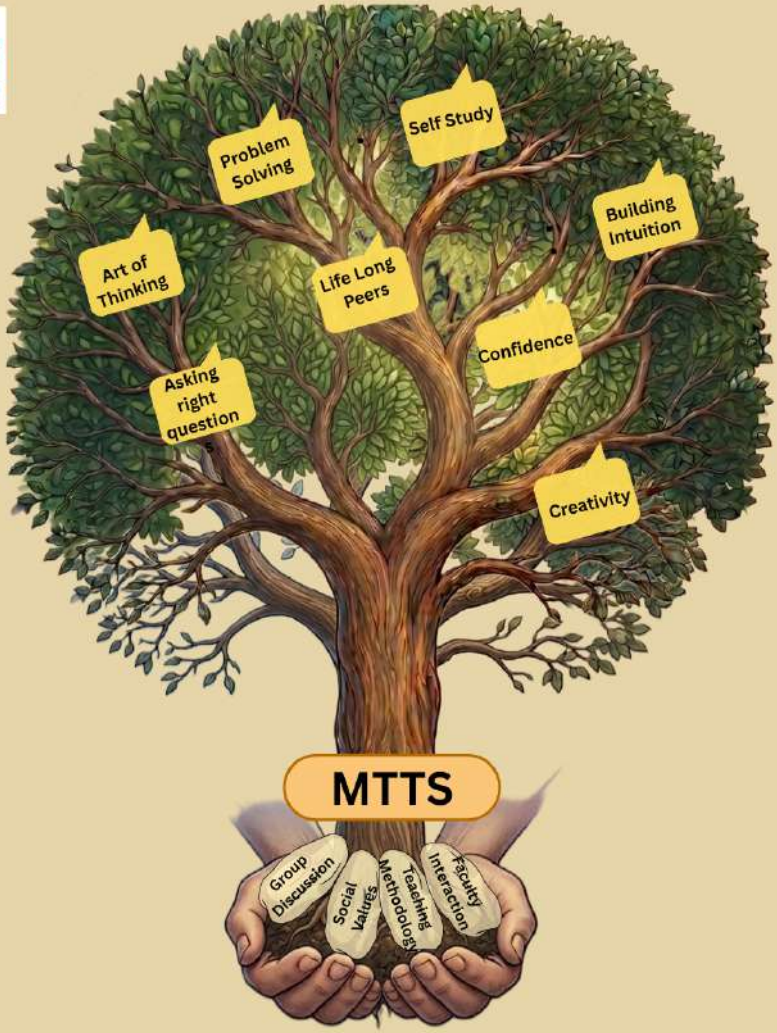
SOUVENIR

MATHEMATICS TRAINING AND TALENT SEARCH PROGRAMME

SKILL BUILDING IN HIGHER MATHEMATICS SINCE 1993



SUMMER CAMP 2026

KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY, BHUBANESWAR (18 MAY TO 13 JUNE 2026)
INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY, THIRUVANANTHAPURAM (21 MAY TO 16 JUNE 2026)
INDIAN INSTITUTE OF TECHNOLOGY JAMMU (25 MAY TO 20 JUNE 2026)

FUNDED BY: NATIONAL BOARD FOR HIGHER MATHEMATICS

MTTS Trust

Since its inception in 1993, the MTTS Programme has not only improved itself throughout its journey, but has also grown tremendously with addition of a number of associated programmes for students and teachers. Under the leadership of its founder, and current Director, Prof. S. Kumaresan, these camps have helped MTTS to reach the farthest corners of the country.

Initially working with the support of a small group of committed mathematicians, Prof. Kumaresan formed a National Core Committee to make decisions and execute all matters related to MTTS in its second decade. On the occasion of the silver jubilee of MTTS, the members of the core committee formed a non-profitable educational trust, entitled "MTTS Trust" to carry forward this endeavour. The Trust was registered in December 2016, and since 2018, all the programmes under the MTTS umbrella are being conducted by the MTTS Trust.

The objectives of the MTTS Trust include the following:

- To continue organizing camps presently being organized under the MTTS umbrella and any other training camps as deemed necessary or important for the country to keep its eminence in higher mathematics.
- To provide training in mathematics to students and teachers of colleges and universities in India, promote higher study and research in mathematics, mathematics education, its allied subjects, and their applications.
- To bring out lecture notes/textbooks of high quality in any branch of mathematics.
- To help any organization or academic institution in India to organize such programmes in line with the objectives of the trust.

The present composition of the MTTS Trust is as follows:

Trustees	1	G. Santhanam (President)	gsanthana@gmail.com
	2	Ajit Kumar (Managing Trustee)	ajit72.training@gmail. com
	3	B. S. Upadhyaya	upadhyayabs@gmail.com
	4	Bhaba K. Sarma	bhabasarma@gmail.com
	5	Vishnu Namboothiri K	vishnu.mtts@gmail.com
	6	D. Sukumar	sukumarmtts@gmail.com
	7	P. S. Srinivasan	pssrinimaths@gmail.com
Invitees	1	H. Ananthnarayan	ananth.mtts@gmail.com
	2	A. Chandrashekaran	chandrul782@gmail.com
	3	A. Satyanarayana Reddy	satya8118@gmail.com
	4	Vikram Aithal	vikram.aithal@gmail.com
	5	Dharmatti Sheetal	sheetal.dharmatti@gmail.com
	6	Arusha C	alphabeta487@gmail.com
	7	Jay G. Mehta	jaymehta.mtts@gmail.com
	8	Dhiren Kumar Basnet	dhirenmtts@gmail.com
Former Members	1	S. Kumaresan (Founder President & Former Trustee)	
	2	A. J. Jayanthan (Former Trustee)	

Any query regarding the Trust or suggestion to the Trust may be directed to the Managing Trustee at mttstrust@gmail.com.

Editors' Note

MTTS, a brainchild of Prof. S. Kumaresan, is now in its 34th year. What began as a summer programme for mathematics students in the country has grown into an organisation that conducts several impactful programmes of varying duration throughout the year, while continuing its flagship summer programme.

The MTTS Souvenir is itself a long-standing tradition, continuing for nearly three decades. It was conceived as a way to bring together information about resource persons and participants, while also providing students with pointers to make the most out of the programme. Continuing this tradition, we are pleased to present the MTTS Souvenir for the year 2026. Although the Souvenir has existed for many years, this is the first time it includes an Editors' Note.

As always, this edition begins with the Director's Take and a message by the President of the MTTS Trust, setting the tone for the current summer camp - MTTS2026. It also contains information about the programmes conducted between April 2025 and March 2026. Noteworthy among these is the newly introduced online programme on Statistics for ML, DS and AI (see page 17). Together, these reflect the continuing growth and commitment of the MTTS Trust in organising meaningful academic programmes. The section on MTTS pedagogy and the methodologies followed in MTTS camps highlights the programme's emphasis on inquiry-based learning and will be useful to students, mentors, and teachers alike.

Over the years, MTTS has touched an ever-growing number of lives. In recent years, we have also tried to include experiences from people associated with MTTS as students, mentors, teachers, and following various careers from academia to industry. This year, in "The MTTS Influence" (see page 22), we are delighted to present the thoughts and experiences of resource persons and former mentors who are now resource persons themselves; about how teaching at MTTS camps has influenced their own teaching practices and shaped their professional journeys.

