



St. Xavier's College (Autonomous)

(Recognized as "College with Potential for Excellence" by UGC & Accredited at A⁺⁺ grade with CGPA of 3.66/4 in IV Cycle by NAAC)

Palayamkottai – 627 002

ANNUAL REPORT 2023-2024

RESEARCH CENTRES

1. ENTOMOLOGY RESEARCH UNIT

1. Entomology Research Unit (ERU), Department of Zoology, St. Xavier's College (Autonomous), Palayamkottai, under the guidance of Dr. P. Selvaraj and Dr. T. Pushpanathan, continues the research and extension activities. At present, 5 research scholars (3 under the guidance of Dr. P. Selvaraj and 2 under Dr. T. Pushpanathan) are doing their Ph.D.
2. Under the co-guidance of Dr. P. Selvaraj, Mr. M. Madasamy was awarded Ph.D. degree by the Manonmaniam Sundaranar University, Abishekapatti, Tirunelveli. Ms. J. Princy Rathnamala Jayaseeli submitted her doctoral thesis entitled "Control of Spodoptera Litura Using Phytoecdysones from Ferns" (TNSCST Student Project Grant) on 20.06.2023. Mr. J. Sherlin John submitted his Ph.D. thesis entitled "Molecular and Classical Taxonomy of Reduviidae," and Sr. M. Velankanny submitted her Ph.D. thesis entitled "Exploration of New Entomopathogenic Fungi for Cotton Pest Management" on 20.02.2024. Under the guidance of Dr. T. Pushpanathan, Ms. Selvarani and Ms. G. Sumathi (CSIR-NET JRF) are doing their research on "Insect Vector Control Using Phytochemicals". The scholars at ERU participated in three National, International Conferences and three Workshops. They also presented six papers and published four research articles in SCOPUS Indexed Journals.

2. CENTRE FOR AQUACULTURE RESEARCH AND EXTENSION (CARE)

1. The Centre for Aquaculture Research and Extension (CARE) is engaged in diverse research areas of Aquaculture, Including Aquatic Biodiversity, Aquatic Toxicology, Fish Nutrition and Feed Formulation, Fish Pathology, Genetics, Water Quality Assessment, Aquatic Biotechnology, Fish Histology, and Recent Trends in Probiotics. CARE's research in 2023-

2024 focused on developing probiotics for fish gut and water health, discovering new drugs from bacterial secondary metabolites, and improving health and growth rates in aquaculture through disease treatment and management. Additional focus is given to the culture and breeding of ornamental fish. Studies are underway to develop new probiotic formulations that promote gut health and improve growth rates in both large-scale and small-scale aqua farms. CARE's research also aims to assess water quality parameters, apply biotechnological interventions to enhance overall aquaculture production, and address critical needs in Indian Aquaculture. In the academic year 2023–24, six students are pursuing their research under the guidance of Dr. J. Ronald, Dr. P. Raja and Dr. R. Azhaguraj.

2. Anni Jain Askwith Mary, a research scholar of Dr. R. Azhagu Raj, submitted her Ph.D. dissertation to Manonmaniam Sundaranar University, Tirunelveli. Works carried out in the CARE laboratory have been published as five papers in Web of Science Journals and four papers in Indexed Journals during the academic year 2023–24. Research scholars presented nine papers at a National-Level Conference.
3. Ramkumar participated in two International Conferences and presented two papers. The first one is titled “In vitro and Molecular Docking Studies on Bioactive Compounds from a *Brevibacillus sp*”. The National Conference on “Biodiversity Restoration: Current Trends and Emerging Opportunities” was presented in a Conference organized by the Department of Zoology at St. Xavier's College (Autonomous), Palayamkottai, on 21.02.2024. The second paper was presented in the National Conference on “Health and Hygiene” (NSHH’ 24), organized by the Department of Zoology, Sarah Tucker College (Autonomous), Tirunelveli on 16.02.2024, titled “Evaluation of Antibacterial Activity Against Prawn Pathogen” and “Broad Spectrum Antibacterial Activity of *Lepidagathispungens* Against Fish Pathogenic Bacteria.”
4. Balagangatharan presented two papers titled “Phytochemical Screening and Antibacterial Potential of Root Extract of *Moringa oliefera*” at the National Conference on “Health and Hygiene” (NSHH’ 24), organized by the Department of Zoology, Sarah Tucker College (Autonomous), Tirunelveli, on 16.02.2024. “Exploring the Antimicrobial and Azo Dye Degrading Potential of a Marine *Bacillus subtilis* Strain” was presented in the National Conference on “Biodiversity Restoration: Current Trends and Emerging Opportunities” organized by the Department of Zoology, St. Xavier's College (Autonomous), Palayamkottai

on 21.02.2024. A paper was published in the Web of Science, Isolation and Characterization of Antagonistic Bacteria from the Gut of *Lampitoma mauritii* (Kinberg, 1866). *Indian Journal of Science and Technology*, 17(2), 194–203.

