



Math Spark

Newsletter

ISSUE : 4

AUGUST 2024



DEPARTMENT OF MATHEMATICS

Arul Anandar College (Autonomous),
Karumathur – 625 514, Madurai.

A commemoration of more than 50 years of Math Journey at AAC

Editor's Desk

The touch of Mathematics is experienced in all the spheres of science and technology. The mathematical outfits are governing the automated world and the regime of Mathematics lasts forever. To impart mathematical knowledge and skills to the students, the Department of Mathematics has taken several initiatives in the academic year 2023-24 and this year is a remarkable one in the journey of Mathematics at AAC as it has witnessed several successful endeavours. The Department acquired the status of Centre for Research from Madurai Kamaraj University, Madurai. An outreach programme entitled "Kanitham Karpom" was initiated exclusively for school students to foster Mathematical learning. The Department conducted a national level workshop on Computational Techniques in Mathematics on 29 September 2023 in association with Gerizim Academy, Bengaluru. A National Conference on Recent Advances in Pure and Applied Mathematics with Industrial Applications and MATAAC - Intercollegiate Mathematical Competitions were also conducted on 04 and 05 March 2024. A Math Model Competition was also conducted for laying a platform for the school children to stage their modelling skills. With deep sense of gratitude, the department bid adieu to our beloved professor Dr. J. Xavier Adaikalaraj, an extraordinary teacher for his excellent teaching service of 23 years in this campus. I express my sincere appreciation to all the faculty members of the Department for their consistent support towards the accomplishment of all the departmental activities.



Gratitude to Dr. J. Xavier Adaikalaraj

XAVIER stands for a **X**enial, **A**ffectionate, **V**ibrant, **I**ngenious, **E**mpathetic, **R**esilient teacher, who has more than 30 years of teaching experience. Born in Trichy, he started his teaching career with a wide mathematical knowledge at St. Joseph's College, Trichy in the year 1988 as a fresh M.Phil. graduate. After serving in various institutions for 13 years as a self-supporting staff, he joined Arul Anandar College in the year 2001 as an Assistant Professor in Mathematics. His dedicated service and interest towards lifelong learning has elevated him as an Associate Professor in the year 2014. During his 23-year teaching career at AAC, Dr. J. Xavier Adaikalaraj has contributed to both academic and administrative excellence by holding several positions at various levels. In 2016, he assumed the headship and served meticulously. His excellent leadership qualities have raised the Department to great heights.





The faculty members and the students of the Department honoured his selfless service on the occasion of MATAAC 2024 held on 05 March 2024. The Department hosted a farewell to Dr. J. Xavier Adaikalaraj on 01 April 2024 to share the nostalgic memories of this extraordinary person. On 30 April 2024, the faculty members together greeted our beloved Professor on the last signing day for his remarkable service of 23 years at AAC.

Significant Events

Centre for Research

The Madurai Kamaraj University has conferred the Department with the status of Centre for Research from the academic year 2023-24 and it is a sign of the departmental growth in the arena of research. The coordinated efforts of the faculty members have taken the Department to this elevated level.

Curriculum Enrichment



Skill based curriculum is the requisite of present higher educational system and the Department is keen on framing courses fostering employability and skill development. The Department hosted the Board of Studies meeting on 10 January 2024 and presented the syllabi of the courses offered during the V & VI semesters of UG Mathematics programme for the approval of the experts. The syllabi of the valued added courses were also presented.



The meeting was headed by Mr. J. Robert Dhiliban, Assistant Professor and Head, Department of Mathematics together with the *University Nominee*, Dr. R. Mangayakarasi, Assistant Professor of Mathematics, EMG Yadava Women's College, Thiruppalai, Madurai; *External Members*, Dr. S. Vimala, Associate Professor of Mathematics, Mother Teresa Women's University, Kodaikanal and Dr. R. Muthuraj, Associate Professor of Mathematics, HH The Rajah's College (Autonomous) (Affiliated to Bharathidasan University, Trichy), Pudukottai; *Industrial Expert*, Mr. S. Amalan, Senior Software Engineer, Korcomptenz Inc., Chennai (In-absentia); *Alumni Representative*, Mr. M. Dileepan, Assistant Professor of Mathematics, Annai Fathima College of Arts & Science, Thirumangalam, Madurai, *Student representative*, Mr. D. Yogeshkannan of II M.Sc. Mathematics and other faculty members of the Department.

Achievements of the Faculty

The faculty members of the Department have demonstrated their proficiency in continuous learning and shared their expertise in different domains.