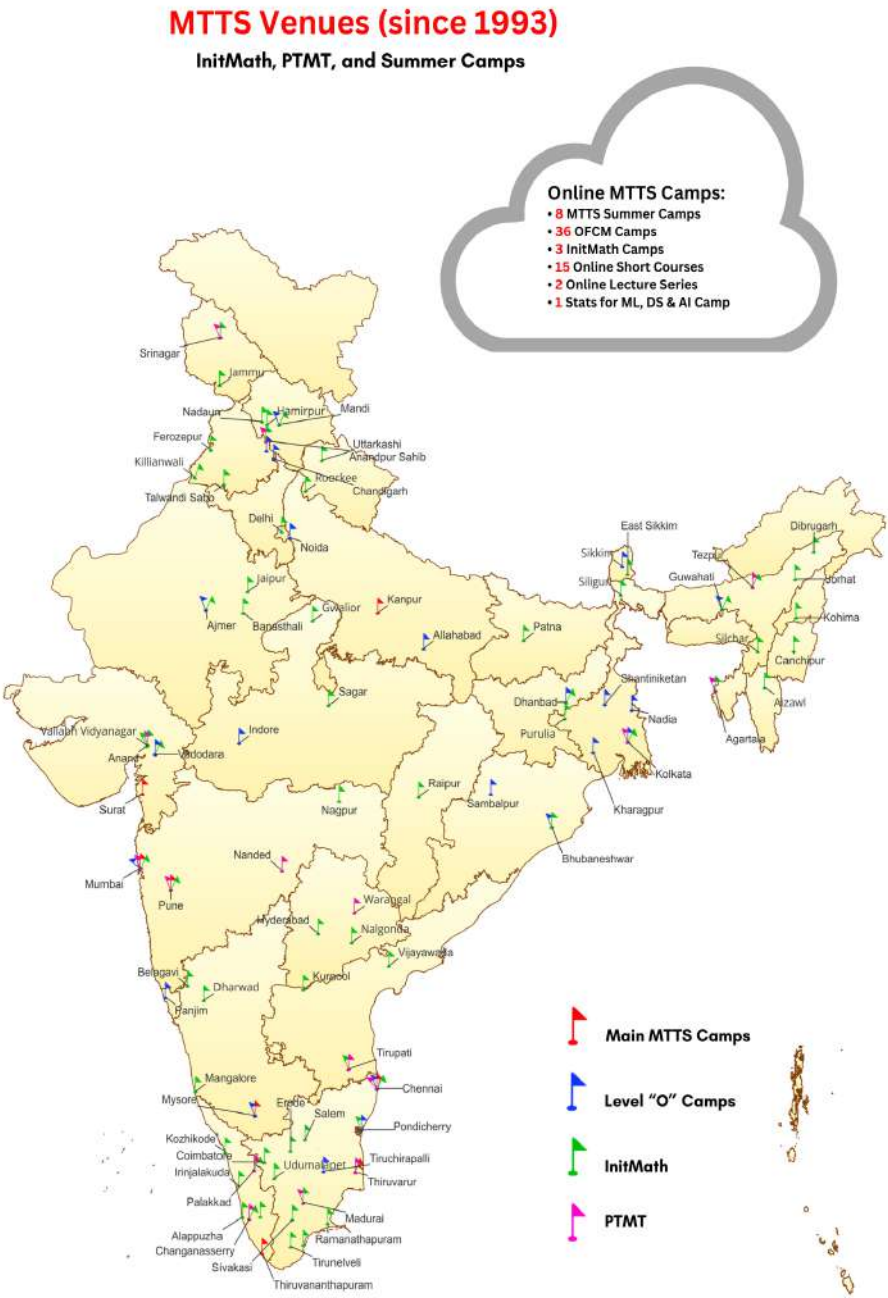
Two of these accounts (on pages 25-27) are worth taking note. The first is by students from one college, who attended InitMath camps, and tried to recreate the sessions for their college peers. The second is the experience of an alumna who benefitted from MTTS and wished to take the programme to more students, especially in her region. Her account, which also records some practices that make a camp impactful and successful, will be particularly helpful for those interested in conducting MTTS programmes in the future.

Last year's summer camp at IISER Pune also witnessed a small local alumni meet. Their continued association with MTTS and their interactions with participants are noted in this edition. Finally, the feedback from students who participated in last year's camps captures, in their own words, the unique spirit and impact of MTTS. These reflections are a delight to read.

The Souvenir is also interspersed by quotes about mathematics and learning and a few photos from various camps held in the last year.

We hope you enjoy and cherish this edition of the Souvenir.

-Ananth & Sheetal


MTTS Venues (since 1993)
InitMath, PTMT, and Summer Camps
Online MTTS Camps:
• 8 MTTS Summer Camps
• 36 OFCM Camps
• 3 InitMath Camps
• 15 Online Short Courses
• 2 Online Lecture Series
• 1 Stats for ML, DS & AI Camp
Srinagar
Jammu
Nadaun
Hamirpur
Mandi
Ferozepur
Uttarkashi
Killianwali
Anandpur Sahib
Roorkee
Chandigarh
Talwandi Sabo
Delhi
Noida
Jaipur
Gwalior
Kanpur
Ajmer
Bansthali
Allahabad
Patna
Sagar
Vallabh Vidyanagar
Indore
Anand
Vadodara
Surat
Nagpur
Raipur
Sambalpur
Kharagpur
Bhubaneshwar
Kolkata
Nanded
Mumbai
Pune
Warangal
Hyderabad
Nalgonda
Vijayawada
Belagavi
Dharwad
Kurnool
Ranjim
Tirupati
Chennai
Mangalore
Mysore
Erode
Salem
Pondicherry
Kozhikode
Coimbatore
Tiruchirapalli
Irinjalakuda
Udumalpet
Thiruvarur
Palakkad
Madurai
Alappuzha
Ramanathapuram
Changanasserry
Sivakasi
Tirunelveli
Thiruvananthapuram
East Sikkim
Dibrugarh
Sikkim
Tezpur
Siliguri
Guwahati
Jorhat
Kohima
Silchar
Canchipur
Shantiniketan
Aizawl
Dhanbad
Nadia
Purulia
Agartala
Main MTTS Camps
Level "O" Camps
InitMath
PTMT