5. Karthick presented a paper titled “Analyzing Bird Diversity and Distribution Using the Fuzzy Matrix Technique” at the National Conference on “Biodiversity Restoration: Current Trends and Emerging Opportunities,” organized by the Department of Zoology at St. Xavier's College (Autonomous), Palayamkottai, on 21.02.2024.
6. Sarath Kumar presented a paper titled “Antimicrobial and GC-MS Analysis of Bioactive Components on the Leaf Extracts of *Artocarpus hirsutus Lam*” at the National Conference on “Health and Hygiene” (NSHH’ 24), organized by the Department of Zoology, Sarah Tucker College (Autonomous), Tirunelveli, on 16.02.2024.
7. Ms. S. Renuka, a research scholar of Dr. J. Ronald, has registered patents for her innovative ideas on the instruments Insect Collecting Kit (Design No. 388720-001) and Plant Microbes Detection Device (Design No. 377681-001).

3. CROP PROTECTION RESEARCH CENTRE (CPRC)

1. During the academic year 2023-24, the CPRC has been mainly concentrating on utilization of locally available plants for Insect Pest Management. Two common plants (Neem and Chilly) have been considered for the investigation.
2. Mr. Petchidurai defended his Ph.D. thesis on 22.01.2024. Mr. K. Madasamy and Ms. G. Ponmalar are actively engaged in research.
3. The first patent (Indian Patent No. 422778), Seaweed Botanical Formulation for Crop Pest and Phytopathogen Management, has not been popularised because of the non-submission of working statements by the owner. The second patent on “Pesticidal Formulations and Processed of Preparation Thereof” (India Patent Application No. 1573/CHE/2015) was not processed of due to the non-availability of applicant details and approval.
4. Mr. K. Madasamy, Ms. G. Ponmalar, and T. Sri Ram Muthu participated in a Workshop on “Research Publication in Scopus-Indexed Journals” organised by St. Xavier’s College (Autonomous), Palayamkottai, on 25.08.2023. They also attended an Orientation Programme on the creation of “VIDWAN, ORCID, Research Gate, and Scopus” IDs and the

authentication of UGC CARE listed journals. T. Sri Ram Muthu completed the second doctoral committee meeting on 11.07.2023.

5. Mrs. S. Santhi, a part-time research scholar, has been working on Entomopathogenic Nematodes that were collected from Kanyakumari district Banana and Mango grooves. They were mass produced and tried to be used for pest management. One post-graduate student and three undergraduate students have been working on their dissertations on Botanicals for Agricultural Pests and Post-Harvest Pest Management.

4. VECTOR BIOLOGY AND PHARMACOLOGY

1. The Centre for Vector Biology and Pharmacology was established in 2017, with a continued focus on research fields on Sericulture, Pharmacology, Biodiversity of birds and insects, Mosquito management, and other related topics. In 2023-2024, two Ph.D. theses have been submitted. Six Ph.D.s are now being worked in the fields of Freshwater Crabs, Aquatic Biodiversity, Pharmacological Effects of Plant Extract, Assessment of Wetland Bird Diversity, and Sericulture. 10 research papers were published in peer-reviewed journals from this research centre.
2. Three papers were presented at National and International Conferences, and a student received the best paper award for oral presentation. Research scholars attended workshops on “Microscopy and Research Publications in Scopus-indexed Journals” organized by various organizations in the fields of biology. One of them completed a course on research ethics. 3 U.G. and 4 P.G. dissertations were submitted from the project work. The Fisheries Survey of India (Chennai), CMFRI (Tuticorin), Avison Biotech (Chennai), V. R. Hospital Lab, Kaveri Hospital, Agarwal Eye Hospital, Tirunelveli, etc. were some of the few places where students completed their internships.

5. BOTANY RESEARCH CENTRE

1. Botany Research Centre was established in 1994 and the main field of research focuses on Plant molecular biology, Microbiology, Nanotechnology, Marine Algal Research, Phytochemistry, Pharmacology, Plant Tissue Culture, Cryptogamic Botany, Bioinformatics, Taxonomy & Plant Systematics and Ecology. Since its establishment, 18 major research

projects, 16 minor research projects have been carried out by agencies such as UGC, DBT, DST-SERB, CSIR, TNSCST, ICSSR and UBCHEA. 720 research papers were published. 25 National conferences and one International conference have been conducted so far. More than 100 scholars have completed their Ph.D., from the Department. The Department of Science & Technology of the Govt. of India has chosen this Department as one of the centers for & Fund of improvement of Science and Technology Infrastructure in University and Higher Education Institutes (FIST).

2. This academic year 2023-24 four research scholars Mr. E. Fredrick Raja, Mr. P. Anusathya, Mr. V. Manivannan and Ms. J. Vijayakumari, successfully defended their doctoral theses and was awarded Ph.D. degree under Manonmaniam Sundaranar University, Tirunelveli. Three research scholars submitted their theses and are awaiting viva-voce examination. Thirteen research articles are published in Scopus, Web of Science and UGC CARE listed journals. Four research scholars are pursuing their Ph.D. The research centre has conducted a Two day National workshop on “Cell Imaging and Cytological Techniques Using Bright field, Phase Contrast and Fluorescence Microscopy” on 28.11.2023 and 29.11.2023. Thirty Five participants were selected and trained on various Cytological Techniques using Bright Field, Phase contrast and fluorescence microscopy techniques. A National Conference on “Advances in Medicinal Plant Research (NAMPR -2024)” was organized in blended mode on 29.02.2024 with participants from different parts of Tamilnadu, Kerala, Telangana, Rajasthan and Andhra Pradesh.

