

# XSI TIMES

DEPARTMENT OF SCIENCE NEWSLETTER



## FUELING THE FUTURE: UNSDGs 2030 & IKS

### Department of Science



As we step into this edition of the newsletter, we present a vibrant glimpse into the Department of Science's dynamic journey—one that ignites passion, nurtures innovation, and fuels the future. Anchored in the theme "Fuelling the Future: UNSDGs 2030 & Indigenous Knowledge Systems (IKS)", this issue celebrates a harmonious blend of traditional wisdom and modern science.



### XSI Society Xavier's Scientific Eye

The XSI Society continues to be a catalyst, encouraging interdisciplinary exploration, peer learning, and scientific temper. This year's highlights—spanning SDGs, IKS, Lab-to-Land initiatives,

SEED Money Projects, student research, and international exposure—reflect our commitment to building a scientifically aware and socially responsible community. Together, we bridge knowledge systems, empower young minds, and champion a future that is innovative, inclusive, and sustainable.



## ST. XAVIER'S COLLEGE JAIPUR

Affiliated to University of Rajasthan

Approved under Section 2(f) AND 12 (B) OF UGC ACT

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# FROM THE MANAGEMENT TEAM



It is with great pride that I share these reflections for the IV<sup>th</sup> edition of the Department of Science newsletter. Each issue highlights not only our department's intellectual spirit but also our commitment to building a more sustainable and compassionate world. At St. Xavier's College, Jaipur, we strive to nurture individuals of conscience—grounded in ethics, social responsibility, and care for the environment. Our efforts in organic farming, reducing plastic use, and climate action reflect our solidarity with the planet and align with the Sustainable Development Goals and the Society of Jesus's Universal Apostolic Preference: Care for our Common Home.

We are also integrating the Indian Knowledge System (IKS) into our curriculum—merging traditional wisdom with modern science. This enriches our students' understanding of today's challenges while keeping them rooted in cultural values.

To our students: live with integrity, pursue sustainability, and prioritize well-being. Let your learning be meaningful and your actions compassionate. Together, let's build a campus that reflects innovation, inclusivity, and environmental awareness.

**REV. DR. FR. S. AROKYA SWAMY SJ**

Manager & Principal, St Xavier's College Jaipur

It is truly heartening to see the Department of Science publish its fourth newsletter, a commendable initiative that reflects the vibrant academic spirit of the department. This publication offers valuable insights into the innovative research, academic pursuits, and outstanding achievements of both students and faculty. It serves not only as a record of accomplishments but also as a source of inspiration and motivation for the entire college community. Such efforts foster collaboration, creativity, and a shared sense of pride among all stakeholders. I extend my heartfelt appreciation to the department for its unwavering commitment to excellence and to the editorial team for their dedication in curating this meaningful and reflective issue. Let this newsletter be a testament to the dynamic progress and collective strength of the department. I look forward to witnessing many more such milestones in the years to come. Congratulations to everyone involved in this significant endeavour.

**REV. DR. FR. RAYMOND CHERUBIN SJ**

Vice Principal, St Xavier's College Jaipur



With great pride and joy, I present the latest edition of the Science Department Newsletter—a reflection of our journey to **Explore, Innovate, and Create**. This volume highlights our commitment to academic excellence and social impact through SDGs and Indigenous Knowledge Systems (IKS). Our flagship event, XSI-TECH'24, themed Fueling the Future: UNSDGs 2030 & IKS, showcased the synergy of science and tradition. Special thanks to Dr. Juniet Maria Jose, our editorial chief, and the student team for creatively presenting the IV<sup>th</sup> volume. May it continue to spark curiosity and purpose.