Programmes conducted during 2025-26

Sl No	Programme	Venue	Region Covered	Dates
1	MTTS Summer Camp - Level O	Bharathidasan University, Tiruchirappalli	All India	May 19 - June 14, 2025
2	MTTS Summer Camp - Level O	KIIT Bhubaneswar	All India	May 26 - June 21, 2025
3	MTTS Summer Camp - Level O	IISER Pune	All India	May 26 - June 21, 2025
4	MTTS Summer Camp - Level I	IISER Pune	All India	May 26 - June 21, 2025
5	MTTS Summer Camp - Level II	IISER Pune	All India	May 26 - June 21, 2025
6	InitMath	NIT Silchar	Assam and neighbouring states	July 14 - 19, 2025
7	OFCM	Online	All India	Aug 24 - Sep 05, 2025
8	InitMath	NIT Hamirpur	Himachal Pradesh and neighbouring states	Sept 15 - 20, 2025
9	InitMath	Amity University, Gwalior	Madhya Pradesh and neighbouring states	Nov 03 - 08, 2025
10	Online Course on Statistics for ML, DS & AI	Online	All India	Oct 11, 2025 - Feb 08, 2026
11	InitMath	IIIT Naya Raipur	Chattisgarh and neighbouring states	Oct 01 - 06, 2025
12	InitMath	University of North Bengal, Siliguri	West Bengal and neighbouring states	Oct 13 - 18, 2025
13	InitMath	NIT Puducherry	Puducherry and neighbouring states	Dec 08 - 13, 2025
14	InitMath	IIT Tirupati	Andhra Pradesh and neighbouring states	Dec 29, 2025 - Jan 03, 2026
15	InitMath	IIT Dharwad	Karnataka and neighbouring states	Jan 26 - 31, 2026
16	InitMath	DHSK College, Dibrugarh	Assam and neighbouring states	Jan 05 - 10, 2026
17	PTMT	NIT Warangal	All India	Dec 29, 2025 - Jan 03, 2026
18	Overture	Patna Women's College, Patna	Bihar	Jan 27 - 28, 2026
19	Overture	S S College, Hailakandi	Assam	Feb 06 - 07, 2026
20	Overture	Bhadrak Autonomous College, Bhadrak	Odisha	Feb 07 - 08, 2026
21	Overture	St. Albert's College, Ernakulam	Kerala	Feb 19 - 20, 2026
22	Overture	Govt. Arts & Science College, Srivilliputhur	Tamil Nadu	Feb 19 - 20, 2026
23	Overture	B N College, Dhubri	Assam	Feb 21 - 22, 2026
24	Overture	D M University, Imphal	Manipur	Feb 23 - 24, 2026
25	Overture	RDS College, Muzzafarpur	Bihar	Mar 16 - 17, 2026
26	InitMath	RCU Govt. P.G. College, Uttarkashi	Uttarakhand and neighbouring states	Mar 30 - Apr 04, 2026

Director's Take

We keep hearing that the twenty-first century is the century of knowledge. Everybody is keen that critical thinking should be inculcated among youngsters. New Education Policy wants this to be a core subject in BS. What is Critical Thinking? If you go through the numerous articles/ books and sift through much jargon, you will find that everything boils down to the Art of Asking Questions! Everything else flows from this.

MTTS Programme, from its inception, has been training young minds of our country in the art of asking questions.

In fact, two decades ago, we started using the fancy phrase ?Critical Thinking?. Later, we even included a one-page DIY summary in the Souvenir. We use mathematics as a medium to encourage critical thinking in young minds. We believe that if critical thinking is taught as an abstract set of principles, it may not achieve its purpose. But if it is taught in the context of a subject, you see the principles in action and retain the principles for future use.

What can you expect in an MTTS camp? First and foremost is that a typical session of an MTTS camp is nothing you would have experienced in a classroom back home. The teacher keeps on asking questions, makes you think and encourages you to come up with your own answers. Slowly you will also start enjoying these interactive sessions, and come up with questions on your own. Gradually, with the help of your teachers, you will start ?discovering? mathematics rather than results being handed down as gospel truths. You will also perceive that mathematics is not only the mother of science, but is also a scientific discipline, and neither a religious dogma, nor a bagful of algorithms and tricks. Like in sciences other than mathematics, we also observe patterns, make experiments to see whether the same kind of pattern recurs, seek out a general principle (mathematicians may call them conjecture, lemma, proposition or theorem) that could explain the pattern and then prove it rigorously. This is where mathematics differs from other sciences. In other sciences, you can only conduct more experiments to verify the proposed principle, but there is no conclusive proof. In other sciences, one enunciates principles that try to explain the collected data or observed phenomenon but if a new set of data is replicated at many places and the existing principle or theory does not explain the new phenomenon, you look for another principle that explains the past as well as the new data. In mathematics, once a result is proved rigorously, the result/principle remains true forever. You will experience all this and more in a typical MTTS camp.

The sessions in an MTTS camp will be radically different from what you have seen in your institutes. It takes about three days for a new entrant to catch on to what we are trying to do. Do not be discouraged if you – a brilliant student– could not answer simple questions on topics you thought you knew 'well?. This is one of the awakening moments. Just like learning a dictionary by heart does not make you proficient in oral or written communication, knowing the jargon is not the same as understanding the subject. The camp offers an academic ambience that is unique. It is a place where you see a lot of experts who are keen to discuss

mathematics, and a whole lot of young minds with a thirst for knowledge. This kind of atmosphere is very rare even among the best institutes in the country. You will see students of varied interests with a variety of talents. Make the best use of this by mixing with other participants and discussing mathematics. We encourage discussion with your peers as it is the best way to learn ANYTHING, in particular, mathematics.

Some of you may have difficulty in communicating in English. Do not worry, a teacher, a mentor, or a participant will be there to help you. MTTS camps not only groomed good mathematicians, they also gave the confidence to such students to overcome their difficulty in English. Many are now with reputed institutes in the country and have made many foreign visits. So, do not let a language be a barrier to your growth.

Since everyone around you is also committed and good, it is a good idea to see how you compare with them. However, this introspection should be used only to identify areas for self-improvement, and attend to these. *Compare with others, but compete only with yourself.* During the middle of the second week of the camp, do some self-enquiry: where were you at the beginning of the camp and what are the positive changes you could see in yourself?

As our emphasis is to make you think on your own and find your own path to learning and doing mathematics on your own, we may not introduce many new concepts and deal with them in a shallow manner. Those who are fortunate to have had good teachers and peers may, at first, be dismayed that they are not learning anything new! Let this thought not blind you so much that you fail to perceive the other aspects of the camp. Newer perspective, deeper understanding, the inner workings of the proofs, mastery over the subject, the confidence in learning new concepts on your own, and the ability to solve problems by means of asking questions, are some of the key takeaways from our courses.

The MTTS methodology can be summed up in one sentence: We learn faster and better by mimicking and emulating experts. In childhood, we learned everything by watching others and imitating them. We made mistakes but that did not deter us from trying again and again. Teachers at MTTS camps think in front of you, show you their raw thinking process, and ask questions aloud that lead them to solve a problem on hand. We hope that consciously or unconsciously, you observe these and put them to use to understand new things and solve unseen problems. This principle is captured by a quote of Henri Lebesgue printed elsewhere in the souvenir.

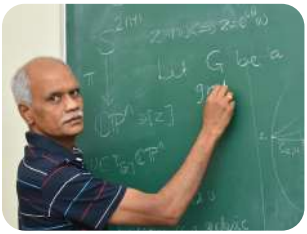
The future of Data Science and AI is built on a foundation of Mathematics and Statistics. Recognizing its critical role, the MTTS Trust is launching specialized courses in Mathematics and Statistics designed for Data Science. We have taken our first big step towards training the experts of tomorrow. Discover our new program details within this souvenir.

With these few words, let me welcome you to MTTS2026. I am sure you will enjoy the academic environment and hopefully, this will turn out to be one of the most cherished parts of your life! Your ideas of Mathematics and the way of learning are going to change forever!

All the best!

S Kumaresan

Message from the President



On behalf of the MTTS Trust, I welcome you all to MTTS2026 - the 34th MTTS summer camp. As you all may be aware, the MTTS method of teaching is very much different from the routine classroom teaching. MTTS firmly believes in making learning enjoyable and wants to give each one of its participants a sense of discovery.

The MTTS programmes have been able to achieve this by making the academic sessions interactive in which every student takes active part in learning. When this happens, every student takes part in this active learning, pays attention to what is being said rather than on what is written on the board, and also thinks along with the teacher. This enables the students to think ahead and discover on their own.

Prof. S. Kumaresan, Director, MTTS Programme has written exhaustively on various aspects of MTTS teaching. This way of learning may be demanding and it is highly rewarding. I am sure you are willing to work hard to get maximum benefit out of this programme.

The MTTS Trust wishes you all the best.

