ST. XAVIER'S COLLEGE, MAPUSA GOA Report of
Activity conducted in the Academic Year 2024-25

Name of Activity	Field Trip of Mathematics students
Date/ Duration	01 day, 27th September 2024, 9:30 am – 5:15 pm
Venue	Indian Institute of Technology (IIT), Goa
Name of organizing Department/Cell **In collaboration with**	Department of Mathematics
Name/s of Faculty Co ordinator	Mr. Gajanan Parab
Stratum of Event	College
Name & details of Resource Person/s if any	Dr. Saurabh Trivedi, Assistant Professor Dr. Sandipan De, Assistant Professor Dr. Shiv Prasad, Associate Professor Department of Mathematics, IIT Goa, Farmagudi – Goa

Report	A field trip in Mathematics was conducted to introduce students to a premiere leading institution IIT Goa. The trip focussed on having students hear and interact IIT Maths faculty, discuss and deliberate on important mathematical topics, and tour the campus to understand the facilities available for learning and doing research.
	Objectives:
	1) **To Expose Students to Real-World Applications of Mathematics**: The trip aimed to help students understand how mathematical concepts are applied in various industries, such as cryptography, AI, and machine learning, thereby enhancing their practical knowledge.
	2) **To Provide Insight into Research Opportunities in Mathematics**: One key objective was to introduce students to research possibilities in premier institutes like IISER, IISC, TIFR, and IITs, and to inspire them to consider careers in mathematical research.

3) **To Expand Career Awareness in Mathematics**: The trip aimed to broaden students' understanding of the diverse career paths available to mathematics graduates beyond teaching, particularly in sectors like finance, data science, and technology.
4) **To Facilitate Interaction with Mathematics Experts**: An important goal was to create opportunities for students to interact with faculty from IIT Goa, allowing them to ask questions, gain insights, and learn from professionals actively involved in mathematical research and teaching.
5) **To Encourage Critical Thinking and Problem-Solving**: Through exposure to open problems and discussions on research methodologies, the objective was to foster critical thinking and encourage students to approach mathematical problems with curiosity and innovation.

Description:

On Friday, 27 September 2024, the Department of Mathematics, St. Xavier's College, Mapusa - Goa, organized a field trip to IIT Goa for SY and TYBSc Mathematics students. The purpose of this trip was to engage students with IIT mathematics faculty through lectures on the importance of mathematics, career prospects, and research opportunities. The faculty members accompanying the students were Mr. Gajanan Parab, Dr. Jervin Zen Lobo, and Ms. Jovita Jacklin Rodrigues.

The trip began with a bus journey from St. Xavier's College at 9:30 am, and upon arrival at IIT Goa, the program commenced at 11:15 am. The first session, led by Dr. Saurabh Trivedi, Assistant Professor of Mathematics at IIT Goa, explored the critical role of mathematics in various fields such as cryptography, network security, ATM cards, space science, artificial intelligence, and machine learning. Dr. Trivedi emphasized the significance of theoretical mathematics, citing examples like G.H. Hardy's contributions to number theory (emphasizing on his book "A Mathematician's Apology"), which eventually found applications in modern-day cryptography.

Following this, Dr. Sandipan De, Assistant Professor at IIT Goa, discussed career opportunities in mathematics. He highlighted that mathematics extends beyond academia, influencing sectors such as finance, data science, and actuarial sciences. Dr. De also presented several open problems to inspire students to explore unsolved questions in mathematics.

The final technical session, delivered by Dr. Shiv Prasad, Associate Professor of Mathematics at IIT Goa, focused on research in mathematics. He provided insights into how students can pursue research at top institutes like IISER, IISC, TIFR, and IITs. Dr. Prasad also offered guidance on formulating research questions and

| | emphasized the importance of persistence and curiosity in tackling complex mathematical problems.

The sessions concluded at 1:00 pm, followed by lunch and a campus tour to see the classrooms, labs and library at IIT Goa. The campus tour included a visit to the mining lab that showcased over a hundred varieties of various mining stones. The field trip concluded successfully, with 21 students returning to college by 5:15 pm.

Outcomes:

1) **Increased Awareness of Mathematical Applications**: Students gained a deeper understanding of how mathematical concepts are applied in diverse fields, broadening their appreciation of mathematics beyond textbooks.
2) **Exposure to Research Opportunities**: The trip introduced students to research avenues in prestigious institutions like IISER, IISC, TIFR, and IITs. They learned about the process of approaching and solving research problems, inspiring potential future researchers.
3) **Career Insights in Mathematics**: Students were exposed to various career opportunities in mathematics, including fields outside of academia such as finance, data science, and actuarial sciences, expanding their perspective on potential career paths.
4) **Interaction with Experts**: The opportunity to interact with around seven IIT Goa Maths faculty members allowed students to ask questions, discuss open problems, and gain insights from experts in the field, enhancing their academic and professional network.
5) **Enhanced Motivation and Curiosity**: Through the discussions of open mathematical problems and theoretical concepts, students were encouraged to think critically and develop a deeper curiosity for pursuing further studies or research in mathematics.

Beneficiaries:
Students of SY/TY Mathematics. |
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| **Brochure/Poster** | NA |
| **Photographs** | **https://xavierscollegegoa.ac.in/wp-content/uploads/2024/10/Group-pic.pdf** |
| **List of participants with signatures** | **https://xavierscollegegoa.ac.in/wp-content/uploads/2024/10/Attendance-Field-Trip-IIT-Goa.pdf** |
| **Certificate** | Not applicable |