**SR. DR. LIGIMOL LOUIS CMC**

Head, Department of Science, St Xavier's College Jaipur





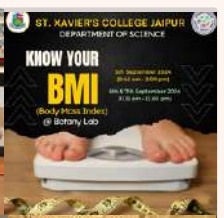
**1 NO POVERTY**

**2 ZERO HUNGER**

**KRISHI SAMVAD**  
A FARMER-SCIENTIST MEET

**3 GOOD HEALTH AND WELL-BEING**

**NATIONAL NUTRITION WEEK**



**4 QUALITY EDUCATION**



**WORLD SCIENCE DAY & XSI-TECH'24**



**SDG WORKSHOP CUM EXHIBITION**



**DESH KA PRAKRITI PARIKSHAN ABHIYAN**  
WITH BHARAT SOKA GAKKAI



**5 GENDER EQUALITY**

**6 CLEAN WATER AND SANITATION**



**WORLD EARTH DAY**  
MATKA WATER INITIATIVE



**7 AFFORDABLE AND CLEAN ENERGY**

# TURNING GOALS INTO ACTION

## SDG STORIES FROM CAMPUS



**8 DECENT WORK AND ECONOMIC GROWTH**

**WORKSHOP ON SUSTAINABLE ENTREPRENEURSHIP WITH LOCAL WISDOM**



**9 INDUSTRY, INNOVATION AND INFRASTRUCTURE**

**10 REDUCED INEQUALITIES**



**11 SUSTAINABLE CITIES AND COMMUNITIES**



**12 RESPONSIBLE CONSUMPTION AND PRODUCTION**

**ORGANIC AGRICULTURE KNOWLEDGE TRANSFER WORKSHOP**



**13 CLIMATE ACTION**



**MATKA WATER INITIATIVE & GREEN MILE WALK**

**14 LIFE BELOW WATER**



**15 LIFE ON LAND**



**16 PEACE, JUSTICE AND STRONG INSTITUTIONS**

**17 PARTNERSHIPS FOR THE GOALS**

# INDIAN KNOWLEDGE SYSTEM

**WORLD EARTH DAY-2025  
PROGRESS THROUGH TRADITION - THE  
MATKA WATER INITIATIVE  
22 APRIL 2025**

Promoting traditional, energy-free cooling methods by reviving indigenous practices aligning with SDG 3, 11 & 13.



## **DESH KA PRAKRITI PARIKSHAN ABHIYAN: AYURVEDA FOR WELLNESS**

(HEALTH CHECKUP & PERSONALIZED DIET INSIGHTS)

**11 DECEMBER 2024**

IN COLLABORATION WITH NSS & NATIONAL INSTITUTE OF AYURVEDA UNDER THE MINISTRY OF AYUSH, GOI

Promoted health awareness through prakriti analysis, lifestyle recommendations



## **NATIONAL NUTRITIONAL WEEK 2-6 SEPT**

The week featured daily themes on millets, pulses, green leafy vegetables, Indian spices, and fruits. Activities included informative displays, BMI checks for all campus members, and awareness on balanced diets. A highlight was Xavier's Herbal Tea, served on Teachers' Day, blending tulsi, ginger, lemongrass, hibiscus, and jaggery to promote wellness. The event also supported the Greening Education Partnership initiative aligning with SDG 3.





**Knowledge Transfer Workshop on Organic Farming**  
Date: 20- 24 July 2024

Venue: Dr R.H Richharia Lab to Land Centre for Knowledge Transfer and Mahapura Gram Panchayat

Organizer Prof. Fr. S. Xavier SJ

Resource Person Prof. Krishendu Acharya University of Calcutta

**WORKSHOP ON “KNOWLEDGE TRANSFER ON ORGANIC AGRICULTURE”**  
20 TO 24 JULY 2024



Hand on training to Farmers



The Lab-to-Land Knowledge Transfer Programme, conducted in R.H. Richharia’s lab and led by Prof. Krishnendu Acharya—recognized among the World’s Top 2% Scientists by Stanford University—focused on promoting sustainable agriculture through biopesticide production. The initiative involved the preparation of cultures such as *Trichoderma* spp., *Verticillium lecanii*, *Beauveria bassiana*, and *Metarhizium anisopliae*, which were distributed in multiple phases. Farmers were given hands-on training in their application, while the biopesticides were also utilized in the college’s organic gardens to support practical learning and eco-friendly farming practices.

