



## ST. ALOYSIUS COLLEGE EDATHUA



### PRINCIPAL'S MESSAGE

It is only with pride and sense of fulfillment that we can think of the rise of our college from its humble beginnings in 1965. It was the vision and hard work of the erstwhile managers, principals, faculty and non-teaching staff that helped it to achieve the present

status. We have now got the approval from RUSA for the proposed project for the infrastructural and other developments of the campus. Once implemented the project is expected to give a face-lift to our campus.

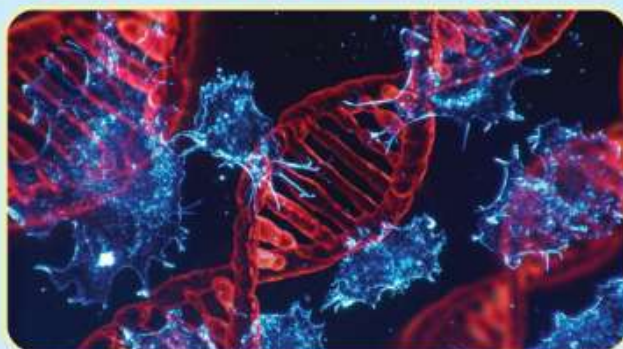
It is the time we need to rededicate ourselves to the service of the college and thus to the community around. I urge the students to constantly challenge their own limits and achieve newer heights. It is very important for any institution to learn from the past and plan for the future. In this context it is very important to document the activities of all our departments and a 'Newsletter' is the best way to do it. I congratulate each and every member of the Department of Mathematics on the effort taken by them in publishing this Newsletter. May God bless them all.

Dr. Jochan Joseph



Ms. Andria Noronha receiving the award for securing first rank in BSc Mathematics in MG University from Prof. Sabu Thomas, Vice Chancellor M.G. University

## Role of Mathematicians in the Human Genome Project



DNA is the blueprint for the genetic information that determines what makes each of us unique. The Human Genome Project (HGP) was the international, collaborative research program whose goal was the complete mapping and understanding of all the genes of human beings. All our genes together are known as "genome." Here we are to see the role Mathematics played in otherwise, a biologically intensive study.

Mathematics made possible the management and analysis of the massive database of the Human Genome Project. Numerical analysis, Statistics and Modeling played a significant role in mapping and sequencing our DNA. Here are some of

the mathematical techniques applied in the Human Genome Project:

**Numerical analysis** DNA is microscopic yet the amount of data it generates is huge. Researchers require advanced numerical techniques to manipulate and make sense of the data.

**Statistics** has played a part in generating "draft sequence data" mostly 10,000 base-pair fragments whose approximate chromosomal locations are known. Additional sequencing will close gaps and reduce ambiguities. Statistics was also used to design experiments to optimize information extracted from these experiments.

**Computational models** Researchers attempt to predict molecular behavior by describing DNA and protein molecules with equations that can be solved numerically. The massive amount of data now available allows for more accurate equations on which to base models and the ability to compare predictions with known results.

**Topology** Topology deals with the shape and geometry of complex structures. The basic double helix structure of DNA provides a good deal of information about the molecule, but it is not complete. The details of the structure and of the different forms of DNA, provide information about the biological function of DNA. In addition, the structure and

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## MESSAGE FROM HOD

work and dedication.

We can look back only with great joy and satisfaction. The year 2018-19 was noted especially for its outstanding programmes- the felicitation programme arranged in honour of Ms. Andria Noronha in which the honourable Vice Chancellor of Mahatma Gandhi University was present and a well conducted mathematics fest 'abscissa'. Some other students also could bring laurels to the Department through their academic and other achievements. This year the department is celebrating the 40<sup>th</sup> anniversary of its inception. While we celebrate its Ruby Jubilee it's my exhortation to my students that they should work so hard as to bring more glory to the Department as well as the College. Wish them the best.