6. PLANT MOLECULAR BIOLOGY RESEARCH UNIT

The Plant Molecular Biology Research Unit (PMRU) was established in 2001 with the aim of promoting Plant molecular biology research. PMRU conducts diverse research across multiple areas of Plant Science, including:

1. Molecular characterization and assessment of aquatic and terrestrial plants using advanced techniques like marker-assisted selection, gene cloning, and genetic engineering.
2. Microbial-based drug synthesis involves harnessing plant-associated microbes to produce pharmaceutical compounds.

3. Crop improvement via microbe interactions, focusing on plant growth-promoting rhizobacteria and mycorrhizal fungi.
4. Culture and characterization of microalgae for applications in biotechnology.
5. Bioinformatics and statistical analysis to interpret large-scale genomics and metabolomics data.

Currently, studies are underway to screen azo-degrading bacteria and evaluate their additional plant growth promoting effects on food crops under contained greenhouse conditions. Importance is given to monitoring any genetic variability induced in treated plants and their associated microbiomes when supplements are applied. Two scholars submitted their theses and are awaiting viva voce examination. Three research articles were published in reputed national and international journals. Research scholars participated in two e-conferences and training programs. Presently, two full-time scholars have registered for doctoral research. Two articles have been accepted in renowned journals for publication after peer review. Our facilities, including Microscopes, Centrifuges, and Molecular Biology Equipment are routinely maintained and shared among researchers.

7. CENTRE FOR PLANT BIOTECHNOLOGY

The Centre for Plant Biotechnology (CPB) is currently focusing its attention on the ex-situ conservation of rare and endangered ferns of the Western Ghats, India, and the anatomical, micromorphological, photochemical, histochemical, and molecular characterization of pteridophytes. Ms. Silvia Juliet and Ms. B. Shivananthini completed their course work. Ms. Vidyanani George has completed her research and submitted her thesis. Mr. V. Manivannan defended his thesis successfully. Six research papers have been published in International, journals (Scopus) during this academic year. At present, two research scholars are doing their research.

8. CENTRE FOR ADVANCED RESEARCH IN PLANT SCIENCES (CARPS)

1. The Centre for Advanced Research in Plant Sciences (CARPS) was established on 06.04.2013 by Rev. Dr. A. Joseph, S.J., former Principal, St. Xavier's College (Autonomous), Palayamkottai with the mission to promote progress in the field of Plant

Sciences. Dr. J. John Peter Paul, Assistant Professor of Botany is working as the Director of CARPS who concentrates on Recent Trends in Plants Sciences. Dr. E. Fredrick Raja was awarded Ph.D., on 31.08.2023 and Dr. P. Anusathya Priya was awarded Ph.D., on 03.10.2023 by Manonmaniam Sundaranar University, Tirunelveli.

2. The Research Scholars, Ms. M. Athi Lakshmi is working on Molecular Biological and Phytochemical Diversity of Marine Macro Algae. Totally 3 research articles were published in UGC approved International research Journals in the academic year 2023-2024. The Director and the research scholars of CARPS have participated and published 3 research articles in various national and International Conferences/Symposia/Workshops. 21 Rbcl sequences were deposited in National Centre for Biotechnology Information (NCBI), Bethesda, Maryland.
3. Dr. J. John Peter Paul is the editorial board member of the following research journals: *Bulletin of Environment, Pharmacology and Life Sciences, International Journal of Pharmaceutical Research and Bio-Science, International Journal of Advanced Research in Biological Sciences, Advanced Journal of Pharmacy and Life Science Research, International Journal of Research in Science and Technology, International Journal of Universal Science and Engineering, American Journal of Pharmacology and Pharmacotherapeutics, International Journal of Nanobiotechnology and International Journal of Molecular Biotechnology*. He also acts as a reviewer for the *International Journal of British Biomedical Bulletin*.

9. CHEMISTRY RESEARCH CENTRE

The Chemistry Department was promoted as a research centre in 2011. The department has a well-equipped research laboratory exclusively for the research scholars to conduct their work, and it has an instrumentation centre consisting of a Guoy balance, Flash Photometer, ROTA EVAPORATOR, UV spectrophotometer, FTIR, HPLC, electrochemical work station, etc. It has two more research labs, for a total area of 1420 sq. ft. The research fields concentrated by the department are Phytochemistry, Electro Organic Chemistry, Nanochemistry, Polymer Chemistry, Green Chemistry, Supramolecular Chemistry, and Adsorption Studies. The college has subscribed to three journals related to chemistry: the *International Journal of Applied Chemistry, the International Journal of Chemistry and Applications, and the International Journal of Pure and Applied Chemistry*. The department has a library for the research scholars

and PG students, with more than 315 books. At present, the research centre has nine recognized research guides. Fifteen research scholars are working for their Ph.Ds under different guides. In this academic year, nine research papers have been published in reputed International Journals.