Research

The faculty members have published their research works in well reputed journals indexed in SCOPUS, WOS and UGC CARE list. They have also published their works as books, book chapters and conference proceedings. The faculty members have also participated in several capacity development programmes such as workshops, faculty development programmes such as orientation and refresher courses.

Publications of Books	03	Contributions of Book Chapters	12	Publication of Articles in Journals	40
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Research Scholars

Three faculty members of the Department are recognized as research supervisors by Madurai Kamaraj University, Madurai. The research status of the scholars is as follows:

Total Scholars	Ph.D. Registered	Thesis Submitted	Viva-Voce Held
07	03	02	06

Professional Development

The faculty members of the Department attended various faculty development programmes such as Refresher Courses and SWAYAM/NPTEL courses to enrich their professional knowledge and academic expertise.

Refresher Courses

Name of the Faculty	Title of the Course	Date
Mr.J.Robert Dhiliban	Refresher Course in Mathematics on Advanced Research Methodology	23.03.2024 - 05.04.2024
Dr.M.Gilbert Rani	Refresher Course in Mathematics on Foundation Course in Vedic Mathematics	31.03.2024 - 13.04.2024
Dr.G.Ramkumar	Refresher Course in Mathematics on Foundation Course in Vedic Mathematics	31.03.2024 - 13.04.2024
Dr.Nivetha Martin	16-day International Online Faculty Development Program on Teaching, Learning and Assessing in 2030	06.06.2023 - 23.06.2023
	Online Faculty Development Programme on Applications of Mathematics in Multidisciplinary Domains	01.02.2024 - 08.02.2024
	Refresher Course in Mathematics on Foundation Course in Vedic Mathematics	31.03.2024 - 13.04.2024



SWAYAM / NPTEL Courses

Name of the Faculty	Title of the Course
Dr.M.Gilbert Rani	National Policy 2020: Professional Development Programme
	Deep Learning
Dr.Nivetha Martin	Business Analytics & Data Mining Modeling Using R Part II
	Design Thinking - A Primer
	Body Language: Key To Professional Success
	Business Fundamentals for Entrepreneurs (Part 1: Internal Operation)
	Development of Sociology in India
	Philosophical Foundations of Social Research
	Business Fundamentals for Entrepreneurs (Part 2: External Operation)
	Sociology and Sanitation-An Introduction
	NBA in Accreditation and Teaching and Learning in Engineering (NATE)
AI in Marketing	

Sharing of Expertise

The faculty members have served as resource persons and shared their expertise on different domains.

Name of the Staff	Title of the Programme	Institution and Place	Date
Dr. M. Gilbert Rani	Guest Lecture on Leadership 5.0	Mannar Thirumalai Naicker College, Madurai	12.07.2023
	A One-day Workshop on A Complete Geometric Transformation in Geogebra	Thassim Beevi Abdul Kader College for Women, Kilakarai	20.10.2023
	A One-day Hands on Training Program in SAGEMATH	G.T.N. Arts College, Dindigul	09.02.2024
	Lecture Series on emerging Trends in Applied Mathematics Topic: Rough Neural Networks	V.O.Chidambaram College, Thoothukudi	14.03.2024
Dr. G. Ramkumar	Guest Lecture on Amazing Analysis	Sri Adi Chunchanagiri Women's College, Cumbum	14.09.2023
	Skill Enhancement Programme on Aesthetics of Analysis	Sri Parasakthi College for Women, Courtallam	08.12.2023
	Delivered an invited talk on Encircling Supra Topological Space with an Abyss Perspective and served as a Rapporteur in the International Conference on Mathematics, Physical & Engineering Sciences Sri Lanka-2024	University College of Construction Technology, Battaramulla, Sri Lanka	15.03.2024
	Doctoral Committee Member	School of Mathematics, MKU	



Dr. Nivetha Martin	International Conference on Recent Trends in Applications of Mathematics	Holy cross College, Tiruchirappalli	04.08.2023
	Keynote address - International Conference on Computational Science & Intelligence	Rest Labs & Rest Society for Research International, Kaveripattinam	05.08.2023
	Inauguration of Mathematics Association Math Club	Theni Kammavar Sangam College of Arts & Science, Theni	06.10.2023
	National Level Gerizim Academy Lecture Series	Gerizim Academy of Research and Development, Bengaluru	14.10.2023
	Workshop on Challenges & Opportunities Research, Funding and Consultancy for Academicians	VIT, Chennai	21.10.2023 to 23.10.2023
	One Day Hands on Training Program in MATLAB	G.T.N. Arts College, Dindigul	16.10.2023
	External Expert - Academic Audit	G.T.N. Arts College, Dindigul	13.12.2023
	Doctoral Committee Member	School of Advanced Sciences, VIT Chennai	12.01.2024
	Chaired the session in National Seminar on Technology Enabled Social Schemes Towards Sustainable Development Goals	G.T.N. Arts College, Dindigul	23.01.2024 & 24.01.2024
	One Day Hands on Training Program in R-Programming	G.T.N. Arts College, Dindigul	07.02.2024
	Endowment Lecture	Fatima College, Madurai	07.02.2024
	International Conference on Computational Science, Engineering and Technology	Rest Labs & Rest Society for Research International, Kaveripattinam	27.02.2024