**TWO-DAY WORKSHOP ON “LAB-TO-LAND KNOWLEDGE TRANSFER”**  
18-19 NOVEMBER, 2024

Farmers and B.Sc. first-year students gained practical training in biofungicide production and organic farming, fostering sustainable agricultural practices and reducing dependency on chemical inputs



ST. XAVIER'S COLLEGE JAIPUR  
NEETA MAHAPURA ROAD, JAIPUR - RAJASTHAN - 302029

DEPARTMENT OF SCIENCE  
in collaboration with  
**ISREAC/UBA CELL**  
Two Days Workshop on  
**LAB TO LAND KNOWLEDGE TRANSFER**  
18 - 19 November 2024

**Day 1**  
Training Session on biofungicides & bioinsecticide @ Dr. R.H. Richharia Lab, SXCJ

**Day 2**  
Visit to farms of adopted village farmers and Observation of Organic Farming Techniques

Sr. Dr. Ligimol Louis (HEAD, DEPT. OF SCIENCE) Dr. Mamta Pareek  
Organizer Prof. Fr. S. Xavier SJ (PRINCIPAL)  
Faculty coordinators Dr. Senthil Kumar Dr. Ajay Dandotiya



Preparation & transfer of medium for bio fungicides



Organic farming field visit with farmers



# INITIATIVES OF THE DEPARTMENT

## Organic Farm



## Titli Vatika



## Pisciculture



## Ayush Garden



## Mycofarm



## Nest & Rest



## Waste Management



## Incinerator Bio compost



## Vermi compost



'ALL FOR THE GREATER GLORY OF GOD'

### HIGHLIGHTS

- SCIENCE EXHIBITION
- POSTER PRESENTATION
- STORY WRITING COMPETITION

Over 500 students from 14 schools and colleges participated

### SEMINAR

#### SESSION I - INDIAN KNOWLEDGE SYSTEM

Dr. Mahesh Sharma (Shastri Kosalendradas)

Dean, Faculty of Darshan Shastra (Philosophy)  
Jagadguru Ramanandacharya Rajasthan Sanskrit University

#### SESSION II - SDG INITIATIVES AT SXCJ

Prof. Fr. S. Xavier SJ  
Principal, St. Xavier's College Jaipur

## XSI - TECH (8 NOVEMBER 2024)

### भारतीय ज्ञान प्रणाली पर सेमिनार का आयोजन



भारतीय ज्ञान प्रणाली पर सेमिनार का आयोजन। डॉ. महेश शर्मा (शस्त्री कosalendradas) ने भारतीय ज्ञान प्रणाली पर सेमिनार का आयोजन किया। इसमें प्रमुख अतिथि डॉ. महेश शर्मा (शस्त्री कosalendradas) और प्राचार्य डॉ. ए. एस. खन्ना (अध्यक्ष) शामिल थे।



# WINNERS OF XSI-TECH

## CHAMPIONS OF INNOVATION EUREKA EXPO (SCIENCE EXHIBITION)

Student Name	School	Position
Vaibhav Jain, Aaditya Soni, Ekansh Sharma, Niyanta Khairara, Survendar	St. Xavier's School, Nevta, Jaipur	First
Nirbhay Singh, Anshika Gupta, Nithik Sharma, Harsh Chowdhary, Aryan		
Sudhanshu Sharma, Samarth Vijay, Gaurav Chowdhary, Dishu Khandelwal	Mount Carmel Convent School, Bagrana	Second
Aviraj Meena, Shivkumar, Yash Mandal, Chitransh Tiwari		
Ayushi Sharma, Mansi Meena, Savi Sharma		
Kartik Kumar, Yug Kasana		
Jaydev Singh, Yuvraj Dinkar, Anant Kandelwal	Podar World School, Jaipur	Third
Abinav Sharma, Lakshay Sirswa, Aradhy Sharma		
Bhaves, Ayush, Shaurya		