10. PHYSICS RESEARCH CENTRE

The Physics Research Centre was established in 2007. And it has created a well-defined system to promote research. Exclusive research centres such as the Materials Research Centre, Crystal Research Centre, and Energy Research Centre are the department - level research units to support the research scholars of the college. At present, 24 research scholars are pursuing their research under the supervision of nine research supervisors in different disciplines. The Physics Research Centre was made available to all the PG students, whether they have any projects of their own or they are interns doing their research. The department has research instruments to carry out UV studies, optical properties of thin film, and nanomaterials. The faculty of the Physics Department is carrying out research in the fields of Crystal Growth, Thin Film, Nanomaterials, Polymers, Optoelectronics, Super Capacitors, etc. A notable number of papers have been published in well-reputed national and international journals for the academic year 2023-2024. The Department of Physics is continuing an MOU with PSN College of Engineering, Melathediyoor, with the aim of undertaking research activities pertaining to Nanomaterial synthesis and characterization, polymers, and hands-on training on Electrochemical Workstations.

11. MATERIALS RESEARCH CENTRE

The Materials Research Centre, Department of Physics, is actively doing research in various domains of materials science. Projects have ranged from the development of novel nanomaterials for energy applications to the characterization of advanced nanomaterials. The achievements include the synthesis of graphene-based composites with exceptional mechanical properties and the discovery of new catalysts for sustainable chemical processes. Three of our research scholars, Mr. P. Ajith, Mr. M. Sappani Muthu, and Sr. Agnes CIC, have received their doctoral degrees after the successful completion of the public viva voce examination. At present, Mr. A. Carroll Xavier is doing research under the guidance of Dr. D. Prem Anand. Dr. P. Ramasamy, Research Director of SSN College of Engineering, Chennai, visited our research

centre and had a fruitful discussion about the irradiation of solids and the SR Method. Many project proposals were submitted to various agencies, such as DST, CSIR, DRDO, MOES, SERB, BRNS-DAE, and BARC-Mumbai. We have published seven research articles this academic year in leading National and International journals. Throughout the year, the Materials Research Centre has been engaged in cutting-edge research across various domains of materials science. Projects have ranged from the development of novel nanomaterials for energy applications to the characterization of advanced materials for aerospace engineering. Notable achievements include the synthesis of graphene-based composites with advanced mechanical properties and the discovery of new catalysts for sustainable chemical processes. The Materials Research Centre has published numerous papers in High-Impact Journals, contributing to the global body of knowledge in materials science. Looking ahead, the MRC is poised for continued growth and success. Plans for the upcoming year include expanding research initiatives in emerging areas such as Quantum Materials, Biomaterials, and Additive Manufacturing. The centre will also focus on strengthening existing collaborations and forging new partnerships to tackle complex material challenges and drive innovation in diverse sectors. The Materials Research Centre has had a productive and impactful year, advancing knowledge, fostering collaboration, and driving innovation in materials science and engineering. With a strong foundation and a clear vision for the future, the centre is well-positioned to make even greater contributions to the field in the years to come.

12. CRYSTAL RESEARCH CENTRE

1. The Crystal Growth Research Centre was established with the DST Project entitled Investigations on the preparations, crystal growth, and characterization of guanidine-based NLO crystals for various optoelectronic applications, with a funding amount of Rs 13.44 lakhs for the duration of three years. The research centre has successfully carried out seven M.Sc. projects. The PG candidates have grown and characterized the guanidine carbonate family of crystals as well as amino acid-based crystals. The constant temperature bath instrument has been effectively utilized for its significance in obtaining the crystal's formation. Ms. D. Sathya had successfully completed her Ph.D. and published around 10 articles in Scopus, Web of Science, and UGC Care-listed journals. Currently Two full-time and one part-time research scholar are working in the Crystal Growth Research Center. Ms. M. Josephine Gladiya and R.

Akash are full-time research scholars, and Mrs. C. Prasanna Devi is a part-time research scholar. Ms. M. Josephine Gladiya is concentrating on growing new organic and semi-organic single crystals that focus on amino acids and the guanidine carbonate family of crystals for various nonlinear optical applications such as Optoelectronic, Photonic and Laser communication purposes. She has published a research article in the 2023-2024 academic year entitled “Characterization of Gamma-Glycine Crystals Grown in an Aqueous Solution of Cerous Chloride” in the European Chemical Bulletin, which is a SCOPUS-indexed journal, and has published 7 articles in proceedings with an ISBN. She has presented eight papers at National and International Conferences. Currently, this scholar has been growing nonlinear optical crystals, studying characterization techniques, and communicating articles to Elsevier and Springer Journals for publication.

2. R. Akash is concentrating on the thin film research area, and he is concentrating on fabricating a solar cell with FeSe₂. The scholar is utilizing various facilities available at the laboratory. The scholar has great interest in fabricating a photovoltaic device and collaborating with the Department of Physics, Central University of Tiruvarur. Mrs. C. Prasanna Devi, a part-time research scholar, is concentrating on growing aminoacid-based crystals and their dopants for various optoelectronic applications. She has published one article in a UGC-listed journal and presented papers at National and International Conferences. Currently, she is growing crystals and exploring the various properties of the crystals by analysing them with suitable characterization techniques. It is necessary to convey that the Crystal Growth Research Centre has emphasized that it is inevitable for crystal growers to work in the desired field with a positive atmosphere.

