





## From the Pro-Vice Chancellor's Desk

I am delectated to announce that the Department of Mathematics, ICFAI University Tripura is coming up with its first news letter namely  $\mu$ -ews as a manifestation of their veracious endeavor to inspirit and document the academic as well as other extracurricular achievements of the department. The ICFAI University Tripura is one of the premier institutions of the country that offers world class innovative, career-oriented professional post graduate and undergraduate programs through inclusive technology-aided pedagogies to equip students with the requisite professional and life skills as well as social sensitivity and high sense of ethics. ICFAI University welcomes talents from across the nation and also optimistic to adequately accommodate International students and researchers.

The ICFAI University Tripura was established in the Year 2004 by Tripura Act 8 of 2004 and since then crediting on its industrious and sacrament conviction of academic excellence; it claimed the trust of the people of Tripura as well as students from other states of the Nation. Today on the eve of the launch of the first volume of  $\mu$ -ews, I am blissful to state that it is the ardent venture of the faculty, staff of the University that has uplifted the stature of ICFAI University Tripura as one of the finest and established academic and research institutions of the country.

**Prof. Biplab Halder**

Pro-Vice Chancellor





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## From the Registrar's Desk

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On behalf of the ICFAI University Tripura, I congratulate the Department of Mathematics for their initiative to bring out the news letter  $\mu$ -ews. Department of Mathematics is one of those departments of the University that is solely devoted in the mission of promoting mathematics. The Department has taken a significant number of initiatives during the COVID-19 pandemic to ascertain that there is no academic loss of the students. The news letter initiative of the Department of Mathematics is both innovative and noble at this hour since it would accommodate in revitalizing the academic community and the ultimate beneficiary's i.e. students and the research scholars at this hours. I wish good luck to the earnest endeavors of the Department of Mathematics.

A handwritten signature in black ink, consisting of a stylized 'G' followed by 'R' and 'A'.

**Dr. A. Ranganath**

Registrar





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## From the Dean's Desk

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I wish to congratulate the Department of Mathematics, ICFAI University Tripura for bringing out their first ever Newsletter  $\mu$ -news. The newsletter is a testimony to all the quality teaching and research happenings in the Department of Mathematics. As a young department, it is a commendable effort that will bring quality to the columns and show case the events. I look forward to reading about the various activities, achievements and articles on contemporary legal issues in the newsletter. Congratulations to the editorial team and I wish them luck.

A handwritten signature in black ink, appearing to read 'P. R. Borthakur'.

**Prof. P. R. Borthakur**

Dean FST,





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## From the H.O.D.'s Desk

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The Department of Mathematics started its journey in 2016 with M.Sc. in Mathematics course and now it offers B.Sc. (Hons.) in Mathematics, M.Sc. in Mathematics and Ph.D. in Mathematics. The department aims to address the main challenges faced by the society and academia in our state as well as in our country. More significantly, in student's search of success in their professional career, we believe in upholding our unceasing dedication to our students, helping them to learn, grow, develop, and achieve their objectives. Our aim is to develop students who provide them with a combination of requirements for academic and industrial needs, which will assist them to build and establish solutions to solve issues at the technical, social and national level. Students are encouraged to become successful tech professionals who can be effective for the company from the day they join the team or use their own new ideas and concepts to pursue entrepreneurial opportunities.

**Dr. Prasenjit Bal**

H.O.D., Mathematics,  
ICFAI University Tripura.



## ABOUT THE DEPARTMENT OF MATHEMATICS

The Department of Mathematics started its journey in August, 2016. Since then it came a long way to present, promote and nurture science in young minds. Currently B. Sc. ( Hons. ), M. Sc. And Ph. D. courses are being offered in the department. The Department of Mathematics has highly qualified faculty members actively engaged in cutting edge emerging research areas. Students are also trained in prestigious institutions during their internship projects in the summer. M. Sc. Projects are being conducted in active research areas in the Departmental facilities. To promote pedagogy and entrepreneurship, numerous seminars are being held throughout the year.



## STRENGTH OF THE DEPARTMENT

- Undergraduate, Postgraduate and Doctorate of Philosophy degrees are offered
- Highly qualified faculty
- Well-equipped Computer Lab facility
- Research and publications in emerging research areas
- Seminars by highly qualified experts from all over India and abroad
- Preparatory classes offered for competitive ex-aminations (NET, GATE etc.)