**Smt. KochuThresiamma Joseph**

It is with great pleasure and much pride I present before you the 5<sup>th</sup> volume of the Departmental Newsletter, MASA. In this occasion I congratulate Dr. Jubin Antony the chief editor, colleagues of the department and my dear students on their hard



## FROM THE EDITOR'S DESK

Memories may fade; but documented memories last long. An academic year may be an insignificant period in the history of a Department. But for the students who study

two or three years in the Department, each year is precious and it gives tones of memories to cherish for their lifetime. This Newsletter is an attempt to document the facts which otherwise would have faded from the memories as time passes by.

The year 2018-19 bids adieu to us leaving a lot of memories to relish for and many accomplishments to be proud of. The year was full of activities and achievements, both for the students and faculty. With their participation and hard work students made the department more vibrant and visible. It was with more academic involvement and research output our faculty made the mark. Here we present these stories of success for everyone's reference.

**Dr. Jubin Antony**

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formation of proteins are far more complicated than those of DNA.

**Computer graphics** make static and mobile images of DNA structures possible, which enables both researchers and laypersons to be abler to visualize and study the genome.

**Microarrays** These are relatively new invention that lets scientists measure something they could not measure before. A microarray measures how much a messenger RNA of a given type is being made in a sample of tissue at a given moment, which gives a good idea of how much of the corresponding protein is being made.

Researchers predict that this fusion of mathematics and biology will result in a new era of molecular medicine, when the diagnosis, treatment and prevention of disease will be individual-specific and thus more successful.

[Source: Mathematics and the Genome, MAM]

## Department News

### Mathematics Association

The election to the office of Mathematics Association for the year 2018-19 was conducted on 28<sup>th</sup> June 2018. Dr. Mary George was nominated President and Mr. Akhil S. (3<sup>rd</sup> BSc Mathematics) and Ms. Lakshmi Chandran (3<sup>rd</sup> BSc Mathematics) were elected Secretary and Joint Secretary respectively.

### Welcome Programme to First Year BSc Students

The second and third year UG students together with the faculty extended a warm welcome to the first year UG students to the department on 10<sup>th</sup> August 2018. Students presented cultural programmes. A high tea was served during the occasion.



## Orientation Programme



An orientation cum value education class for the third year degree students was held on 25<sup>th</sup> June 2018. Dr. Varghese Mathew, Adjunct Professor, Cochin University College of Engineering Kuttanad led the session. The students were given orientation on the career prospects and higher studies opportunities in Mathematics. The necessity of developing a value orientation in thoughts and actions was the theme of the talk.

## Mathematics Association Inauguration



The Mathematics Association 'activities' for the academic year 2018-19 was inaugurated on 28 September 2018. Dr. Varghese Mathew, Associate Professor Marthoma College Thiruvalla was the chief guest. Smt. Kochu Thresiamma Joseph, Asso. Prof & HOD presided over the function and Dr. Saban K V, the Principal felicitated. Dr. Mary George extended welcome and Ms. Lakshmi Chandran proposed the vote of thanks.

## UGC NET Orientation cum Motivational Class



The Department arranged an orientation cum motivational class on UGC NET examination for PG students on 27.09.2019. Mr. Deepu T D and Ms. Arya Chandran, our alumni who had successfully cleared the NET exam led the session.

## Invited Talk



A lecture on "Some Counting Problems in Mathematics" was held on 28<sup>th</sup> September 2018. Dr. Varghese Mathew, Head of the Department of Mathematics, Marthoma College Thiruvalla delivered the lecture.

## Felicitations Programme

The department organized a programme to congratulate Ms. Andria Noronha on her securing the first rank in BSc Mathematics from MG University on 28 November 2018. Prof. Sabu Thomas, Vice Chancellor, MG University was the chief guest. In his address he exhorted the students to focus on studies and to update on what is happening around them.