13. ENERGY RESEARCH CENTRE

In the Energy Research Centre, research is carried out in the field of solar energy and energy storage using batteries and super capacitors with nanocomposites and polymers by Dr. S. Anna Venus and research scholars. One of the research scholars, C. Bhagya Lakshmi, defended her Ph.D. thesis under the RFRS scheme funded by TNSCST on 11.12.2023.

The following research works have been reported in National International Journals and Conferences in the academic year 2022-2023 by the energy research centre:

Publications in journals

1. Published a paper entitled “Probing Novel Photoanodes Relying On Cubise/Metal’ Oxides Nanocomposites-Based Dye-Sensitizing Solar Cells” in the Journal **Surfaces and Interfaces** 37(2023)
2. Published a paper entitled “Structural, Optical, And Photovoltaic Properties Of V₂o₅/Zno and Reduced Graphene Oxide (Rgo)-V₂o₅/Zno Nanocomposite Photoanodes For Dye-Sensitised Solar Cells” in **Carbon Letters** 1007 (September 14, 2023)

Publications in Proceedings

1. “A New Class Of Highly Stable Co-Polymer 4-Fluoro Phenyl Maleimide With Methyl Methacrylate” in the International Conference on Technology Important Materials for Device Fabrication held in Aditanar College of Arts and Science on September 1, 2023.
2. “Synthesis And Study On Photocatalytic Activity Of Mn-Doped Zns” in the national conference on Recent Developments in Effective Materials Redeems’ 24 by the Department Of Physics And Research Centre, Sarah Tucker College (Autonomous), Tirunelveli on February 2, 2024.
3. “Investigation Of Synthesis And Characterization Studies Of Yttrium Oxide Nanocomposite For Electric Charge Application” in the National Conference” on ‘Recent Developments In Effective Materials’ ‘Redeems’ 24 by the department of physics and research centre, Sarah Tucker College (Autonomous), Tirunelveli on February 2, 2024
4. “Photocatalytic Studies Of Crystal Violet Dye Using Zns Nanoparticles” in the International Conference on Recent Advancements in Materials Science and Nuclear Energy Research (ICRAMNR-2024), Department of Physics, Government Arts and Science College, Kovilpatti, on February 16, 2024.

Paper Presentation

The research scholars presented four papers in different National and International Conferences and attended four conferences and workshops.

1. Presented a paper titled “Synthesis And Characterization Of Yttrium Nano Composite For Battery Application” in the International Conference on “Recent Trends in Material Science (ICRTMS-2023)” organized by the Department of Physics, Kristu Jayanti College, Bengaluru, on 7.3.2023.
2. Presented a paper titled “Concise Review of Biopolymers and Their Composites For Energy Storage Applications” in the international conference on “Recent Trends in Material Science (ICRTMS-2023)” organized by the Department of Physics, Kristu Jayanti College, Bengaluru, 7.3.2023.
3. Presented a paper titled “Electrochemical Performance of Mg Ion/ Biopolymer Electrolytes” in the national conference on Recent Trends in Physics organised by the Department of Physics, Sri Sarada College for Women College (Autonomous), Tirunelveli on 16.3.2023.
4. Presented a paper titled “Bio-Host Polysaccharides Pectin Complexed with Mg-Based Solid Electrolyte for Battery Application” in the three-day International Workshop/Summer school and course preparation on “Solar water splitting and artificial synthesis” SWAP 2023 held at Madurai Kamaraj University, Madurai. 05.06.2023 – 07.06.2023.

Participation

The students and research scholars participated in the following 4 conferences and workshops:

1. National Conference on “Recent Trends in Physics”, organised by the Department of Physics, Sri Sarada College for Women College (Autonomous), Tirunelveli on 16.3.2023.
2. Workshop on “Research Publication in Scopus Indexed Journals” conducted by St. Xavier’s College, Palayamkottai, on 15.7.2023.
3. All-India Workshop on “Mobilising Renewable Energy for Battery Swapping, G2v, and V2g Charging Stations in India” was conducted by the Department of Electrical and Electronics Engineering, SRM IST, Kattankulathur, from 21.07.2023, to 22.07.2023.

4. A State-Level Hands-on Workshop on “The Gaussian 16 W Potential Tool for Materials Scientists” conducted by the Department of Physics, St. Xavier’s College (Autonomous), Tirunelveli, on 08.12.2023.

14. MATHEMATICS RESEARCH CENTRE

The Mathematics Department has a passion for creating research articles with an intense desire for innovation through research collaboration. There are 5 Research Supervisors and 20 scholars. The research areas cover Operations Research, Graph Theory, Functional Analysis, Algebra, Algebraic Graph Theory and Fuzzy Logic. One Scholar has defended the thesis and two scholars have submitted their theses through the research Centre during the academic year 2023-24. 45 research articles were published in Web of Science, Scopus, UGC Care listed journals and Conference Proceedings with impact factors. The PG & Research Department of Mathematics conducted ‘An Intra-collegiate Three Day Workshop on Problem Solving in Analysis, Algebra and Integral Equations’ on 15.11.2023 – 17.11.2023. 43 students from the Department of Mathematics participated in this workshop. ‘A Two day Workshop on Linear Algebra’ was conducted on 06.12.2023 – 07.12.2023, around 148 participants got benefited. ‘An International Conference on Applications of Mathematics in Data Science’ was conducted on 27.02.2023 and 28.02.2024 in collaboration with the PG Department of Data Science. Around 140 PG students, Research Scholars and faculty members participated in this conference. 64 participants presented papers. The papers of the conference were published in UGC CARE listed journals and ISBN Proceedings.