## AREA OF RESEARCH

- Real Analysis and theory of Banach Space
- Topology
- Fuzzy Set Theory and Fuzzy Topology
- Sequence Spaces
- Numerical Linear Algebra
- Matrix Theory
- Numerical Analysis and Singular perturbation problems
- Mathematical Modeling
- Mathematical Biology

## ISSUE EDITOR

**Dr. Prasenjit Bal,**

Assistant Professor and H.O.D. Mathematics.

## EDITORIAL BOARD

**Dr. Amit Kumar Laha,** Assistant Professor.

**Dr. Arnab Ghosh,** Assistant Professor.

**Dr. Debjani Rakshit,** Assistant Professor.

**Dr. Koyel Chakravarty,** Assistant Professor.

**Dr. Amit Kumar Laha,** Assistant Professor.

**Dr. Soumen Kundu,** Assistant Professor.

## COURSES OFFERED

- B. Sc. (Hons.) Mathematics
- M. Sc. Mathematics
- Ph. D. Mathematics

## EVENTS

### Celebration of National Mathematics Day

#### The proposal:

Srinivasa Ramanujan was born on 22nd December 1887. In order to recognize his immense contribution towards Mathematics, the Government of India has decided to celebrate Ramanujan's birthday every year as National Mathematics Day.

Mathematics is more than dry text books and exercise and proofs, it is a world of great excitement and joy. To popularize the significance, importance and contribution of India towards mathematics, the Department of Mathematics of ICFAI University, Tripura has proposed an event on 17th February, 2020.



#### Inauguration

The inaugural session of National Mathematics Day celebration is hosted by Mr. Tushar Datta and Monalisha Debbarma, B.Sc. (Mathematics) students of our institute. The session was started by welcoming the chief guest Prof. Binod Chandra Tripathi, Professor, Department of Mathematics, Tripura University.



#### Srinivasa Ramanujan Iyanger

Born: December 22, 1887 Erode, India

Passed Away: April 26, 1920 (aged 32)

Kumbakonam, India.

#### Celebration

Vice Chancellor Prof. Rajiv Lochan Pareek felicitated the chief guest of the day by offering flower bouquet and humble gifts as a token of our respect and warmth. Next lighting the lamp ceremony took place symbolizing seeding knowledge in one's mind. Chief guest Prof. B.C. Tripathy, Vice Chancellor Prof. Rajiv Lochan Pareek, Registrar Dr. Avula Ranganath and Dr. Prem Shankar Srivastava took part in this sacred ceremony. Students of Mathematics Department presented the inaugural song. Our Vice Chancellor Prof. Pareek delivered a highly motivational speech mentioning the importance of mathematics in daily life.





Next speaker was our chief guest Prof. B.C Tripathy. He explained the life of Ramanujan, how he struggled throughout his life, how he became a mathematical genius although he didn't have a graduation degree. He has also described the contribution of Ramanujan towards mathematics, how Prof. Hardy has influenced Ramanujan's research etc. The next speaker was Dr. P.S .Srivastava. He has explained the challenges for a mathematics teacher and how to overcome the while addressing the teachers who has come from different schools. Dr. A. Ranganath delivered the vote of thanks afterwards. Near about 80 students from ICFAI University and other institutes, some teachers from nearby schools were present in session.



### College level Quiz

To popularized mathematics, we have arranged a Mathematical Quiz competition for the under graduate students. On spot registrations was done by Dr. Arnab Ghosh. Teams of two students from Tripura University, B.B.M College, Ramathakur College, Netaji Subash Mahavidyalaya, Women's College and ICFAI University, Tripura has Participated in the competition . The quiz masters were Mr. Sonjoy Pan and Dr. Abhishek Das. The quiz was designed in three different steps. In between the steps, there was an open quiz for the audiences. Gouri Paul and Nandita Paul from the Women's College, Agartala has won the first position in that.



### Prize Distribution

After the competitions and events were over, the prize distribution and concluding ceremony marked the end of this nice event. In total there were 18 participants out of whom 8 were male and 10 were female.