## Study Tour

A study tour for the third BSc students of the department was organized from 14 to 18 December 2018. Thirty six students together with faculty Dr. Mary George and Mr. Jijo Joy joined the trip. Students visited Mysuru, Chickamangalur and Udupi.

## Abcissa – the Mathematics Fest



The annual Mathematics Fest Abcissa was held on 1st February 2019. It was inaugurated by Mr. Jerome P.V., Vice-Principal and Head of the Department of Commerce. Dr. Mary George, President of Mathematics Association presided over the function. Ms. Lakshmi Chandran of third BSc welcomed the gathering and Sr. Ann Maria Jacob of 3rd BSc proposed the vote of thanks. Competitions on Academic Paper Presentation,

Quiz, Maths Puzzle Solving, Word Puzzle and Rubik's Cube were conducted. Ms. Tinu V. Tom and Ms. Aiswarya Joseph of 2nd BSc Mathematics won the Paper Presentation Competition. Mr. Wesley Wilson of 3rd BSc Mathematics won the Rubik's Cube Solving Competition. First year PG students won the Word Puzzle and Mathematical Puzzle Solving Competitions. Winners were awarded cash prizes from the sum of Rs. 5,000 sponsored by Smt. Kochu Thresiamma Joseph, Head of the Department. Dr. Jochan Joseph, Head of the Department of Physics gave away the prizes.

## Manuscript Magazine



The department manuscript magazine for the academic year 2018-19 was released on February 01, 2019. The manuscript magazine titled "Chinthana" contained the art and written works of the students of the department. Ms. Vidya M. Nair, 3<sup>rd</sup> BSc Mathematics served as the editor. Mr. Harikuttan B, 3<sup>rd</sup>

BSc Mathematics and Ms. Divya Sudhan, 3<sup>rd</sup> BSc Mathematics designed the cover page and other pages.

## "ADIOS"—the Farewell Programme



A farewell function was arranged to 2<sup>nd</sup> MSc and 3<sup>rd</sup> BSc students on 19<sup>th</sup> February 2019. The first and second year students presented various entertainment programmes. Ms. Kochu Thresiamma Joseph delivered the farewell message to the students.

## BIO-FARMING COMPETITION



The department actively participated in the bio farming project organized by the college under the leadership of Bhoomithrasena. Students under the leadership of Ms. Mariya Varghese, 2<sup>nd</sup> BSc Mathematics cultivated various items of vegetables. The students sold vegetables worth Rs. 705 through auction. The department bagged first prize in

the competition.

## College Annual Sports Meet



The annual sports meet of the college was held in February with inter - department competitions in various games and athletic events. The department secured third position. The winners are;

400 Mtrs Men – First Prize – Mr. Sumith Chandran

## MATHEMATICS ASSOCIATION VALEDICTORY

The valedictory function of the Mathematics Association was held in the afternoon of 19<sup>th</sup> February 2019. The Association President Dr. Mary George presented the annual report of the association.



## Parent Teacher Meeting

A parent teacher meeting of the undergraduate students of the department was conducted on October 31, 2018. 82 parents attended the meeting. Dr. Saban KV, the Principal delivered the keynote address.



400 Mtrs Men – Second Prize – Mr. Thomas Jacob  
Javalin Throw Men – First Prize – Mr. Sumith Chandran  
Discus Throw Men – Second Prize – Mr. Thomas Jacob  
4 X 400 Mtrs Relay Men – First Prize - Mr. Sibin T. Varghese, Mr. Ashish. A, Mr. Sumith Chandran and Mr. Sachin K.S.

## Vocational Certificate Course in Embroidery



The department organized a vocational certificate course in Embroidery. Ms. Emily Kurian, Guest

Lecturer, Department of Mathematics was the tutor. 20 students of the department successfully completed the course and obtained the course certificate.

### Release of Newsletter 2017-18



The annual Newsletter of the department for the year 2017-18 was released by the college Vice-Principal Mr. Jerome P.V. on 7<sup>th</sup> September 2018.