G. Santhanam

Post-Dinner Discussions, MTTS2025, IISER Pune

Thanks a lot

The MTTS Trust would like to record its sincere thanks to:

- Prof. S. Kumaresan, Director, MTTS Programmes, and former President, MTTS Trust for his dynamic leadership and his continued invaluable contributions to the MTTS Programme since its very inception;
- Prof. G. Santhanam, President of MTTS Trust his dedicated guidance support in steering the activities of the Trust;
- All the trustees and invitees of MTTS Trust for their untiring support and invaluable contributions to the MTTS Trust in its endeavour;
- National Board for Higher Mathematics (NBHM), an apex body of the Department of Atomic Energy, Government of India for generously funding the MTTS programmes since its inception in 1993;
- All the donors for their generous support to MTTS Trust to carry out MTTS activities and its mission;
- The Vice-Chancellor of Kalinga Institute of Industrial Technology (KIIT), Bhubaneswar, the Directors of Indian Institute of Space Science and Technology (IIST), Thiruvananthapuram and Indian Institute of Technology Jammu for according the permission to organize the MTTS 2026 summer camps in their respective institutes and for providing various facilities;
- Local coordinators of MTTS 2026 summer camps: Dr. Abhijit Sutradhar and Dr. Manas Ranjan Mohapatra (KIIT, Bhubaneswar), Prof. K S Subrahamanian Moosath and Prof. Anil Kumar C V (IIST, Thiruvananthapuram), Dr. Rajiv Kumar and Dr. Arvind Kumar (IIT Jammu) who have very generously shared their organizational expertise and ideas, and worked with great dedication toward our common goal;
- All the members of the Organizing Committee of MTTS 2026 summer camps for their whole-hearted support in taking care of various aspects of organizing the programmes;
- All the resource persons and mentors of MTTS 2026 summer camps who have agreed to teach and guide students despite their busy schedule;
- Mr. Nair of Scientific Books, Mumbai for supplying books;
- All the resource persons, local coordinators and mentors who have contributed to the various camps organized under the MTTS umbrella from April 2025 to April 2026 for their unwavering commitment and steadfast support in this collective endeavours;
- The recommending teachers for supporting the MTTS endeavours by encouraging their students and their interest in the betterment of students;
- All of those who have contributed in making MTTS a brand in the last thirty-three years;
- Last but not the least, all the participants of the MTTS camps in 2025-26, and those that are participating in MTTS2026 summer camps.

– - Ajit Kumar
Managing Trustee, MTTS Trust

MTTS Programme - An Introduction

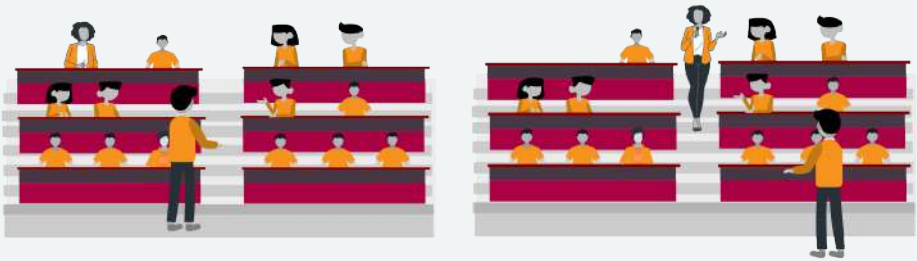
What is MTTS?

The Mathematics Training and Talent Search (MTTS) Programme started in 1993 as a four-week intensive summer training programme for mathematics students and has been organised at different locations across India for the last three decades. The programme, funded by the National Board for Higher Mathematics (NBHM), has been organised by a group of committed mathematicians under the dynamic leadership of Prof. S. Kumaresan (Retd., University of Hyderabad), the first recipient of the INSA Teachers Award in Mathematics.

Over the years, MTTS has grown, with a number of different training programmes held across the country throughout the year. The MTTS programmes are one of the most effective and unparalleled training programmes, making a significant impact on the mathematical scene in India. From 2018 onwards, all MTTS activities are organised by the MTTS Trust, a non-profit educational trust formed in December 2016.

The Genesis

In 1989, during a conference titled "Development of Mathematics" organised by the NBHM, Prof. S. Kumaresan proposed a training programme with a vision different from the then-existing training programmes in mathematics. Subsequently, during "Discussion Meeting on Harmonic Analysis" held at the Indian Institute of Science, Bangalore in 1992, a session was devoted to discuss the academic preparation of the students who come for Ph.D. programmes in Mathematics. Prof. Kumaresan suggested that a training programme, with the aim to expose young minds to the excitement of doing mathematics, and enabling them to have a meaningful career in research and teaching, should start at an early stage, perhaps at the B.Sc. level itself. The NBHM, an apex body of the Department of Atomic Energy, Government of India, was approached with the proposal, which promptly agreed to support such an endeavour. Thus, the programme, christened as the MTTS Programme, took off in the summer of 1993.



Aims

The manifold aims of MTTS include

- exposing bright young students to the excitement of doing mathematics;
- promoting creative thinking and initiating into art of asking questions;
- promoting problem solving skills;
- reaching out to students interested in mathematics across every nook and corner of the country;
- preparing students in various aspects of mathematics required to become professional mathematicians;
- improving the teaching methodology of mathematics in the country.

The Magic of MTTS

The teaching methodology in MTTS is radically different from regular classrooms. Resource persons refrain from delivering well-polished lectures. All the sessions are highly interactive, and the participants are asked to think, experiment, formulate and prove mathematical results on their own at every stage. The principle followed in this programme, is best explained in the words of Lebesgue,

"The best way to teach students is to think in front of them".

Some of the regular features in the MTTS camps are: group discussions, student seminars, thinking and writing assignments, sessions on how to read mathematics books and counseling sessions.

In each on-site camp, all resource people, which include the instructors, as well as the mentors, are present throughout the day, in all the sessions and are involved in round-the-clock discussions with the participants. They reside with the participants and spend most of their time engaged with them. MTTS camps provide an effective platform for the participants to interact with peers and experts in the fields, which helps them to build

strong mathematical foundations. MTTS gives preference to participants from rural backgrounds, from remote areas, and to women participants. During the past 32 years, MTTS has reached the farthest corners of the country. Every year it is ensured that the participants of the programme are drawn from almost every state of the country.

Due to the covid pandemic outbreak in 2020, the MTTS Trust had to abandon its traditional on-site camps in the summer and switch over to the online mode. It was a challenge for the Trust to replicate the highly successful interactive and students-participation based methodology of the MTTS camps, if the programmes were to be conducted online. Under the guidance of Prof. Kumaresan, several rounds of extensive discussions among MTTS Trustees and invitees were held, and experimentation with various online tools available were conducted. The success of a pilot online course conducted by Prof. Kumaresan with select students of MTTS2019 made the Trust confident enough to conduct online camps.This became an initial model for the Trust to follow, and an abridged version of MTTS2020 was conducted online. Since then all programmes under the umbrella of MTTS were conducted online by the Trust successfully until the annual summer camps in 2022. The untiring efforts of the faculty and the mentors, and the positive response from the students, made this possible.

Through the online programmes conducted in 2020 and 2021, the Trust gained expertise in teaching using online platforms. The magic of the MTTS style of teaching in the on-site camps was almost recreated in these online camps. The online programmes are immensely useful in reaching out to a large number of students from remote geographical locations, giving them an initial training, and for holding the follow-up camps of different MTTS programmes. After the easing out of the covid situation and pandemic induced restrictions in the country, the Trust has not only resumed its on-site activities starting from MTTS2022, but also continued to use its collective experience and expertise, by conducting various highly appreciated programmes in the online mode.