*"It is not certain that everything is uncertain."*

— Blaise Pascal



**Creative activity could be described as a type of learning process where teacher and pupil are located in the same individual.**

— Arthur Koestler



## Celebration of National Science Day

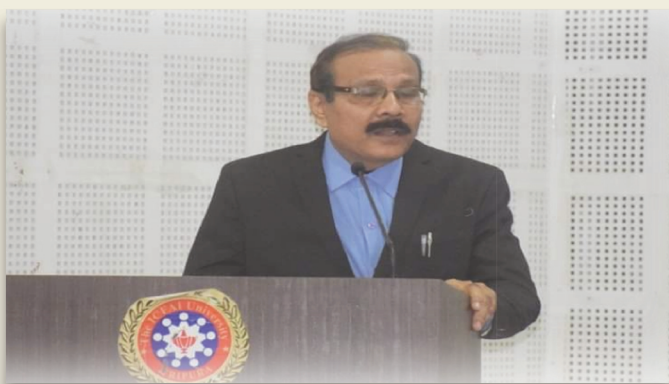
The Department of Mathematics, as a part of ICFAI Science School celebrated the National Science Day on 28th February, 2020. The theme of the event was "Women in Science" as suggested by government of India.



Felicitation of Dr. Alok Satpathy by Prof. Priyangshu Rana Barthakur, Dean, FST, The ICFAI University Tripura.



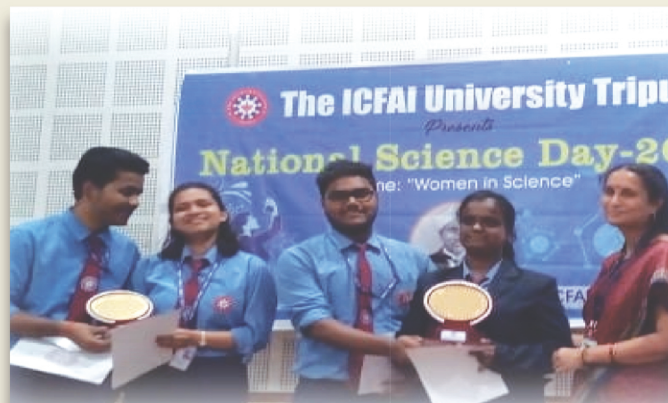
Inaugural Song by B.Sc. students on the occasion of National Science Day celebration.



Speech by Dr. Alok Satpathy on "Women in Science" as this was the theme of National Science Day, 2019, proposed by MHRD, Govt. of India.

***"Mathematics is the queen of science, and arithmetic the queen of mathematics."***

— Carl Friedrich Gauss



Prize distribution ceremony. Students of B. Sc. Physics 1st year won the science model competition and they are receiving the award from Dr. Arundhati Bai.

## Orientation Of New Students

### Introduction:

As a part of the Academic Activity of the Department of Mathematics, Orientation program was organized on 8th September, 2020 and 9th September, 2020 for the first Semester students of the Department of Mathematics, ICFAI University Tripura. The Orientation program was held in different sessions. In this orientation program all the Faculty members deliberated words of advice/suggestions to the newly admitted students of B. Sc. and M. Sc.



**Prof. Biplab Halder,**  
Pro Vice-Chancellor,  
ICFAI University Tripura,  
Delivering the welcome address.



**Dr. A. Ranganath,**  
Registrar,  
ICFAI University Tripura  
addressing the new students.



**Prof. P.R. Barthakur,**  
Dean, FST,  
ICFAI University Tripura,  
addressing the new students.



Day-2  
**Dr. Prasenjit Bal,**  
H.O.D. (Mathematics),  
ICFAI University Tripura,  
Explaining the role of ERP,  
LMS and Google Meet.



## Objectives:

- To aware the students about the rules and regulation of the University and the Department.
- To make the students comfortable in the new institution and also in this new environment.
- To create an interactive environment in between the students and faculties.
- To know the students and about their skills.
- To inform about the course syllabus and significance of attendance (have to maintain 75 per cent attendance in each paper.)
- To make the students aware about online class systems and examination system.
- Responsibility towards the society as an educated person.

## Motivational Speech

Date: The 10th September, 2020.

Speaker : Swami Hitakamananda, Ramakrishna Mission, Shillong.