## COLOURS OF SUSTAINABILITY (POSTER MAKING COMPETITION)

Student Name	School	Position
Trisha Chittoria	St. Xavier's School, C Scheme, Jaipur	First
Disha Upadhyay		
Pragya Soni	Mount Carmel Convent School Bagrana	Second
Sheethal		
Divisha Jain	St. Anslem, Pink City School, Malviya Nagar	Third
Riddima Saini		
Vani Sharma	Mount Carmel Convent School Bagrana	
Diya Sharma		



## SUSTAINABLE DEVELOPMENTAL PRACTICES IN YOUR SCHOOL (STORY WRITING COMPETITION)

Student Name	School	Position
Anshika Bansal	Morning Star St. Anselm's School, Madrapura, Jaipur	First
Diva Rajpurohit	St. Xavier's Sr. Sec. School, C-Scheme, Jaipur	Second
Ishan Jain	St. Anslem, Pink City School, Malviya Nagar	Third



# STUDENT PRESENTERS OF RESEARCH PUBLICATIONS

## International Conference

8 FEBRUARY 2025

Sustainability and AI in a VUCA World (Volatility, Uncertainty, Complexity, Ambiguity)  
An Interdisciplinary Approach towards Viksit Bharat



Paper presenter from Zimbabwe  
Chivhenge Annah Rumbidzai

### HIGHLIGHTS

- The Department of Science hosted a panel discussion on "Scientific Innovations for Sustainable Development" as part of the International Conference.
- The offline presentations were chaired by Prof. Dr. Suresh Raju C. (LNMIT), while the online session was led by Sr. Dr. Ligimol Louis (HOD, Science). The session featured 20 global presentations highlighting advancements in AI, energy, healthcare, and waste management aimed at promoting sustainability.

## Fourth National Symposium Vision for Viksit Bharat@2047

5 APRIL 2025



## Student Research Projects

RPC IN COLLABORATION WITH INNOVATION INCUBATION CELL (IIC)

### BIODEGRADABLE ECO-FRIENDLY PLASTIC FROM AGRICULTURAL WASTE

Student Researchers: Zoya Khan, Gauri Gautam & Vani Bharti  
Research Guide: Sr. Dr. Ligimol Louis

### GREEN SYNTHESIS OF METAL NANOPARTICLES FOR MOSQUITO VECTOR CONTROL

Student Researchers: Kashish Choudhary, Jalaj Singh Jodha, Alen Varghese & Aryan Jat  
Research Guides: Dr. Antony Nitin Raja & Dr. Juniet Maria Jose

### FOG & DEW HARVESTING: SUSTAINABLE SOLUTIONS TO WATER SCARCITY

Student Researchers : Mr. M. Krishna Teja Rao  
Research Guide: Dr. Nithin Mohan & Dr. Antony Nitin Raja