## CHRISTMAS CELEBRATION



The Christmas celebration of the college was held on 21<sup>st</sup> December 2018. The department won second prize in carol singing competition.

## Women's Day



Annual Women's Day Celebrations and Competitions were held on 21<sup>st</sup> March 2019. Ms. Tinu V. Tom (2<sup>nd</sup> BSc), Ms. Mariya Varghese (2<sup>nd</sup> BSc), Ms. Anagha S Nair (2<sup>nd</sup> BSc)

and Ms. Harsha V. (1<sup>st</sup> year BSc) represented the department in Nasrani Manka, Ms. Aloysius, Malayali Manka and Monchathi competitions respectively.

## STUDENT CORNER

### HONOURING THE ACHIEVERS

The Department honoured brilliant students from the 2017-18 batch who have passed out of the College in flying colours. Prizes were distributed to the following students during a department level meeting on June 25, 2018.

- ❖ Ms. Andria Noronha — 1<sup>st</sup> Rank in BSc Mathematics in MG University in March 2018 CBCSS Exam
- ❖ Ms. Manupriya M. Pillai — Secured A grade with 9.33 grade points in BSc Mathematics in March 2018 CBCSS Exam
- ❖ Ms. Josmy George — Secured A grade with a grade point of 3.64 in MSc Mathematics in May 2018 MG University Exam
- ❖ Mr. Akshay P. — Secured A grade with a grade point of 3.63 in MSc Mathematics in May 2018 MG University Exam
- ❖ Mr. Deepu T. D. (MSc 2009-11) — Qualified CSIR NET Examination Conducted in December 2017
- ❖ Ms. Arya Chandran (MSc 2014-16) — Qualified CSIR JRF - NET Examination Conducted in December 2017





Ms. Lakshmi Chandran was adjudged the Aloysian Exemplar by a panel of three judges. 120 meritorious students were screened through written and group discussion rounds and finally 10 students competed in front of the entire college community on 20.02.2019.

## Merit Day



The academic and co-curricular achievers of the department in the year 2018-19 were honoured and prizes were distributed on the Merit Day held in the afternoon of 1<sup>st</sup> February 2019. Mr. Mathew Gregory, Head of the Department of Chemistry was the chief guest. The awardees are;

Ms. Vidya M. Nair — Topper in 3<sup>rd</sup> Semester CBCSS Exam November 2017

Ms. Sangeetha U. — Topper in 3<sup>rd</sup> Semester CBCSS Exam November 2017

Ms. Vidya M. Nair — Topper in 2<sup>nd</sup> Semester CBCSS Exam April 2017

Ms. Sariga M.S. — Topper in 1<sup>st</sup> Semester CBCS Exam January 2018

Ms. Keerthana R., Ms. Lini S. and MS. Vidya M. Nair — Topper in 4<sup>th</sup> Semester Mathematics (Core) CBCSS Exam April 2018

Ms. Lini S. — Topper in 4<sup>th</sup> Semester Statistics (Complementary) CBCSS Exam April 2018

Ms. Sangeetha U. — Topper in 3<sup>rd</sup> Semester Mathematics (Core) CBCSS Exam November 2017

Ms. Lini S. — Topper in 3<sup>rd</sup> Semester Statistics (Core) CBCSS Exam November 2017

Ms. Vidya K. — Topper in 2<sup>nd</sup> Semester Mathematics (Core) CBCSS Exam April 2017

Ms. Keerthana R. — Topper in 2<sup>nd</sup> Semester Statistics (Complementary) CBCSS Exam April 2017

Ms. Tinu V. Tom and Ms. Mariya Varghese — Topper in 1<sup>st</sup> Semester Mathematics (Core) CBCS Exam January 2018