## Introduction:

As this new normal set in, everybody is learning how to best adjust to working from home and being isolated from friends and family. Staying motivated can be tricky, but you can help make it a bit easier for yourself by setting realistic schedules and taking time to care for yourself. Though this pandemic can feel like it will be endless, it will eventually pass. Staying motivated can help refocus our attention away from these stressful changes and towards a more hopeful future.



**Swami Hitakamananda,**  
Ramkrishna Mission, Shillong,  
Giving a motivational speak

## Objectives:

- Strategies for staying motivated during the COVID-19 pandemic.
- To manage a healthy work life at home.

## The Talk :

Swami Hitakamananda. Swamiji has explained how to stay motivated during this time. He has told that it is important to recognize that this is not normal time and human productivity is likely not at its peak right now. Setting daily goals can help people to make their day as productive as possible, but

be realistic with the goals he set. Big goals may seem impossible right now. Thus, focus on small goals for each day that people can cross off their list. For many students, working from campus provides time to socialize with friends in the class room or the laboratory. Being surrounded by others doing work can be very motivating, and so working from home can be hard when students are sitting alone at a desk. Thanks to platforms like Zoom or Google Meet, where people can still work with friends virtually.

## Guest Lecture

### Invited talk on the topic related to mathematical modeling

Organized by Department of Mathematics,  
ICFAI University Tripura

**Title of the talk:** Explosive Tritrophic Food Chain models  
with Interference: A comparative study

**Date:** 6th July 2020      **Time:** 12.00-13.30 pm

## Objective of the talk:

- To motivate and open up student's eyes into research prospective that they never saw possible before.
- Students may gain knowledge about mathematical modeling.
- Students may come to know the use of mathematics in the biological areas.
- To introduce the researchers in the area of Nonlinear Dynamics and Mathematical Modeling.



Resource Person

**Dr. Debaldev Jana,**

Assistant professor, Department of Mathematics, SRM Research Institution, Chennai, India

**Research Area :** Nonlinear Dynamics and its application in Biological Systems.

## About the event:

The program has been started as per schedule time (12:00pm) on Google Meet. At first our HOD, Dr. P. Bal has given an introductory speech about our department, our University, etc. and introduced the speaker with audience. Then, the talk has been started and continued till 13.30pm. At the beginning of the talk, there are some Internet connection problems from time to time, but we resolve the same immediately. We have a large number of participants from our University, different parts of our country and also from abroad. The participants have discussed their queries and the program has been terminated followed by a vote of thanks speech by HOD of Mathematics.

**Link:** [https://drive.google.com/file/d/17C3ck-Jq0RqHcN8Ln6C9PMH1zjf\\_er/view](https://drive.google.com/file/d/17C3ck-Jq0RqHcN8Ln6C9PMH1zjf_er/view)



## Webinar

National Webinar on

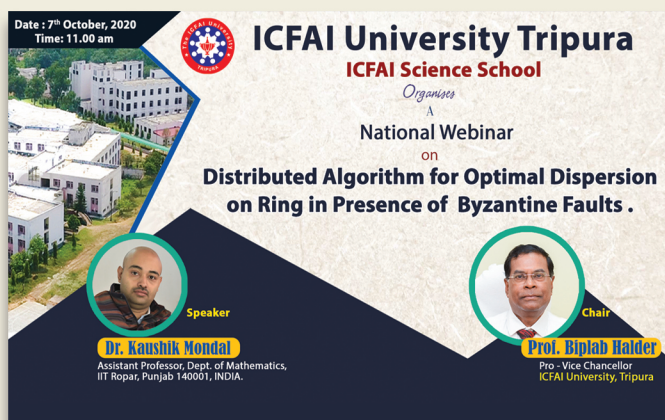
### Distributed Algorithm for Optimal Dispersion on Ring in Presence of Byzantine Faults

Organized by Department of Mathematics, ICFAI Science School, ICFAI University, Tripura

**Date:** 7th Oct 2020 **Time:** 11.00-12.00pm

#### Objective of the talk:

- To motivate and open up student's eyes into research prospects that they never saw possible before.
- Students may gain knowledge about ring and Byzantine Faults.
- Students may come to know the use of mathematics in the network algorithm and distributed algorithms.
- To introduce the researchers in the area of distributed algorithms for mobile robots, graph algorithms etc.