### AGROWASTE DEGRADATION THROUGH OYSTER MUSHROOM CULTIVATION

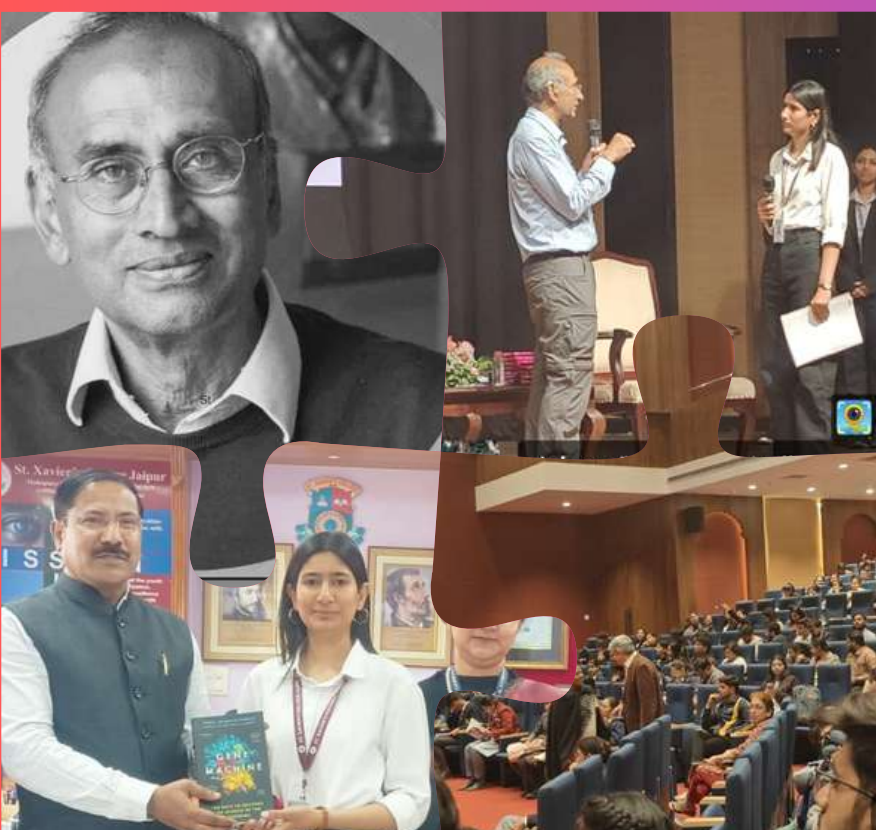
Student Researchers : Vinita Saini & Vanshika Sharma  
Research Guide: Dr.Sr. Ligimol Louis & Dr. S. Senthil Kumar

# SCIENCE BEYOND WALLS TALKS & TOURS THAT TRANSFORM

## EDUCATIONAL CUM INDUSTRIAL VISIT TO JAGDAMBA LABORATORIES & SAMMRIDHI ORGANIC HEALTHCARE PVT. LTD.

DECEMBER 6, 2024

14 students visited Jagdamba Laboratories and Sammriddhi Organic Healthcare, Bagru. The visit provided hands-on experience in modern lab techniques and organic healthcare.



## SCIENCE TALK - MY ADVENTURES IN RIBOSOME by Nobel Laureate Dr. Venki Ramakrishnan

JANUARY 31, 2025

Students of B.Sc. (Bio) attended a Science Talk by Nobel Laureate Dr. Venki Ramakrishnan at Rajasthan International Centre. Highlighted by an engaging Q&A session, student Jalaj Singh Jodha received a signed copy of *Gene Machine* for her insightful question on species re-evolution.

# STUDENT ACHIEVEMENTS

## UNIVERSITY TOPPERS 2023-2024

MR. RITUMAN SHARMA (BIO)  
MS. ISHITA TIWARI (BIO)  
MR. DEV BIHANI (MATHS)



