Examinations   *Grades: 5 A*s*

ACADEMIC DISTINCTIONS

Dean's Honors List Scholarship   August 2021 – Present
Lahore University of Management Sciences   *Lahore, Pakistan*

- Placed 3rd overall after Junior Year, and qualified for a 100% merit scholarship.
- Placed 4th overall after Sophomore Year, and qualified for a 50% merit scholarship.
- Placed 5th overall after Freshmen Year, and qualified for a 50% merit scholarship.

International Olympiad Teams   2019 – 2020
Pakistan

- Selected for the reserve Pakistan International Math Olympiad Team in 2020.
- Selected and participated as part of the Pakistan team in the Asian-Pacific Math Olympiad in 2020.
- Selected and participated as part of the Pakistan team in the Iranian Geometry Olympiad.

National Mathematics Talent Contest   2019
Pakistan

- Placed 17th among 3000 participants in Pakistan.

High School Merit Scholarship   2015 – 2020
The Lahore Alma   *Lahore, Pakistan*

- Earned and stayed on a 100% merit scholarship throughout my A Levels.

UNDERGRADUATE PROJECTS/PRESENTATIONS

Senior Thesis on Symplectic Geometry   2023 – Present
Supervisor: Dr. Shaheen Nazir

- Introduced the fundamentals of Symplectic Geometry and explored their role in toric varieties.

Directed Reading Project on Manifold Theory and De Rahm Cohmology   Summer 2023
Supervisor: Dr. Haniya Azam and Dr. Shaheen Nazir

- Primarily explored the contents of the book *"An Introduction to Manifolds"* by Loring W. Tu.(**Book survey**)

Summer Reading Group on Enumerative Combinatorics   Summer 2023
Supervisor: Dr. Shaheen Nazir

- Primary text followed was Richard P. Stanley's *"Enumerative Combinatorics"*.

Course Project and Presentation on Elliptic Curves   Spring 2023
MATH 426: Elements of Algebraic Geometry

- Motivated the topological and algebraic structure of Elliptic Curves through the Chord-Tangent Law and toric parameterization.
- Was included in a larger group project report on Complex Projective Cubic Plane Curves.(**PDF**)

Course Project and Presentation on Knot Theory   Spring 2023
MATH 407: General Topology

- Introduced and proved foundational/classical results in Knot Theory.(**Handwritten Project Report**)

Directed Research Project on Algebraic and Analytic Number Theory   Spring 2022
Supervisor: Dr. Shaheen Nazir

- Explored foundational ideas of Algebraic and Analytic Number theory primarily through Kenneth Ireland and Micheal Rosen's *"A Classical Introduction to Modern Number Theory"*.

Course Presentation on Equivalence of Completeness property in Reals   Spring 2022

MATH 309: Introduction to Analysis II

- Presented a proof of the equivalence of the Bolzano-Weierstrass Theorem and the Completeness of Reals.

Course Project on Kepler's Laws and Orbits   Spring 2021

PHY 100: Experimental Physics I

- Built a program to simulate the Moon's orbit around the Earth given different initial conditions.(**Lab Project Report**)

Course Project on Generalized Towers of Hanoi   Fall 2020

CS 100: Introduction to Programming

- Built a program that solved the general n-towers k-pegs Towers of Hanoi problem recursively.

GRADUATE COURSES

MATH 426: Elements of Algebraic Geometry (Spring 2023): A+
MATH 407: General Topology (Spring 2023): A+
MATH 325: Convex Optimisation (Spring 2022): A
PHY 404: Relativistic Electrodynamics (Fall 2022): A
PHY 412: Advanced Quantum Mechanics (Fall 2022): A-
MATH 521: Advanced Algebra (IMM Variant) (Fall 2023): Pending
MATH 4013: Differential Geometry (IMM Variant) (Fall 2023): Pending
MATH 4102: Qualitative Differential Equations (IMM Variant) (Fall 2023): Audit

TEACHING AND WORK EXPERIENCE

Teaching Assistant   Fall 2023

MATH 309: Introduction to Analysis II and MATH 204: Introduction to Formal Mathematics   *LUMS*

- Graded assignments/quizzes, and held tutorials.

Teaching Assistant   Spring 2023

MATH 205: Introduction to Analysis I   *LUMS*

- Graded assignments/quizzes, and held tutorials.

Teaching Assistant   Fall 2022

PHY 101: Mechanics   *LUMS*

- Graded assignments/quizzes, and held tutorials.

Math Circles Instructor and Consultant   January 2023 – Present

Lahore University of Management Sciences

- Conducted interactive math circles in the underprivileged and remote government schools of Gilgit Baltistan in the Summer Fiesta GB 2023.(**Article**)
- Went to local government schools to conduct engaging math circles in Fall 2023.
- Consulting in writing the first LUMS math circles book volume.

Director Salam Sessions   August 2022 – Present

LUMS Students' Mathematics Society

- Organized seminar-type talks by professors centered around the applications of mathematics in their varying scientific fields.
- Launched and spearheaded *Fermat's Enigma* sessions, where students gather to discuss famous mathematical puzzles.

In-person and Online Tutor   August 2021 – Present

Private

- Tutored multiple high school students in O/A Level Mathematics, Physics, and Biology.

SEMINARS

John Conway Spirited Seminar Series   May 2021 – Present

Lahore University of Management Sciences

- Regularly attended and participated in this weekly seminar series with guest speakers coming from all over the world. (**Webpage**)

Extra-Curricular Achievements/Skills

- Selected to become the LUMS Basketball Team Captain for 2023-2024.

- Became the LUMS under-70 kg Powerlifting Champion in 2023.

- Possess programming proficiency in Python, C++, Matlab, and LaTeX.

- Qualified for the Lahore Junior Chess Team in 2019.