#### About the event:

The program has been started as per schedule time (11:00 am) on Google Meet. At first, Dr. K. Chakravarty has introduced the webinar and the Guest with the audience. Then our honorable Dean sir, Prof. P. R. Borthakur has given an introductory speech about our department, our university, etc. Then, the talk has been started and continued till 12:20 pm. We have a large number of participants from our university, different parts of our country. The participants have discussed their queries and the program has been terminated followed by a vote of thanks speech by HOD of Mathematics.

#### Link:

[https://drive.google.com/file/d/1RML5gAipeQDROgcjeJ\\_fGuLXP-92kd1h/view?usp=sharing](https://drive.google.com/file/d/1RML5gAipeQDROgcjeJ_fGuLXP-92kd1h/view?usp=sharing)



Resource Person  
**Dr. Kaushik Mondal**  
Assistant Professor,  
Department of Mathematics,  
IIT Roopar.

#### Research Area

- network algorithms
- distributed algorithms for mobile robots
- graph algorithms

## Students Activity

The quality of a life is determined by its activities

— Aristotle

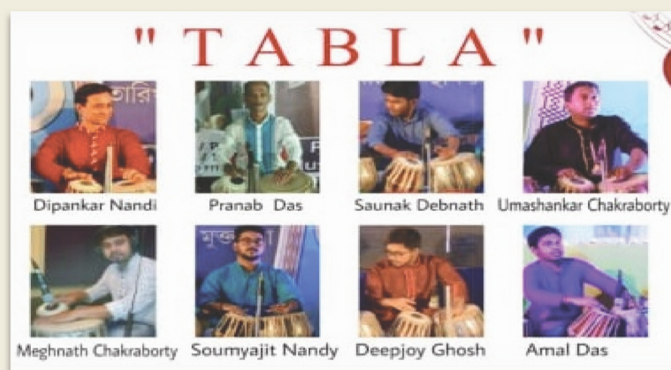
ICFAI present the scope to extend the hobbies as profession



One of our students was performing in state level "Tabla utsab".

Civilization is the order and freedom is promoting cultural activity.

— Will Durant



One of our students performed in 7th vanguard festival at children's park, Agartala.

*"Perfect numbers like perfect men are very rare."*

— Rene Descartes



#### Exploring the science

ICFAI gives the platform to ignite young mind with scientific knowledge.

Our M.Sc student given a presentation on "Barcode technology" on the Science day program at ICFAI University, Tripura.

*"If people do not believe that mathematics is simple, it is only because they do not realize how complicated life is."*

—John von Neumann





It was a fine art teacher's training examination which was conducted by Bangiya Sangeet Kala Kendra.



Students of the Mathematics Department participating in Lecture cum Demonstration Session in an workshop on Indian Classical Music.



Students of the Mathematics Department participating in Techno Cultural Fest of ICFAI University Tripura (ICARIA-2020)

### Online Internship Program

The students of the Department of Mathematics, ICFAI University Tripura are involved in various internship programs during their summer break vacations every year. In the academic year 2019-2020, the Bachelor's (1st and 2nd year) and Master's (1st year) degree students have done their summer internship program through an online platform called "INTERNSHALA" for about one month on the topic of their choices. The students of B.Sc. 1st year have chosen the topic such as "Data Science", "Data Science Challenge", "Advanced Excel", "Photography", "Teach From Home" and "Web Development". The students of B.Sc. 2nd year and M.Sc. 1st year have chosen the topic "Advanced Excel" and "Programming With Python" respectively. One internal guide from our department was also assigned to every student to guide in writing their Project Report and to prepare their Project presentation. After successful completion of their project through "INTERNSHALA", they submitted their report to the Department of Mathematics, ICFAI University Tripura, and also demonstrated their project work by Powerpoint presentation through the Google Meet platform.

### Publications & Collaborative Researches:



**Dr. Prasenjit Bal**  
Designation:  
Assistant Professor  
(HOD Mathematics)

#### Invited talk delivered:

**Title of the talk :** History of Numerals : From Pre-historic symbols to the modern day Numerals.

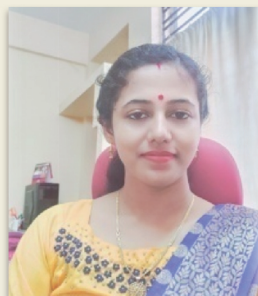
**National Conference on Vedic Mathematics Including Ancient Indian Mathematics.**

Date: Dec 28-29, 2019.