## ACADEMIC EXCELLENCE AWARD (24-25)



**MATHS GROUP**

**BIO GROUP**

**Mr. Mannan Jhajharia**

**Ms. Vanshika Sharma**



PRIDE OF THE DEPARTMENT '24-25  
MS. VANSHIKA SHARMA

## NATIONAL LEVEL ACHIEVER

**JAI VARDHAN SINGH RATHORE**  
III YR BSC. MATHS

22 RAJASTHAN STATE CHAMPIONSHIP RIFLE PISTOL 2024  
10M PISTOL(NR) CHAMPIONSHIP YOUTH MEN

## SWAYAM/NPTEL COURSE

**MS. VANSHIKA SHARMA**  
III YR BSC. BIO

**Biomedical  
Nanotechnology**

**Elite+Silver  
(Aug-Sep 2024)**

**MR. IKSHU GUPTA**  
III SEM BSC. BIO

**Biomedical  
Nanotechnology**

**Elite+Silver  
(Aug-Sep 2024)**

## ACCOLADES - COLLEGE LEVEL

**MS. JALAJ SINGH JODHA**  
**MR. ARYAN JAT**  
**MR. ALEN VARGHESE**  
BSC (BIO) SEM I

SECURED II POSITION @  
SYNERGY '24 - PRESS QUEST

ECONOMICS SOCIETY,  
ST. XAVIER'S COLLEGE  
JAIPUR



## STUDENT EXCHANGE PROGRAM

**MS. TANISHA YADAV & MS. VANI BHARTI**  
INDO-NEPAL INTERNATIONAL CULTURAL EXCHANGE  
BSC (MATHS) SEM I

Accompanied by - Dr. Antony Nitin



# DEPARTMENT HIGHLIGHTS

## Hi-Tech Lab Facilities



CHEMISTRY LAB



PHYSICS LAB

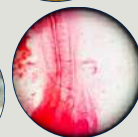
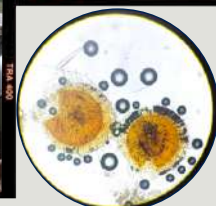
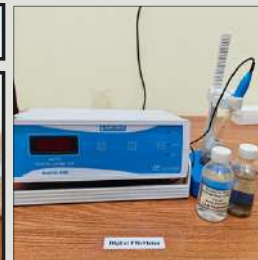


BOTANY LAB



## CENTRAL INSTRUMENTATION FACILITY

- \*Spectrophotometer \*pH Meter \*Binocular Microscope
- \*Incubator\*Centrifuge \*Hot Air Oven \*Autoclave



## ANANDAM PROJECTS



## Mentoring

Each I, II, and III year student is assigned a mentor for continuous academic, career, and research-oriented counselling and support.

## Mid semester Internal Exam



## ONGOING SEED MONEY PROJECTS

CULTIVATING SUSTAINABILITY: ORGANIC FARMING FOR GREENER FUTURE

SR. DR. LIGIMOL LOUIS

IMPACT OF PESTICIDES ON SOIL HEALTH IN JAIPUR'S AGRICULTURAL LAND AND COMMUNITY LIFE

DR. ANTONY NITIN

VERMICOMPOSTING & BIOCOMPOSTING

DR. JUNIET MARIA JOSE

INVENTORY AND RECORD OF FLORAL AND FAUNAL DIVERSITY IN THE CAMPUS

DR. ANTONY NITIN

EXPLORING THE EFFECTS OF INDUSTRIAL EFFLUENTS ON SOIL AT NEVTA DAM, JAIPUR

SR. DR. LIGIMOL LOUIS

AQUAPONICS

DR. ANTONY NITIN

EVALUATION ON COMPOST QUALITY PRODUCED BY VARIOUS TECHNIQUES : A CASE STUDY AT ST. XAVIER'S COLLEGE JAIPUR

DR. JUNIET MARIA JOSE

AYUSH UDYAN

# FACULTY ACHIEVEMENTS

## 1. PROF. (FR.) S. XAVIER SJ, PRINCIPAL

a. Conducted a training program on “AI Tools for Higher Education” with Dr. Antony Nitin Raja for the faculties of St. Xavier’s College, Maitighar, Kathmandu, as part of the Training of Trainers (ToT) Workshop from 26–28 November 2024.

b. Published a Coffee Table Book Nature’s Canvas, St. Xavier’s College Jaipur (ISBN: 978-93-340-8766-6).

c. Published an edited book titled Envisaging Viksit Bharat @ 2047, Bloomsbury Academia, New Delhi (ISBN: 978-93-56407-34-3).