Ms. Anakha S., Ms. Sariga M.S., Ms. Gowri Mohan, Ms. SruthyBabu, Ms. Anagha S. Nair, Ms. Aiswarya Joseph, Ms. Bhavithalakshmi R., Ms. Claire Mary Yovakim, Ms. Mariya Varghese, Ms. RakhiRaj and Ms. Tinu V. Tom — 100 percent in 1<sup>st</sup> Semester Statistics (Complementary) CBCS Exam January 2018

Mr. Harikuttan B, 3<sup>rd</sup> BSc Mathematics — Prizes in Intercollegiate Dance Competitions

Ms. Kiran Theresa Mathew, 1<sup>st</sup> BSc Mathematics — Second Prize in Intercollegiate Poem Recitation Competition

Ms. Kiran Theresa Mathew, 1<sup>st</sup> BSc Mathematics — Second Prize in District Level Declamation Competition organized by Nehru Yuva Kendra Alappuzha, Govt. of India.

Ms. Kiran Theresa Mathew, 1<sup>st</sup> BSc Mathematics — First Prize in A.D. Shroff Memorial English Elocution Competition

Ms. Kiran Theresa Mathew, 1<sup>st</sup> BSc Mathematics — Selected for District Level Debate Competition "Speak for India" organized by Mathrubhumi and Federal Bank

Ms. Anjali Murukan, 1<sup>st</sup> BSc Mathematics — Gold Medal in Firing Competition in the Combined Annual Training Camp (NCC)

Ms. Divya Sudhan, 3<sup>rd</sup> BSc Mathematics — Prizes in Pencil Drawing Competitions



## Eco-friendly Product Making

Mr. Harikuttan B., 3<sup>rd</sup> BSc Mathematics won second prize in the eco-friendly product making competition conducted in the college.

## Minor Research Project

Smt. Kochu Thresiamma Joseph: Completed and submitted UGC supported Minor Research Project No. 1886-MRP/14-15/KLMG019/UGC-SWRO titled "A study on fuzzy logic and BI-RADS in breast cancer"

## Conference/ Workshop Presentation

- Dr. Indulal G.** Indian Contribution in Mathematics. KSCSTE sponsored National Mathematics Day celebration at Marthoma College Thiruvalla on 09.08.2018  
The Distance Spectra of Some Families of Graphs. International Conference on Discrete Mathematics – ICDM at National College Trichy on 15.12.2018  
Linear Algebra in Graph Theory. National Workshop on Discrete Mathematics at Kerala University Kariavattam on 19.12.2018  
Some Basic Topics of Spectral Graph Theory. KSCSTE sponsored National Seminar on Algebra and Graph Theory at St. Berchmans College Changanacherry on 19.1.2019  
Elementary Matrix Theory useful to Spectral Graph Theory. Research Workshop Series in Graph Theory at CUSAT Cochin on 11.05.2019
- Dr. Jubin Antony** Applications of Software in Data Analysis. Workshop organized by the Department of Statistics, St. Thomas College Kozhencherry on 30.10.2018

## Conference/ Training/ Workshop Attendance

- Mr. Jogy Joseph:** Two week workshop on Research Methodology organized by College Development Council, MG University Kottayam from 03.12.2018 to 17.12.2018
- Dr. Jubin Antony:** National Seminar on Curriculum Designing and Student Centered Learning Methods organized by St. Berchmans' College Changanacherry during 10-11 January 2019
- Ms. Deena C Scaria:** Orientation Programme for SSP Coordinators organized by Department of Collegiate Education at Loyola College, Thiruvananthapuram, on 12.9.2018  
Teachers Enrichment Workshop on Measure and Integration organized by National Centre for Mathematics at Mar Thoma College Thiruvalla during 8 – 13 April 2019.