Organised by : Tripura Mathematical Society.

#### Research Article/Book/Book Chapter published for the period Oct. 2019 to Oct. 2020

P. Bal and DR Lj. Kocinac, "On Selectively Star-ccc Spaces", Vol. 284, 2020, Article Id: 107184



**Dr. Debjani Rakshit**  
Designation:  
Assistant Professor

#### Research Article/Book/Book Chapter published for the period Oct. 2019 to Oct. 2020

B. C. Tripathy, S. Debnath and D. Rakshit, "On I-statistically limit points and I-statistically cluster points of sequences of fuzzy number", MATHEMATICA (Accepted) vol-62(85) No. 2.





**Dr. Soumen Kundu**  
Designation:  
Assistant Professor

#### Invited Talk Delivered:

Two days national webinar on Mathematics and its application.  
Date: 14th -15th September 2020.

**Organized by Department of Mathematics, Abhedananda Mahavidyalaya, Sainthia, Birbhum, West Bengal, India.**

#### Research Article/Book/Book Chapter published for the period Oct. 2019 to Oct. 2020

- Z. Zhang, S. Kundu, J. P. Tripathi and S. Bugalia, "Stability and Hopf bifurcation analysis of an SVEIR epidemic model with vaccination and multiple time delay", Chaos, Solitons & Fractals, Vol-131, 2019.
- S. Kundu, S. Maitra and A. Ghosh, "Traveling wave solution and Painleve' analysis of generalized Fisher equation and diffusive Lotka-Volterra model", International Journal of Dynamics and Control (Accepted), 2020.
- Z. Zhang, J. Zou and S. Kundu, "Bifurcation and optimal control analysis of a delayed drinking model", Advances in Difference Equations (2020) 2020:522.

#### Departmental Research Collaboration:

- Nis University, Serbia.
- Central University Rajasthan, India
- National Institute of Technology Durgapur, India
- Anhui University of Finance and Economics, China
- SRM Research Institution, Chennai, India
- Qassim University, Saudi Arabia
- UAE University, UAE

#### New Members of the Family



**Dr. Swarup Barik**  
Designation:  
Assistant Professor

Dr. Swarup Barik did his Ph.D. in Mathematics from the Indian Institute of Technology Guwahati in the year 2019. He did master's in Mathematics from Indian Institute of Technology Madras in the year 2012. He has joined the ICFAI University Tripura as an Assistant Professor in the Department of Mathematics on 23rd September 2020. Prior to that he was working

an Assistant Professor (Ad-hoc) at NIT Meghalaya from July 2019 to May 2020. His broad area of research is Fluid Mechanics. His research interests are dispersion phenomena, concentration transport and environmental fluid mechanics.



**Prof. Subal Ranjan Sahu**  
Designation:  
Assistant Professor

Mr. Subal Ranjan Sahu has completed his Ph.D. thesis work in Mathematics from the National Institute of Technology Rourkela and submitted his thesis in March 2020. He did master's in Mathematics from Pondicherry University in the year 2015. He has joined the ICFAI University Tripura as an Assistant Professor

in the Department of Mathematics on 5th October 2020. He has teaching experience from August 2015 to December 2015 in Rajendra (Autonomous) College, Odisha, where he served as a guest lecturer in the Department of Mathematics. His broad area of research is Numerical Analysis. His research interests are numerics of PDE and singularly perturbed problem.

#### From the Heart of the Alumni's



"It was an awesome experience at ICFAI University, Tripura. Faculties are very much helpful and cooperative."

**Abhijit Debnath**  
(M. Sc. (Mathematics),  
2016 – 18



"After coming out of University, I have learnt to believe in myself, to adapt to the ever changing world, understand and interact with each individual differently. The college has given me the platform and opportunity to learn a lot of new things, to make lifelong friends.

I would like to thank the faculties of department of Mathematics and the entire ICFAI, Tripura fraternity who have always been on their toes to make us perfect in everything what we do."

**Mousumi Saha**  
(M.Sc. (Mathematics), 2017 – 19)



"ICFAI University, Tripura is the best university that I have ever seen. I have achieved a lot here. Learning from the esteemed faculties at the University was a golden moment in my life."

**Abhijit Lodh**  
(M.Sc. (Mathematics),  
2017 – 19)