

Sarah-Sonia Balan

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Education

2023-2027 **The University of Manchester**

MMath Mathematics

Consistently ranked within the top decile of the MMath cohort (82% GPA)

- Year 3 research project: “Noetherianity of Skew-Polynomial Rings” supervised by Dr. Omar Leon Sanchez; individual-led study of graduate textbooks on noncommutative rings, presenting them in an accessible manner.
- Awarded 3rd place as “Volunteer of the Year” for work benefitting students.
- Led a Year 2 group project on mathematics education and logic, helped produce and deliver a viva which got awarded a First.

2019-2023 **“Mircea cel Bătrân” National College**

- Final average: 10/10 (one of the four students in the year with perfect marks).
- Specialised proficiency of C++, JavaScript, SQL.
- Awarded merit scholarship, silver and bronze medals in national Maths Olympiads.

Research & Academic Experience

Summer 2025 ***Facilitating Effective Teaching in Abstract Algebra: A Study of Teaching Practices and Proof Comprehension***, University of Manchester

- Supervised by Prof. Louise Walker and funded by the London Mathematical Society Undergraduate Research Bursary and the University of Manchester.
- Completed a comprehensive literature review on how students learn algebra.
- Conducted six staff interviews initiating a dialogue on student struggles.
- Co-created a set of tutorial activities to support conceptual understanding of proofs.
- Reflections on Dr. Aslanyan’s blog and forthcoming in the LMS Newsletter..

2025 - 2026 ***Noetherianity of Skew Polynomial Rings***, University of Manchester

- Undergraduate project supervised by Dr. Omar Leon Sanchez, exploring Ore extensions and Noetherianity criteria.
- Presented results from McConnell–Robson and Goodearl–Warfield.
- Highlighted the historical context of Emmy Noether’s discoveries in abstract algebra.
- Examining links with group algebras, enveloping algebras and quantum groups.

Summer 2025 ***London Mathematical Society Undergraduate Summer School***, University of Bath

- One of 50 students selected nationally for a competitive residential programme.
- Strengthened foundations in algebra and modern mathematical methods.
- Developed academic networks and insight into postgraduate pathways.

Presentations and Publications

December 2025 **The Summer I Became a Mathematician: Reflections on the LMS Summer School and My Project, LMS Newsletter**

- Blended personal reflection with academic insight, highlighting how mathematics offered clarity at a pivotal moment.
- Aims to inspire other students to pursue a path in mathematics.

Summer 2025 **Institute of Teaching & Learning Conference, University of Manchester**

- **Poster presentation:** *Generating and Communicating Ideas: Co-creation and Student Voice in Teaching Materials*, developed and delivered among the Library Student Team, based on analysis of EducateMCR 2025 survey data.
- **Lightning Talk:** *Classic UoM – Student Experience Issues*, delivered with Kai Prince and Maths Welfare Tutor, Dr. Neil Morrison addressing systemic administrative struggles students face.

December 2024 **The Big Story to Fermat's Little Theorem, The Mancunion**

- Explores the human narrative and historical curiosity behind a classic result in number theory.
- Makes abstract ideas accessible to a general audience through clear, engaging storytelling.

University Community & Leadership

- **Peer – Assisted Study Sessions Scheme Coordinator** (2025–) — design materials informed by my LMS research; trained and supervised PASS leaders;
- **MathSoc Student Development Secretary** (2023–) — organise academic events; co-run Manchester Maths League;
- **Manchester Interdisciplinary Maths. Undergraduate Conference** — core organiser coordinating speakers, logistics, and student presenters.
- **Student Representative** (2025–) — gather feedback; close feedback loop; contribute to study spaces facilities projects; represent students at student-staff meetings.
- **Library Student Team (Training & Development Area Lead)** (2024–) — co-present ITL poster; review inclusive teaching resources; support HEA accreditation pathways.
- **Levelling Up in Maths Tutor (LMS/IMA) and mA*ths tutor** (2023–2025) — A-level help for students from disadvantaged backgrounds; work profiled in LMS case study.

Awards & Certifications

- **Fellowship of the Higher Education Academy (FHEA) – Pending (2026)**
- **UoM Volunteering Award — Third Place (2025)**
- **STEP II-S and STEP III (2023)**

Additional Skills

IT: C++, SQL, LaTeX, JavaScript, achieved 90% on university Python course.

Languages: Romanian (native), English (C2), German (B1), Polish (A1)