Awards and Recognitions

Name of the Staff	Name of award/fellowship	Agency / Institution and Place	Date
Dr. M. Gilbert Rani	Best Paper presentation for the paper - Emerging challenges of Education 5.0 in the view of Quality Assurance, Enhancement and Sustenance in Higher Education Institutions	Thakur Shyamnarayan College of Education & Research, Mumbai	20.04.2024
Dr. G. Ramkumar	International Best Researcher Award 2024	International Conference on Mathematics, Physical & Engineering Sciences Sri Lanka - 2024 at University College of Construction Technology, Battaramulla, Sri Lanka	15.03.2024

MoU Activities



The Department of Mathematics has established a memorandum of understanding with the Department of Mathematics, G.T.N Arts College (Autonomous), Dindigul. The faculty members Dr. M. Gilbert Rani and Dr. Nivetha Martin served as the resource persons of the workshops on computational software.

Association Activities



The Department of Mathematics inaugurated the Mathematics Association on 26 July 2023 with great zeal. The resource person, Dr. A. Shakila Jemima, Associate Professor and Head, Department of Mathematics, NMSSVN College (Autonomous), Madurai presented a lecture on “Unveiling the Applications of Graph Theory”.

Orientation Programme

The Department of Mathematics organized an Orientation Programme for the first year undergraduate students on 02 August 2023. Dr. J. Xavier Adaikalaraj, Associate Professor and former Head of the Department presented the introductory remarks. The faculty members discoursed on CBCS-OBE curriculum structure, examination system, evaluation pattern, cocurricular and extension activities.



Club Activities

Pi Math Club

The Pi Math Club of the Department of Mathematics organized a programme entitled *Convention of Piations* on 18 August 2023 to make the students of first year UG and PG students aware of the modalities of Pi Math club. A *Math Literary Competition* was conducted on 11 December 2023 to all the students of UG and PG to make them express their creativity in writing literary works using math vocabulary. The *Math Connections Competition* was conducted on 13 December 2023 to make the students gain competency in excelling in math competitions. A *Math Charades Competition* was conducted on 22 Feb 2024 to foster mathematical learning.



Womentics Club

The Womentics Club of the Department of Mathematics, organized a Pep Talk on *Future Shocks* to the women students of the Department on 25 August 2023. Ms. S. Henri Rita Mary, Assistant Professor of Economics and Dean of Women Students, AAC served as the resource person. A *Poster Making Competition* was organized exclusively for girl students on 7 March 2024 to commemorate International Women's Day. The students prepared posters on the themes of Women Mathematicians and Contribution of Women in Science. The students actively participated and displayed their creative posters.



Skill Development Programmes

To foster the skill sets of the students, the Department organized various skill centered programmes on different themes.



- Career Guidance on Mobile Phone Technology, 25.07.2023
- Workshop on Resource Management Skills, 28.07.2023
- Career Guidance to First UG students, 07.08.2023
- Workshop on Solving Plane Problems in Geogebra, 01.09.2023
- Workshop on Graphing Functions in Geogebra, 11.09.2023
- Workshop on The Nuances of Poster Making, 04.10.2023
- Workshop on Problem Solving in Vector Calculus, 14.10.2023
- Workshop on Interview Techniques, 09.01.2024
- Skill Development Programme on Mastering Math Computation Skills, 11.03.2024

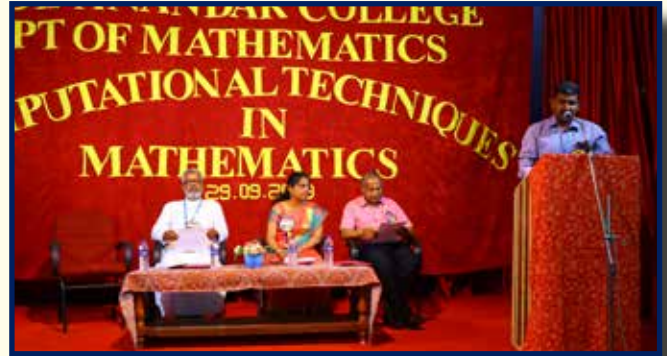


Workshop on Computational Techniques in Mathematics

On 29 September 2023, the Department of Mathematics organized a workshop on *Computational Techniques in Mathematics* with the sponsorship of the Gerizim Academy of Research and Development, Bengaluru. Mr. J. Robert Dhiliban, Assistant Professor & Head welcomed the gathering. Rev. Dr. M. Anbarasu SJ, the Principal delivered the inaugural address. Rev. Dr. A. Antonysamy SJ, the Secretary of the College felicitated the gathering and released