A key aspect of all the MTTS camps is that feedback is taken from all the stakeholders, including students, mentors, coordinators, and faculty. The MTTS motto "I'mproving Myself" is also applicable to itself, as appropriate measures based on constructive feedback are taken up for future improvement. In fact, this meticulous exercise is one of the reasons why MTTS has had continued success for over three decades, and has evolved into one of the most effective training programmes.

Academic Programmes

MTTS Annual Summer Camps

The main and oldest format of MTTS camps, itself known as the MTTS Programme in the initial decade, is the intensive four-week MTTS annual summer camp. It has been held uninterrupted every summer since 1993 (including the years 2020 & 2021 disrupted by the pandemic, when it was held online). The main centre comprises three camps, one at each of the following levels: Level-O, Level-I and Level-II meant for B.Sc. 2nd year, B.Sc. 3rd year,

and M.Sc. 1st year students respectively, catering to around 130-150 students every year. Two more Level-O camps are held at geographically separated locations in the country, catering to approximately 90-100 more students of BSc second year with the aim of reaching out to students, and inspiring them to take up a career in mathematics.

Usually, at each level, four fundamental topics in mathematics are taught by a highly committed team of faculty members from various leading institutes in India, well-versed in MTTS pedagogy. The camp is set up so as to give individual attention to every student and ensure that no student feels left out. All teaching faculty, aptly called resident faculty, as well the mentors, stay with the students in all the classes, and help them resolve their doubts and queries not only during lunch and tea breaks but often also after dinner.

After four weeks of intensive training, one experiences a remarkable improvement in students' critical and independent thinking, mathematical writing, and problem-solving abilities. In fact, the whole approach of these students towards mathematics changes. Group discussions at the end of each session and student seminars are hallmarks of this programme, which enable, nurture and hone these abilities. Innovative sessions like reading mathematics from a maths book, and learning effectively from online video content, are conducted for students to keep up their learning even after returning from the camp.

The Summer Camp is advertised sometime in December and the applications are invited through an online application portal. Around 250 students out of about 3000 applicants, in three levels are selected to participate in the summer camps after a very rigorous selection procedure. The selection of students primarily depends on their consistently good academic record, and the recommendation of a teacher closely acquainted with the student. The process also ensures that students from all states, including a fair proportion of girl students, are selected. The programme takes care of the travel, accommodation and food of the participants, and provides other study materials including books. A mini-feedback after a week and detailed feedback towards the end of the programme are collected, which are used for self-assessment and improvement.

InitMath (formerly known as miniMTTS) and PTMT Programmes

In order to provide opportunities to a larger number of students and teachers, regional level programmes of shorter duration are held that are modelled on the MTTS methodology. Two initiatives that have served the mathematics community across the country are Initiations into Mathematics (InitMath), and Pedagogical Training for Mathematics Teachers (PTMT) programmes. So far 91 InitMath camps and 18 PTMT programmes have been organised in various parts of the country in the past decade. These camps have been organised in almost all states in the country, including several in geographically disadvantaged regions, motivating a large number of students from remote areas to pursue a career in mathematics. Several InitMath camps from 2020 to 2022 were also held online. *These camps are conducted throughout the year, and potential applicants should see the MTTS website for*

information about upcoming camps.

Online Foundation Course in Mathematics (OFCM)

"Foundations" is a unique course taught in the MTTS camps to initiate the students to some fundamental topics of mathematics based mainly on mathematical logic. After attending a 2-week course on Foundations in the MTTS camps, almost all participants so far have experienced a change in their attitude towards mathematics, problem solving abilities, and logical and analytical thinking. They also acquire a high level of confidence for self-study to undertake courses in higher mathematics. In order to facilitate the transfer of the positive changes that the Foundations course brings to MTTS participants, to many more students across the country, the idea of hosting it in an online form was mooted after the MTTS2020 Summer Camp. The first edition was held online in October 2020 with six parallel online camps (with 12 sessions each, over a duration of 3 weeks) covering almost all states of the country. One of these camps was also live streamed on YouTube, which was watched by a large number of students and the viewers were guided online by several mentors. The Trust has been successfully conducting this programme every year since then. 36 OFCM camps have been conducted so far, reaching out to a large number of motivated students. It is expected that OFCM will be held in August each year in the near future, *with the application portal opening some time in July.*

Overture

To further the reach of MTTS training to a larger audience of deserving students, a new programme titled "MTTS Overture" was started in 2023, through which two-day workshops are held in colleges in different parts of the country. The pilot project in 2023 has had a significant impact, leading the Trust to make this a regular activity. In each of these camps, about fifty students studying in colleges in the locality, are trained by two experienced MTTS faculty. Two very short courses out of Real Analysis, Linear Algebra, Foundations, etc., are run, exposing the young undergraduate students to the MTTS learning methodology, and to various resources for self-learning.

The MTTS trust bears the cost pertaining to the resource persons and the host institutes are asked to arrange food, refreshment, etc., for the participating students (at times with a nominal fee, if needed). The Overture camps are conducted during the period September - December every year, and preference is given to the institutions that are serving students in geographically disadvantaged locations. 52 overture camps have been held in all since 2023, at different locations in the country. *The colleges interested in organizing Overture camps can apply online on the MTTS website.*

Follow-ups of MTTS Camps

A follow-up of an MTTS camp is often conducted, depending on the availability of resource persons, if there is sufficient interest from the students. The main premise is that

a smaller number of students who have made full use of the opportunity presented by the original camp, and are well-trained by it, can be pushed a lot more in a short intensive camp.

Follow-ups of the summer camps have been held on-site in the initial years of MTTS, and then again in Dec 2023, where those coming out of Level II were trained further in advanced courses, helping them head towards research in mathematics. These follow-ups have been conducted in different formats, with the most recent being in the form of two intense advanced courses covered in one week, with at least as much time for discussion as the sessions themselves.

Various versions of online follow-ups have also been regularly conducted for the OFCM camps since 2021. In 2024, the Trust experimented with two versions; the first was in the form of 2-3 sessions followed by watching 2-3 videos on YouTube, on related topics, covered by Prof. Kumaresan, while the second was a self-study based approach, where the group of students were given links to videos similar to the above, and a discussion meeting arranged, if they needed it. It has been observed that the second format may have a better impact if it is combined with MTTS Self-Assessment in some format.

Online Short Courses (OSC) and Online Lecture Series (OLS)

Encouraged by the success of the online programmes since 2020, a number of short courses and lecture series have been organised by the Trust depending upon the availability of resource persons, and feasibility for students. These also include several online courses, which served as a follow-up to various camps.

These courses are based on advanced topics in mathematics aimed at students at different levels, and are given by experts in the respective fields. Each OSC has about 8-10 online sessions, and each OLS has about 12-15 online sessions consisting of 60 minutes of lecture followed by discussion by the participants in groups for about 40 minutes. Since May 2020, 2 lecture series and 15 short courses in different areas have been organised, with a large number of students and teachers from across the country participating in, and benefiting from these.

Online Open Mathematics Forum

The purpose of this forum is to organise expository lectures by mathematicians with high levels of expertise in diverse areas. These online lectures are usually for about 60 minutes and are followed by a discussion with the participants. The forum is an ideal way of exposing talented students in the country to various aspects needed for a successful career in mathematics. This is aimed to attract a large number of students, and prepare and entice them for further studies and research in the area of the exposition. The forum is expected to build a critical mass of scholarship in more areas in the long run.