15. COMPUTER SCIENCE RESEARCH CENTRE

The Computer Science Research Centre was established in 2009 as the first research centre among the affiliated colleges of Manonmaniam Sundaranar University, Tirunelveli. In this research centre, four faculty members are guiding research scholars. There are twenty-four research scholars working towards their Ph.D. degree. In this academic year 2023–24, six candidates have been awarded Ph.D.s under the guidance of Dr. S. P. Victor, Dr. S. John Peter, T.C. Rajakumar, and Dr. M. Safish Mary. Around six doctoral committee meetings were held in the research centre during this academic year. A Oneday Workshop on ‘Generative AI Tools and their Application for Industry 4.0’ was held on 27.02.2024. Mr. J. Mohammed Nowsath Sherif,

MD & CEO, and Mr. Santhosh, Senior Trainer, Start Dom Education, Chennai, were the resource persons. Around seventy participants attended the workshop.

16. ENGLISH RESEARCH CENTRE

The English Research Centre was established in 2011. Ever since its genesis, the research centre has produced many scholars, pushing academic service and excellence. At present, there are five research supervisors and eighteen Ph.D. scholars. A scholar, Ms. V. Ajitha, has submitted her dissertation under the guidance of Dr. Lizie Williams this academic year. Every year, the scholars come out with research publications of quality in their areas of research. This year, scholars and teachers have published twenty articles in rated journals. Ms. A. Andrew Arockia Celsy, under the guidance of Dr. D. Jockim defended her thesis on 05.12.2023. The English Research Centre has been publishing a bi-annual peer reviewed journal “Inter Disciplinary Research Journal for Humanities”.

17. FOLKLORE RESOURCES & RESEARCH CENTRE (FRRC)

1. In collaboration with the Department of Tamil, MSU College, Nagampatti, the Department of Folklore and FRRC organised a seminar on the theme "Seminar on Folkloristics" on 09.09.2023, at MSU College, Nagampatti.
2. **Thuckalay Peer Mohammed Appa Memorial Seminar:** In collaboration with the Department of Tamil, Manonmaniam Sundaranar University, Tirunelveli, the Department of Folklore, and FRRC, organized Thuckalay Peer Mohammed Appa Memorial Seminar on 08.01.2024, at SXC.
3. Dr. G. Stephan, Director, P.G.Extension Centre, Manonmaniam Sundaranar University, Nagercoil, Dr. N. Ramachandran, Director, FRRC, and Dr. M. Arivalagan, Assistant Professor, Department of Folklore, SXC, served as chairpersons of the sessions. The resource persons for the seminar include Mr. Senthese Natarajan, Director, Sempavalam Research Centre, Nagercoil, Mr. H. Hameem Mustafa, member, Thuckalay Peer Mohammed Appa Trust, Dr. A. Shailahelin, Dean of Academics, World Tamil Music University, USA, Dr. S. Selvakumar, Associate Professor, Nesamani Memorial Christian College, Marthandam and Mr. Thuckalay Haleema alias H. Mohammed Hider Ali, Deputy Collector (retired). Dr. T.

Jasmine Sudha, Head (i/c) and Assistant Professor, Department of Tamil, MSU, coordinated the event.

4. In collaboration with the Department of Fine Arts, University of Jaffna, Sri Lanka, the Department of Folklore and FRRC organized an international conference on “Tamil Christian Art Worlds”, on 29.01.2024 – 31.01.2024, at the University of Jaffna, Sri Lanka. Mr. P. Ahilan, Head, Department of Fine Arts, University of Jaffna, welcomed the gathering at the inauguration ceremony on January 29, 2024. Prof. S. Srisatkunarajah, the Vice-Chancellor, University of Jaffna, delivered the Chief Guest address. Prof. S. Raguram, Dean, Faculty of Arts, University of Jaffna, delivered a special guest address. Dr. M. Arivalagan, Assistant Professor, Department of Folklore, SXC, released the book of abstracts of the conference. Rev. Fr. J.E.R. Jeyaseelan gave the first keynote address on the theme, Tamil Krithava Kalai Ulagankal. The second keynote address was given by Architect Sagara Jayasinghe, Professor, University of Moratuwa and Research Fellow, Lisbon, on the theme, Exploring the 19th Century Tamil Christian Art and Architecture in Northern Sri Lanka. The inauguration ceremony ended with the screening of a documentary film, Thirakuthu, by K. Ramachandran, Film Maker, Mumbai.
5. In collaboration with FRRC, the Department organized the Prof. N. Vanamamalai memorial lecture (observed as Naa. Va. Naal) on February 12, 2024, at SXC. Dr. Me. Thu. Rasukumar, Editor, Samuka Vijnanam, gave the Naa.Va. Naal Lecture on the theme, “Kallathar Karrar Karrare Kallathar”.
6. In collaboration with FRRC, the Department organised the Tho. Mu. Ci. Ragunathan memorial seminar on 26.02.2024, at SXC. Dr. V. Arasu, Professor and Head (Rtd.), Department of Tamil Literature, University of Madras, Chennai, delivered the key-note address. Mr. S. Tamilselvan, an Eminent writer, Mr. Aravindan, a writer, Dr. R. Kamarasu, Professor and Head, Department of Folklore, Tamil University, Tanjore, Mr. S. Kandasubramaniam, Assistant Professor, Department of Tamil, P.S.G. Art and Science College, Coimbatore, and Dr. N. Ramachandran, Director, FRRC, presented papers in the seminar.
7. **Perasiriyar Na. Vanamamalai Karkai Vattam (Prof. Na. Vanamamalai Reading Circle):** In 2021, FRRC started an informal reading circle with a purpose of reading habits, initiating debates, sharpening and enriching critical thinking among research scholars and