the third issue of the Department's Annual Newsletter – MATH SPARK. The first technical session was presided by Dr. G. Hannah Grace, Assistant Professor, Senior Grade, School of Advanced Sciences, Division of Mathematics, VIT Chennai Campus. She shared her insights on “Software Approaches in Computational Mathematics”. The second technical session took place in online mode. The resource person Dr. M. Clement Joe Anand, Assistant Professor of Mathematics, Mount Carmel College (Autonomous), Bengaluru shared his expertise on “Recent Developments in Computational Techniques”. Dr. M. Sajan Joseph and Dr. I. Pradeepa chaired the technical sessions. Dr. A. Sundararaj, the Deputy Principal delivered the valedictory address and distributed the certificates to around 100 participants. Dr. Nivetha Martin, the organizing secretary delivered the vote of thanks.



National Conference

The Department of Mathematics organized a National level Conference on *Recent Advances of Pure and Applied Mathematics with Industrial Applications* on 04 March 2024. The resource persons Dr. Sunil Jacob John, Professor, Department of Mathematics, National Institute of Technology, Calicut, Dr. V. Lakshmana Gomathi Nayagam, Associate Professor, Department of Mathematics, National Institute of Technology, Tiruchirappalli, Dr. P. Gnanachandra, Assistant Professor, Department of Mathematics,





Ayya Nadar Janaki Ammal College, Sivakasi, Mr. P. Rajaram, Senior Technical Manager, HCL, Tech, Chennai deliberated on various advanced topics of Mathematics and its applications in industries. Around 200 students and research scholars participated in this conference. Dr. M. Gilbert Rani, the organizing secretary registered the words of gratitude.

MATAAC 2024



The Department of Mathematics of Arul Anandar College (Autonomous), Karumathur, organized a State Level Intercollegiate Competition MATAAC 2024 on 05 March 2024. Students from 10 colleges across the state participated in various mathematical competitions such as Math Quiz, Paper presentation, Dumb Charades, Rangoli, Math Music and Math Model. St. Joseph's College, Trichy won the overall rolling trophy. Dr. M. Sajan Joseph, the organizing secretary coordinated the overall programme.

National Mathematics Day Celebration

The Department of Mathematics celebrated National Mathematics Day on 8 January 2024 to commemorate the birth anniversary of Srinivasa Ramanujan. The resource person Dr. C. Ganesan, Assistant Professor of Mathematics, V.H.N.S.N. College (Autonomous), Viruthunagar delivered an enlightening talk on the *Significant Contributions of Srinivasa Ramanujan*



Mechanics Model Expo

The students of II B.Sc. Mathematics organized the Mechanics Model Expo on 26 Feb 2024 and exhibited models and charts. The event was well organized by the students and it was a wonderful opportunity for them to comprehend the practical implications of various learned concepts through modeling.



Pi Day Celebration

The Department of Mathematics organized a workshop on the theme *Magic & Mystic of Pi* to commemorate the celebration of Pi Day on 27 February 2024. The resource person Mrs. R. A. Latha Devi, Assistant Professor of Mathematics, Sri Meenakshi Government Arts College for Women, Madurai deliberated on the *Significance and Applications of Pi in Mathematics*.

Student's Achievements

The students of our department participated in various intercollegiate competitions and gained a wide range of experiences to dwell in the arena of mathematics. The students were also encouraged to take part in other competitions conducted by the college to commemorate significant days of events.

Student Council Election

For the academic year 2023-24, Mr. J. Ajay Pindo of III B.Sc. Mathematics served as the III Year UG Representative and Mr. B. Sugumar served as the Student Secretary of the Mathematics Association.



Presentations in Conferences

Ms. R. Harnica and Ms. V. Ashini of I M.Sc. Mathematics presented papers in the International Conference on Recent Trends in Applied Mathematics organized by the Department of Science and Humanities, Sri Ramakrishna Institute of Technology, Coimbatore on 11 October 2023.

Inter-collegiate Competitions

The students participated in various intercollegiate competitions conducted by the colleges located in and around Madurai and secured many prizes.