MTTS Self-Assessment (MTTS-SA)

MTTS Self-Assessment, an initiative taken by the MTTS trust during the pandemic days to improve student learning and understanding, is born out of Prof. Kumaresan's conviction that assessment is different from tests/exams and his years of experience as a teacher. In our prevalent system, the marks and grades obtained by the students do not reflect their real learning and confidence in the subject, since the evaluation, which is not the same as assessment, is often solely based on memorisation and rote-learning. In order to bring meaningful changes in the assessment system in the country, Prof. Kumaresan conducted an online workshop, attended by over a hundred teachers. This introduced the teachers to some radically different ways of assessment that are class-tested over three decades and are practical, and encouraged them to experiment with the same.

MTTS-SA is built upon these ideas, and provides a way for the participants of the MTTS camps to assess their own learning, understanding and improvement. This activity is conducted online through the MTTS Moodle site, which can be accessed by logging in at https://classroom.mtts.org.in/. While regular examinations are never conducted during MTTS programmes, this activity is in the form of a quiz, but without any marks, or judgement. There are several types of questions, all of which are created in a manner so that a student can attempt it online, identify their mistakes, reflect on their (correct as well incorrect) answers, without the presence of a teacher. If they are unsure, they are encouraged to think, discuss with their peers, the mentors, or teachers, in that order.

The self-assessment has been regularly conducted during the online programmes, especially OFCM. It was also made available during the on-site MTTS2022 camp, and many InitMath camps in the past two years. It has been observed that though the self-assessment was not mandatory, most students end up attempting it multiple times. There is a tendency among students initially to go through multiple attempts just to increase one's "score", but (with a couple of gentle reminders from the resource persons) many of them get used to thinking over the answers at the end of each attempt, once they realise that understanding of concepts is far more important.

Various MTTS faculty and mentors involved in multiple camps have taken a part contributing to the question pool. The primary sources for these questions have been (i) the questions asked, and examples shared by the instructors during the sessions, which help the students avoid, or get over mental blocks, (ii) those generated by the students in their group discussion, and (iii) those arising out of the points of difficulty of students, and their frequently made mistakes.

Once these questions are generated, there has been a dedicated team of volunteers, from among the MTTS faculty and mentors, who go over these raw questions, and work on them to make them moodle-compatible, make them appropriate for self-assessment, and help run the self-assessment modules in various camps. The efforts of this team, with its dedicated approach, has led to the creation of a sizable number of SA-ready questions in almost all the subjects taught in Level O, and some in Level I. In the future, the MTTS Trust

plans to make MTTS-SA available to students at various levels and on various subjects, and these teams have been working hard to make this vision come true.

Online Training Programme in Statistics for ML, DS and AI

The MTTS Trust, known for its pioneering contributions in mathematics education in India under the leadership and guidance of Prof. Kumaresan, noted the need to stimulate data driven thinking among mathematics students. Keeping this in mind, the Trust started a new online training programme on Statistics for Machine Learning, Data Science, and Artificial Intelligence in 2025-26. A key goal of the camp was to equip students with the statistical and mathematical foundations and skills necessary for pursuing careers and advanced studies in the fields of ML, DS and AI.

The programme was designed to bridge the gap between theoretical foundations and practical applications, with a strong emphasis on data-driven thinking using real-world datasets. The curriculum was carefully developed through extensive discussions with experts from academia and industry, ensuring relevance to current trends in data science and related fields. In alignment with the MTTS pedagogy, the sessions combined lectures, mentoring sessions, discussions, and hands-on learning using the R programming environment.

The highlight of the camp were the capstone projects, a distinctive feature of which was the use of diverse, real-world datasets sourced from the Government of India's AI-Kosh platform. The datasets were carefully chosen to expose learners to different data structures, statistical complexities, and domain-specific interpretations, reflecting pressing societal, economic, and public policy challenges. Participants gained hands-on experience in handling complex datasets, interpreting results in a socio-economic context, and developing data-driven insights relevant to public policy and national development.

The long-term vision of this programme is to establish a nationally recognized platform that nurtures strong foundations in statistics, mathematics, and data science through the MTTS pedagogy, while promoting research-oriented and application-driven learning. The programme aims to build a community of skilled learners who can apply statistical thinking

to solve real-world and nationally relevant problems. The Trust is however, constrained to charge a nominal fee to the participants defray the costs, as no funds have been approved

Future Plans

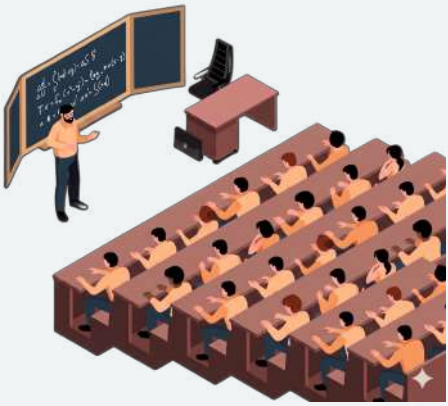
MTTS has managed to reach out to students from almost every part of the country and has inspired a large number of students to become highly competent mathematicians, including mathematics teachers at all levels. But for a vast country, just having 3 camps for Level O, one camp of Level-I and Level-II each and few InitMath camps are not sufficient. MTTS would like to organise more such camps in the country so that it can help students to learn mathematics in an engaging manner and also help mathematics teachers in pedagogy. As a first step, OFCM has helped by leveraging the reach of the online mode, and MTTS Overture is making forays into territories which have been untouched so far in terms of exposure, thereby getting the Trust closer to its goal of reaching the farthest reaches of the country.

A large number of MTTS alumni who have become established mathematicians are willing to contribute in the Trust's endeavours, which can change the way mathematics is being taught in the country in the long run. Further, the Trust also plans to build a movement for bringing meaningful changes in the assessment system in the country, by conducting more workshops on Assessment, as well as expanding the scope of Self-Assessment, and run it independently of individual camps.

In case you wish to organise an InitMath, Overture, or PTMT programme, you can log into the MTTS website (https://4dspace.mtts.org.in/) and apply online. Proposals which assure some partial financial support from the host institution may be given preference. Your cooperation, help and suggestions will help us make the programmes successful.

If you have any specific questions or wish to send your valuable suggestions, please feel free to write to us at the Trust email id: mttstrust@gmail.com.

Planting an MTTS2025 Sapling: Local coordinator, Dr. Diganta Borah, (IISER Pune), assisting Dr. Ajit Kumar, (Managing Trustee, MTTS Trust)



MTTS Pedagogy

Teaching Methodology in MTTS Activities

The teaching methodology in the MTTS camps, whether on-site or online, is radically different from regular classrooms. The faculty for these programmes are active mathematicians with a strong commitment to teaching, and are chosen from various leading institutions in the country. These resource persons refrain from delivering well-polished lectures. All the sessions are highly interactive, and the participants are asked to think, experiment, formulate and prove mathematical results on their own, at every stage. The aim of the instructions is not to give routine lectures, but to stimulate the participants to think and discover mathematical results on their own. From its inception the MTTS programme has adopted this inquiry-based learning methodology which in recent studies has been identified as a core part of the effective teaching methodologies in pedagogy courses all over the world. It is evident from students' feedback and faculty assessments that the MTTS teaching methodology nurtures the inquisitive nature of students, equipping them for self-study and research.