- students. Dr. T. Namasivayam, Drama Teacher, St. Xavier's College of Education, Palayamkottai, served as resource person for the first event on 26.07.2023. He reviewed the book, *Urakkapesu: Saftar Hasmiyin Maranamum Vazhvum*, by Suhanya Deshpande.
8. The second event was held on 18.08.2023, in which Ms. Indhumathi, II year MA student, Department of Folklore, SXC, reviewed the book, *Jathiyarravalin Kural*, written by Jeyarani.
 9. Mr. T. Eswaran, II year MA student, Department of Folklore, SXC, reviewed the book, *Deviyin Thiruppaniyalarkal*, for the third event on 12.09.2023.
 10. Ms. K. Kalaimagal, Ph.D. scholar, Department of Folklore, presented the review of the book, *Marxia Azhagiyaal* by N. Vanamamalai, for the fourth event on 10.10.2023. She has also reviewed the book, *Airoppiya Thatthuvankal* by N. Muthumohan for the fifth event conducted on 12.02.2024.
 11. Ms. P. Anzanai, I year MA student, Department of Folklore, SXC, reviewed the book, *Uvari Meenavar Vazhviyal* written by S. P. Antonysamy, 19.02.2024.
 12. On 28.02.2024, Ms. P. Beaula Push, Ph.D. Scholar, Department of Folklore, SXC, presented the review of the book, *Krithavamum Sathiyum* by A. Sivasubramanian.
 13. Ki. Ra. Kathai Solli Koottam: FRRC started an informal forum, Ki. Ra. Kathai Solli Koottam (named after famous eminent writer K. Rajanarayanan), to facilitate an opportunity for the students to tell stories in this academic year.
 14. Mr. S. Arun Kumar, a first-year MA student, Department of Folklore at SXC, participated in the inaugural event. He narrated the story of "Paramartha Guruvinkathai" by Veerama Munivar on 14.09.2023.
 15. On 21.09.2023, Ms. P. Anzanai, a first-year MA student, Department of Folklore, SXC, narrated stories from Tenali Raman Kathaikal.
 16. Ms. K. Bhuvaneshwari, a first-year MA student in the Department of Folklore, SXC, narrated stories from "Panchathanthira Kathaikal" on 26.09.2023.
 17. Mr. T. Purushotthaman, artist and Ph.D. scholar, Department of Folklore, SXC, narrated stories from his experience on 05.10.2023.
 18. Mr. P. Augustio Raj, Ph.D. scholar, Department of Folklore, SXC, narrated stories from Ki. Ra. vin Nattuppurakathaikal on 18.10.2023.
 19. Mr. S. Arun Kumar, a first-year MA student, Department of Folklore, SXC, narrated the stories of "Sudalaimadan Kathai and Muttharamman Kathai" on 22.02.2024.

20. Ms. P. Anzanai, a first-year MA student, Department of Folklore, SXC, narrated stories from *The Canterbury Tales* on 29.02.2024.

18. ECONOMICS RESEARCH CENTRE

Research is the most important aspect of higher educational institutions, which enhances critical thinking among the students and research scholars in the institution. The Economics Research Centre of St. Xavier's College, Palayamkottai, was established in 2018 with the aim of encouraging and stimulating the research scholars to have a deep and closer attitude towards the changes present in the areas of social, cultural, industrial, economic, technological, agricultural, and environmental aspects of people and economic comparison in society. The research scholars also have wide knowledge, in-depth reading, and the ability to take part in all the events in the Department Research Center. It helps them improve the overall quality of the research work. The centre has all the basic facilities, such as 450 sq. ft. of research cabin with three computers and internet facilities, and the scholars can meet the supervisors at anytime during the working hours. Most of the students pursuing a postgraduate degree in Economics have the insight to do their Ph.D. in the DERC. Right now, the Economics Research Centre has enabled seven full-time research scholars and two part-time research scholars in the academic year 2023-2024. Among nine scholars, two of them have completed their pre-doctoral presentations.

19. ENTREPRENEURIAL DEVELOPMENT AND RESEARCH CENTRE (EDRC)

1. Dr. C. Mahimai Arul Ignatius, the Coordinator of ED & RC organized the Inauguration Function of the Entrepreneurial Development and Research Centre (ED&RC) for the academic year 2023–24 on 04.09.2023.
2. The resource person, Mr. T. R. Tamilarasu, CEO of TKR Group and President, All India Chamber of Commerce, addressed the gathering. He motivated the students to be self-employed and shared the importance and advantages of being entrepreneurs.
3. Entrepreneurial Development and Research Centre (ED&RC) of the Department of Commerce, St. Xavier's College (Autonomous), Palayamkottai, organized an “Awareness Programme on Niral Thiruvizha” on 30.01.2024.