National Cadet Corps (NCC)

The NCC cadets of our Department Cdt. D. Deepak, Cdt. L. Sakthivel, Cdt. S. Lavanaya and Cdt. J. Reena of II B.Sc. Mathematics attended various adventurous training programmes, such as, Thal Sainik Camp, All India Trekking Camp, EBSB Camp, etc., both at regional and national levels.

National Service Scheme (NSS)

Mr. P. Sathish Kumar of II B.Sc. Mathematics actively took part in NSS awareness programmes on the themes of social empowerment.

Saral



The Department of Tamil conducts Saral - A Tamil Drama Competition every year and our students bagged the First Prize in the competition conducted on 23 September 2023 by enacting a historical play on “Jallianwala Bagh”. Mr. P. Sathish Kumar of II B.Sc. Mathematics won the Best Actor award.

Theatre Fest



Theatre Fest is an annual English Drama competition hosted by the Department of English on 16 Feb 2024. The students of our department enacted a skit on a contemporary social theme entitled “Voice to

Rise” and bagged the First Prize in Theatre Fest 2024. Mr. P. Sathish Kumar of II B.Sc. Mathematics won the Best Actor award.

PTA Meeting

The PTA meetings are regularly conducted and these meetings serve as a chance for the parents to get to know the progress and conduct of the students. The PTA meetings for II UG & PG and III UG are conducted on 30 September 2023 and 4 October 2023.

Mentor Meeting

The mentor meetings are conducted periodically for facilitating the mentor-mentee interactions. During these meetings, the students share their problems with their respective mentors and in turn the faculty make use of these meetings as a chance to comprehend the status of their allotted mentees.

Education Exposure

A total of 43 final year UG and PG students along with 2 faculty members, Dr. M. Sajan Joseph and Dr. Nivetha Martin visited Kerala on an Educational tour on 09-11 March 2024. The students and staff felt refreshed by gaining experiential learning on real life applications of Mathematics.



Internship



The final year UG students (2021–2024 Batch) completed their 25 days of internship from 13.05.2023 to 10.06.2023 at various companies located in and around Madurai. The students earned work experience and comprehended the mathematical applications in real life. The students attended the internship viva on 30 August 2023. A workshop on “Roadmap to Internship” is conducted on 15 April 2024 for the students to lay a clear picture of internship modalities.

Placement and Higher Studies

The students were given intense training and orientation on placements and higher education. As a result of it, a few students have got placed in reputed companies.

Extension Activities

Outreach Programme - Kanitham Karpom



The Department usually has an overwhelming response at times of admission in both UG and PG programmes under both Aided and Self-financed streams. However, the Department faced a huge setback in UG and PG admissions after the CORONA period. There was a gradual decline in the student demand ratio and the Department faced a big impact in the enrolment of the students in the UG programme followed by the PG programme. To resolve this challenging task, the faculty members of the Department of Mathematics

together initiated a Motivational Programme entitled “Kanitham Karpom” for the school students to encourage their learning interest of Mathematics. The faculty members shared various responsibilities and worked as a team in making this programme a great success. The Motivational programme was so beneficial to the school students as it served as an opportunity for the students to comprehend the scope and opportunities of learning Mathematics. A total of 644 students from 8 schools were benefitted out of this programme.

Math Model Competition for Rural Schools



A Math Model Competition was exclusively organized for the students of nearby rural schools. Around 200 students actively participated in this competition and exhibited their models.



ARISE

ARISE is an extension program exclusively designed for second-year undergraduate students, aiming to engage them in contributing to the social transformation of rural society. The II B.Sc. Mathematics students actively participated in all the extension activities. Regular visits were made to Vadakkampatti Village, where events such as medical camps, street plays and awareness rallies were conducted.

Naan Mudhalvan Scheme

As a part of Naan Mudhalvan Scheme, the school students visited the Department of Mathematics. The significance and employment opportunities of mathematics were presented to the students.



In the year 2023-24, the Department has spread out its wings in the dimensions of curriculum enrichment, research and extension to offer quality education to the student community and to escalate the holistic growth of the Department. At this juncture, I register my sincere gratitude to the AAC Management and all the stakeholders for their enduring support.

The Department of Mathematics has strategized quality research endeavours in the upcoming academic year 2023-24. At this juncture, I express my heartfelt gratitude to the management and the stakeholders for their persistent support.

Mr. J. Robert Dhillan
Chief Editor

Editorial Board

Chief Editor

Mr. J. Robert Dhillan
Assistant Professor & Head

Associate Editors

Dr. M. Sajan Joseph
Assistant Professor

Dr. Nivetha Martin
Assistant Professor