The Philosophy Behind this Methodology

Every mathematics textbook is filled with results and techniques which were once unknown. The results were discovered by mathematicians who explored, experimented, guessed, discussed their work, and explored further. Many promising ideas turned out to be dead-ends, and lots of hard work resulted in little output. Often the first progress was the understanding of some special cases. Continued work led to greater understanding, and sometimes a complex picture began to be seen as simple and familiar. By the time the work reaches a textbook, it bears no resemblance to its origins, earlier form, and the details of its birth and evolution have been lost. The precise and methodical exposition of a typical textbook often leads students to mistakenly believe that mathematics is a dry, rigid and unchanging subject, missing out on its vibrant nature.

The most exciting part of mathematics is the process of invention and discovery. The aim of the MTTS camps is to introduce this process to the participants. By means of a variety of tasks, the camps lead them to discover some real mathematics. By looking at examples, searching for patterns in those examples, and investigating reasons behind those patterns, the participants are encouraged to develop their own mathematical ideas. *The camps are only to get the participants started in the right direction*, the rest is up to them.

Role of the Resident Faculty

In any session, questions are asked and time is given for the participants to think along. These questions are different from those encountered in usual classes, and are meant to provoke thinking. Some examples of such questions are, "Why is this true?", "Why is this relevant?", and often "What do you think is the next question?" The definitions, and proofs of theorems, are derived using inputs from the participants, often based on well-chosen leading examples. The emphasis is on thinking first, refining the thoughts, and then putting them down on paper into a standard "textbook" definition, statement, or proof.

The teachers attend all the sessions, not just their own. They identify the difficulties of the students and give individual attention to each one of them. Many-a-times, teachers and mentors also have discussions with interested students in the evenings or after dinner. This is one of the unique features of the MTTS camps, and reasons why each student leaves the camp with the sense of betterment in their learning abilities.

Role of the Group Discussions, Student Seminars and Assignments

Each session is followed by a group discussion slot given for students to internalize, revise, and refine the concepts learnt in the previous session. The students are subdivided in small groups and all of them are asked to discuss and clarify the concepts, examples seen, and proofs learnt in the previous session amongst themselves.

Students are also encouraged to give short seminars on various topics enhancing their communication, as well as develop skills for understanding the concepts and explaining it to others. They are also given writing assignments regularly to formulate and write logical proofs of theorems and solutions of problems. These assignments are assessed and elaborate feedback is given, so as to improve their mathematical writing skills. All teachers are present during group discussions and seminar sessions to identify difficulties of the students, and assist them.

Role of Mentors

MTTS alumni pursuing their higher studies, and teachers familiar with the MTTS teaching methodologies are being inducted as mentors during the programs. Their primary role is to

facilitate discussion sessions, correct assignments, and often, as the name suggests, act as a mentor for those students who are initially reluctant to approach the resident faculty. It is envisaged that these mentors would adopt the MTTS pedagogy in their teaching, thereby adding to the pool of resource persons for future MTTS activities.

Methodology of MTTS Online Activities

In the online camps, each session consists of a lecture part, followed by a mandatory discussion session. The lecture sessions are as interactive as in the on-site camps, with the students encouraged to use non-verbal feedback in response to the Yes/No type questions asked by the teacher. Some of the participants are then called upon, and the course often builds on their responses.

After explaining a concept or a proof, students are given time to go through the same orally, and once they finish going through it, the Yes/No and Raise Hand kind of option buttons are used to ensure that many of the students have followed the concept. Each session is followed by a discussion time in smaller groups which utilises the breakout rooms. The discussion sessions are facilitated by the MTTS faculty and mentors designated for the same. The mentors are students pursuing higher studies and faculties who understand the spirit of the MTTS teaching methodology. They are assigned to work with smaller groups of students, thus ensuring individual attention, even in the online mode. The mentors' presence is a crucial aspect, especially in helping first-time participants imbibe the MTTS methodology. Online polls are conducted at the end of each session to understand how much students have followed in the particular class. Thus, a supportive classroom atmosphere and eliciting student intellectual input is effectively recreated even in the online mode of instructions.

The teaching methodology followed in the online MTTS camps has been found to be very effective and has been appreciated by all the students, mentors, and teachers who have participated in MTTS activities. The mentors are the backbone of success in this format, since they act as a conduit between the instructor and the students, helping provide individual attention to the student, and immediate feedback to the instructor. Feedback from all stakeholders reveal that the Trust has been truly successful in recreating its on-site teaching model in the online camps.

> *"All depends, then, on finding these easier problems, and solving them by means of devices as perfect as possible and concepts capable of generalization."*
>
> – David Hilbert

The MTTS Influence

MTTS Programmes - Direct Impact

Since 1993, 151 MTTS four-week summer camps, 91 InitMath camps of duration one to two weeks, 18 PTMT camps, 36 Online courses on Foundation Course in Mathematics, 52 Overture camps, 2 lecture series, 15 short courses, 1 online camp on Statistics for ML, DS and AI, and many follow-up camps have been organised. More than 13,000 students and 600 teachers have been trained in the various MTTS camps.

- More than 500 MTTS Alumni have received Ph.D. degrees in Mathematics or are in the process of finishing their degree from prestigious institutes of India and abroad.
- More than 1000 have become mathematics teachers at various levels from schools to universities and research institutes.
- The programme has inspired a large number of girl students, and students from rural areas, to become professional mathematicians and who are serving in many of the leading institutions.
- In recent years many of the MTTS alumni/ resource persons have received various prestigious awards and recognitions.
- It is widely acknowledged by the alumni, mentors and resource persons of MTTS that the quality of training is such that it helps them not just in mathematical careers, but also any other fields in which they choose to work. The training and work ethic that they take away from the camps is also appreciated by their peers.

All of these show that the MTTS programmes have made a significant contribution towards the mathematical community.

Impact of MTTS on my Teaching

BalaKumar V, Assistant Professor, NIT Puducherry, Karaikal

I was fortunate to participate in the MTTS program in the very first semester of my teaching career. During my college days, I was skeptical about whether visualizing concepts and

getting results was an admissible approach. Now, I strongly admit and advocate that the MTTS programme has influenced my teaching on a larger scale in many ways, such as appreciating visualization wherever possible, introducing a new topic using example situations, understanding that different students learn in different ways, and encouraging students to ask questions which lead to their active participation in the discussion. As a by-product, my organizational skills, flexibility to adopt new ideas, role as a member of team efforts, and public speaking are greatly improved.

MTTS from the view of an Instructor

Dhiren Kumar Basnet, Associate Professor, Tezpur University, Assam

I am immensely benefitted by participating in MTTS camps as an instructor. The most important aspect that I observed and learned in MTTS is how differently and beautifully someone can introduce and present a concept. Secondly, you have to have a lot of questions, no matter how obvious the answer is. Finally, the independent thinking exercise is a crucial part of these camps. These are the three main aspects (apart from many others), that help the participants (students, mentors and teachers) to improve themselves.

My experiments using MTTS Pedagogy

Prashantkumar Patel, Assistant professor, Sardar Patel University, Anand, Gujarat

Exposure to the MTTS pedagogy made me realize the value of inquiry-based learning. Now, instead of directly providing definitions or solutions, I pose leading questions to my students, guiding them to discover concepts on their own. This shift from delivering knowledge to facilitating discovery has been transformational—not just for my students, but for me as well.

I encourage students to think about how definitions arise naturally from problem contexts. We discuss what conditions are necessary to make a mathematical statement precise, and what assumptions are essential to prove a theorem. This approach has sparked genuine curiosity and deep thinking. While students may not always arrive at the correct proof independently, they are developing the ability to initiate a proof, consider logical structure, and identify key ideas—skills that are crucial for higher mathematics.