4. Mr. Sanjay Gunasingh, Director of Bell Pins (P) Ltd., Tirunelveli, shared his path-paving lecture on entrepreneurial skills and self-employment.
5. Mr. M. Siva Baarathi delivered a lecture on the context of Niral Thiruvizha. He guided students on entrepreneurial skills like uniqueness, innovation, problem solving, risk-taking, and various means for starting up businesses.

20. COMMERCE RESEARCH CENTRE

Twenty Ph.D. scholars (9 full-time and 11 part-time) pursuing their research under the Commerce Research Centre of the department and 12 scholars have been awarded Ph.D. degrees in the academic year 2023-2024. The centre has initiated the following activities and programmes for the benefit of the research scholars:

1. Online Training on Research Article Publication

An Online Training Programme on research article publication was organized through the Google Meet platform. The resource person was Dr. Satyanaryana Parayitam, Professor, Dept. of Management and Marketing, Charlton College of Business, University of Massachusetts, North Dartmouth, MA 02747. Eleven sessions were conducted between 01.10.2023 and 18.02.2024. Review of quality papers from reputed journals, collection of conceptual variables and creation of conceptual models, steps for the construction of survey instruments, and steps for writing research papers for Scopus-indexed journals were the focal areas of the training programme. Professors, research supervisors, and research scholars of our college and other institutions such as St. Joseph's College, Trichy, QIS College of Engineering and Technology, Ongole, Andhra Pradesh, Amritha Vishwa Vidya Peedham, Deemed University, Mysore, St. Joseph's College of Arts and Science, Cuddalor, and Jai Ram Arts & Science College, Salem, joined the sessions and benefited.

2. A discussion on research article preparation was arranged for the scholars of the centre on 08.02.2024. Ms. S. Anuysha Mini, the research scholar at Holy Cross College Nagercoil, was the moderator.

3. To discuss and deliberate the concepts and matters related to research methodology for the research in Commerce, an online discussion forum “X.Com Explorer” was created.
4. A special issue of *Xaverian Journal of Marketing* on the theme “Digital Marketing” was released on 29.02.2024.

21. MBA - XIBA RESEARCH CENTRE

1. XIBA Research Centre has taken its vigor after the renewal of its period. The scholars have progressed gradually and 2 have completed their third Doctoral committee meet and presented their mini projects and articles in XIBA Research Colloquium. About six Scholars (fulltime and part time) have defended their pre Ph.D.. Viva and submitted their theses. Five fulltime scholars and two part time scholars have completed their theses satisfying all the norms of the university.
2. All the Scholars have published papers either in UGC CARE listed or in Scopus Indexed journals. The scholars participated in the conferences and workshops organized by St. Joseph’s College, Bangalore, Vellore Institute of technology, Chennai, S.I.V.E.T college, Chennai, Christ University, Bangalore, VET College Erode, Nehru Arts and Science College, Coimbatore, Research Methodology courses organized by IIT Madras, Five day workshop on Research methodology, Data analysis and Case writing organized by Thiagarajar School of Management (TSM), Madurai. Published papers in many Journals like XIBA Business Review, UGC CARE list Journal-Journal of Management and Entrepreneurship, Chelonian Conservation and Journal of Research Administration Biology Scopus Journal.
3. XIBA center for research up skilled itself by signing MoU with reputed institutions. Thiagaraja School of Management and Mainz International College in Male, Republic of Maldives.

22. XAVIER RESEARCH FOUNDATION

1. The Xavier Research Foundation (XRF) is one of the novel initiatives of St. Xavier’s College management to promote Interdisciplinary research, publication, and extension activities. It is a research centre of eminence to promote cutting-edge pursuits to solve people's problems and protect the environment. A director, three scientists, two emeritus scientists, six project

fellows and research scholars, and a technical assistant are working full time at XRF. XRF is recognized by M.S. University as an Interdisciplinary Research Centre. **(MSU/RES/R4/IRC/2021).**

2. Currently, XRF is running six major projects related to agro-tourism, organic agriculture, environmental awareness, and the promotion of herbal gardens in schools in Tirunelveli District. Additionally, it is involved in the documentation of medicines used in Varmam therapeutics by the non-institutionally trained Siddha practitioners of Southern Tamil Nadu and the isolation of soil actinomycetes collected from the Agasthiyamalai hills. Further, XRF is working on indigenous traditional herbal medicines for curing certain diseases based on rigorous scientific evaluation. XRF has also developed some natural products for controlling insects and pests.
3. In 2023 – 2024, XRF has published 26 research papers and granted two Indian patents.
4. The publication of the ‘Flora of Tirunelveli Hills’, a dream project of Fr. V.S. Manickam S.J., was completed. XRF has published three books: *Flora of Tirunelveli Hills, Monocotyledons, Vol. IV (text)*, *Flora of Tirunelveli Hills, Monocotyledons, Vol. IV (Figures)* and *The Works of Jesuits in India*.
5. XRF is helping many students to refer to the SXC herbarium and utilise its facilities for their research. Many PG students are doing their project work. The digitalization of herbarium is in progress.