## Responsibilities Held Outside College

- Smt. Kochu Thresiamma Joseph** Resource person at BAM College Thurithicad in connection with the Association inauguration on 4/1/2019  
External Examiner of Viva – voce at Assumption College, Changanacherry on 10/4/2019 & 11/4/2019  
Subject expert of the Guest Lecturer interview at S B College, Changanacherry on 27/4/2019
- Dr. Indulal G.** Member, Governing body St. Berchmans College Changanacherry  
Member, PG Board of Studies in Mathematics, MG University Kottayam  
Approved reviewer for the American Mathematical Society (AMS)  
Member of Kerala Mathematical Society, American Mathematical Society (AMS) and American Chemical Society (ACS)  
Referee for Research Journals Discrete Mathematics, Linear Algebra and its Applications, Journal of Computational Mathematics, International Journal for inequalities, Applicable analysis and Discrete Mathematics, Indian Journal of Discrete Mathematics (IJDM), etc.
- Dr. Mary George** Member, Board of Studies in Computer Sciences, St. Theresa's (Autonomous) College Ernakulam  
Question Paper Setter for Assumption (Autonomous) College Changanacherry

**Ms. Deena C Scaria**

Question paper setter for VI Semester CBCS B.Sc. Mathematics Examination at Assumption College, Changanacherry

**Mr. Jijo Joy**

Question paper setter for VI Semester CBCS B.Sc. Mathematics Examination March 2020 of Assumption College, Changanacherry  
Question paper setter for M.G. University I Semester CSS M.Sc. Mathematics Examination December 2019

**Dr. Jubin Antony**

Resource Person, UGC Sponsored Add-on Course on Statistical Data Analysis at Catholicate College Pathanamthitta.

## Research Paper Publication

G. Indulal, Deena C, Scaria and X. Liu (2019). The Distance Spectrum of the Subdivision Vertex Join and Subdivision Edge Join of Two Regular Graphs. Discrete Mathematics Letters (1), 36-41.

Deena C. Scaria and G. Indulal (2019). The Distance Laplacian Spectrum of the Subdivision Vertex Join and Subdivision Edge Join of Two Regular Graphs. Discrete Mathematics Algorithms and Applications (1).

Jubin Antony (2019). Willingness to Pay for Access to Improved and Reliable Piped Water: A Contingent Valuation Study in Kerala, India. Thailand Statistician, 17(1), 75-83.

Jubin Antony (2018). Recent Trends in Credit Scoring and Financial Modelling: A Review. Journal of Propagations in Probability and Statistics, 18(1), 13-21.

## Radio Talks

**Dr. Indulal G.**

On 'The legacy of Kerala Mathematics' broadcasted through All India Radio on August 10, 2018 through the Radioscope programme Nationwide.

On 'Srinavasa Ramanujan, athulyanaya ganitha sasthan prathibha' (Srinivasa Ramanujan, The unparalleled Mathematical Genius) ' broadcasted through All India Radio on December 20 , 2018 through the Vidyabhyasaramgam programme

On 'NielsHenric Abel' broadcasted through All India Radio on April 24, 2019 through the sasthanlokam programme

## Karen Uhlenbeck- the first woman to receive the Abel Prize



The 2019 Abel Prize, also known as the 'Nobel prize for mathematics' was won by Karen Uhlenbeck, the first woman to ever receive the award. The award makes her one of the pioneers for women mathematicians, alongside Maryam Mirzakhani, the Iranian who was the first woman to win another prestigious prize in 2017, the Fields Medal, awarded by the International Mathematical Union.

Uhlenbeck is legendary for her skill with partial differential equations, which link variable quantities and their rates of change, and are at the heart of most physical laws. But her long career has stretched across many fields, and she has used the equations to solve problems in geometry and topology.

One of her most influential results is the discovery of a phenomenon called bubbling, as part of seminal work she did with mathematician Jonathan Sacks. Sacks and Uhlenbeck were studying 'minimal surfaces', the mathematical theory of how soap films arrange themselves into shapes that minimize their energy. But the theory had been marred by the appearance of points at which energy appeared to become infinitely concentrated. Uhlenbeck's insight was to 'zoom in' on those points to show that this was caused by a new bubble splitting off the surface.