## 2. DR. M. SHANMUGAM

a. Published a paper “Facile Two-Step Approach of Chitosan/Nickel/ZrO<sub>2</sub> Bio-nanocomposite and Investigation of their Antimicrobial Activities Against Escherichia coli” in Journal of the Indian Chemical Society, Vol. 101(11), Nov 2024. [SCOPUS & WoS]

## 3. DR. S. SENTHIL KUMAR

a. Published a paper “A Sustainable Strategy to Improve Photocatalytic Degradation Properties of CuO and CuO-rGO Nanocomposite Using Eucalyptus Leaf Extract” in Journal of the Indian Chemical Society, Vol. 101, Oct 2024. [SCOPUS & WoS]

## 4. SR. DR. LIGIMOL LOUIS

a. Co-authored and presented a paper on “A Green Chemistry Approach Using Resorcinarene-Based Supramolecular Systems for the Removal of Toxic Pollutants” at the 2nd Int. Conference on Advanced Materials for Green Chemistry and Sustainable Environment (AMGSE-2025), K.R. Mangalam University, 20–21 March 2025.

b. Received Best Paper Award for “Integration of Traditional Knowledge System for Promoting Organic Farming” (co-authored with Dr. Juniet Maria Jose, Dr. Antony Nitin) at a National Seminar organized by Vimala College, Thrissur.

c. Co-authored a book chapter Integration of Traditional Knowledge Systems for Promoting Organic Farming Practices: A Case Study at St. Xavier’s College Jaipur (with Prof. Fr. Xavier, Dr. Juniet Maria Jose, Dr. Antony Nitin Raja) in Traditional Knowledge System and Biodiversity (ISBN: 978-81-725).



PROF. S XAVIER & DR. NITIN, RECEIVING THE APPRECIATION CERTIFICATE FROM DR. AUGUSTINE SJ, THE PRINCIPAL OF SXC KATHMANDU



DR. SR. LIGIMOL LOUIS  
HOD SCIENCE  
CHEMISTRY

## 5. DR. ANTONY NITIN RAJA

a. Co-conducted the “Training Program on AI Tools for Higher Education” at St. Xavier’s College, Maitighar, Kathmandu (26–28 Nov 2024).

b. Resource person for Five-Day FDP on “AI Tools in Higher Education” (5–9 May 2025), jointly organized by FTDEPC (Jaipur) & St. Xavier’s College of Management & Technology, Patna.

c. Served as judge for the Research Paper Presentation Competition on National Technology Day (10 May 2025), part of the event “AI-Powered Research: Tools & Methodologies” organized by Dept. of Computer Science, SXCJ.

## 6. DR. NITHIN MOHAN

a. Presented a paper “Enhancing the Efficiency of Electrostatic Fog Collectors Using Ensemble Machine Learning Models” at the International Conference Sustainability and AI in a VUCA World: Towards Viksit Bharat.

b. Resource person in a Five-Day FDP on “AI for HEIs - Improving Outcomes, Enhancing Experience” (24–28 October 2024), conducted a session on AI & Research Tools.

## 7. DR. JUNIET MARIA JOSE

a. Presented a paper “Evaluation of Serum Iron Profile & Good Glycemic Control in Type-2 Diabetes Mellitus Patients” at the International Conference Sustainability and AI in a VUCA World: Towards Viksit Bharat held on 8–9 February 2025.



DR. ANTONY NITIN RAJA  
ASST. PROFESSOR  
CHEMISTRY



DR. NITHIN MOHAN  
ASST. PROFESSOR  
PHYSICS



DR. JUNIET MARIA JOSE  
ASST. PROFESSOR  
ZOOLOGY

# Editorial Board



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It is with great pride and heartfelt gratitude that we present this edition of XSI-Times, the official newsletter of the Department of Science, St. Xavier's College, Jaipur. This edition captures the dynamic range of our departmental endeavors—including student accomplishments, SDG-based initiatives, educational and field visits, as well as research carried out under the SEED Money Project and the Innovation and Incubation Council (IIC). Curated especially for our student community, the newsletter aims to be an engaging and concise read that sparks curiosity and promotes scientific thinking.

Our united efforts consistently work to bridge the divide between academic pursuits and the needs of society. Guided by a shared sense of purpose and steadfast commitment, we move forward with the conviction that the strides we make today will lay the foundation for a brighter, more sustainable future.