Furthermore, I have started group discussions, enhancing their conceptual clarity and fostering collaborative learning. After such sessions, I often assign tasks where students collectively write full proofs of theorems discussed in class. This not only reinforces the logical flow of mathematics but also builds their confidence in expressing mathematical ideas clearly and independently.

Adopting the MTTS style has also had a profound impact on my own mathematical thinking. Constructing definitions and theorems interactively in front of students has deepened my understanding and allowed me to view problems from multiple perspectives. This shift has enriched my research as well, helping me to approach problems with a fresh, inquisitive mindset and to explore alternative methods and formulations.

The MTTS Influence on my Academic Journey

Manoj Kumar, Assistant Professor, School of Engineering & Science, IIT Madras Zanzibar

I had the opportunity to attend the MTTS Level-II programme at RIE Mysore in 2017, and it remains one of the most influential experiences in my academic journey. Coming from a background with limited exposure to advanced mathematical thinking, MTTS introduced me to a new way of engaging with mathematics, one that emphasized depth, intuition, and creativity.

What left a lasting impression on me was how the lectures motivated us to truly think, rather than just apply formulas. The teaching style was unique, focused on building ideas from first principles and encouraging curiosity.

This influence stayed with me beyond MTTS. During my interview at IIT Madras in August 2023, when I was asked about my role model for teaching, I recalled those lectures and mentioned Prof. Kumaresan. That moment made me realize how deeply MTTS had shaped not just my understanding of mathematics, but also my perspective on teaching.

I had the opportunity to contribute as a mentor in MTTS initiatives such as the Online Foundation Course in Mathematics (OFCM) and the Online Training Programme on Statistics for Machine Learning, Data Science, and Artificial Intelligence. This experience allowed me to reconnect with the MTTS community and further refine my approach to teaching and research.

One of the most valuable lessons I learned through mentoring is that effective teaching is not about giving answers, but about guiding students to discover them on their own. This is something that truly makes MTTS unique.

Today, as I work in the areas of data-driven dynamical systems and physics-informed machine learning, I continue to draw upon the clarity of thought and problem-solving approach that MTTS instilled in me. MTTS was not just a programme, but a turning point that reshaped how I perceive and pursue mathematics. I remain grateful for the experience and hope it continues to inspire many more students.

Happiness is being part of MTTS: My MTTS Journey

Anuwedita Singh, Assistant Professor, IIITM Gwalior

My journey with MTTS began in 2012 as a student in Level O, and over the years, I have grown within this beautiful team, initially serving as a mentor and coordinator from 2020 to 2024, and now as a teacher. Being part of MTTS has always been a source of immense joy for me.

Level O was a turning point in my life, and while I was selected for Level I, I couldn't attend it. The way MTTS faculty explained basic concepts of maths made it very interesting. Even though I had an interest in physics and was thinking of pursuing my career in it, I developed a great deal of confidence in mathematics, and I chose to pursue maths for MSc.

I would also like to highlight that, as a Hindi-speaking student, I never felt language to be a barrier in MTTS. Every faculty member and mentor was extremely supportive, approachable, and encouraging.

While working on my PhD at IIT BHU, I reached out to Bhaba Sir, my teacher from Level O, expressing my interest in contributing to MTTS in any capacity. Soon after, the COVID-19 pandemic began, and thanks to the tremendous efforts of the MTTS team, the programs successfully transitioned to an online format—something I had never imagined possible, especially for the main camps.

During this time, I received an invitation to serve as a mentor in an online miniMTTS camp. This was a moment I had been waiting for since 2012, and I immediately said yes. It turned out to be a deeply enriching experience; I learned a great deal while also sharing my knowledge with students. Their positive feedback gave me confidence and a sense of belonging. Remarkably, even in online mode, the experience felt as engaging and impactful as the traditional offline camps.

Since then, I have had the privilege of serving as a mentor and coordinator in several MTTS camps, both online and offline. More recently, I have also had the opportunity to teach "Foundations" in several camps. In all these engagements, I have always tried to give my best. Whenever I encountered challenges, the MTTS team was always there with guidance and support.

MTTS has not only enriched my mathematical understanding but also helped me grow as a better human being. I am always grateful to MTTS and am proud to be a part of it.

InitMath Follow-up: Peer Learning Sessions

Yannah Marchon (InitMath KA), Dikshita Raut (InitMath PY) & Saloni Raut (InitMath KA)
DCT's Dhempe College of Arts and Science, Miramar, Goa

Following our completion of the InitMath (MTTS) training, our professors, Mrs. Suzana Miranda and Mrs. Rashmi Naik, recognized a unique opportunity for our colleagues to benefit from a different way of thinking and learning. To ensure these specialized methodologies didn't remain in a silo, we decided to lead a series of three sessions tailored for our peers.

The sessions, each 90 minutes long, focused on utilizing MTTS principles to better understand Foundations, Real Analysis, and Linear Algebra. The core goal was to demystify seemingly complex concepts and build a stronger foundation in mathematics. While Dikshita taught our friends about statements, sets, and functions, Saloni walked them through upper bounds and proofs. Yannah discussed the solution sets of linear homogeneous equations and then gradually built up the concept of a vector space.

We reframed silence in the classroom. Instead of rushing to fill the void, we treated those quiet moments as active cognitive processing time, allowing our peers to sit with the discomfort of a problem until the logic clicked. We encouraged them to think deeply, and be mindful of their colleagues by giving them time to think as well.

As we learnt from MTTS, we decided that less could be more; prioritising understanding, over simply brushing over topics or concepts in a bid to 'complete' them. We weren't just solving problems; we were reading the room. We learned how to balance the pace so the faster learners stayed engaged while the others didn't feel left behind. We realized that we are now part of a chain of knowledge. By passing on the MTTS way of thinking, we solidified

our own commitment to this teaching-learning method that makes each student feel like a curious child again.

A special shoutout to our teacher and mentor, Dr. Mamta Kumari, for being the one who first told us about MTTS and passionately encouraged us to apply for all the camps.

Peer Feedback:

1. The content was well explained. From the enthusiasm of the explanation we could tell that they were genuinely excited to teach us in the same way that they had learnt. they did a good job.
2. The sessions were conducted in a very cool way. We were able to visualize the concepts and the teaching methods were effective enough to keep us attentive throughout.

Behind the Scenes - InitMath Karnataka at IIT Dharwad

Meghana Bhat, MTTS Alumna and Mentor (OFCM and IM2026KA)

The MTTS Trust conducted an InitMath camp at IIT Dharwad in January, 2026. This is a record of a part of the process that went behind the scenes before the start of the camp.

The Background: For me, the idea of wanting any MTTS activity in north Karnataka began as a feeling I carried from my own experience with MTTS - the wish that more students from this region could also experience the kind of mathematical exposure, encouragement, and community that has meant so much to me. The possibility of organizing a camp in this region made it into almost every conversation with people associated to MTTS since my first (miniMTTS) camp in Dec 2017.

When I joined IIT Dharwad for PhD. in 2021, this thought naturally returned with more seriousness. During the next two years, I tried to pursue the idea with some local colleges, but that did not materialize. Until this point, I had mostly known these camps from the participant's perspective. It was only when I started mentoring in OFCM around the same time that I began to understand the quiet work that goes on in the background into reaching students.

Institutional Support: Once IIT Dharwad moved into its permanent campus, the idea of having a camp there became practical. My PhD advisor, Prof. Shreedevi, herself an MTTS alumna, submitted a proposal to the Trust. A representation from the department consisting of MTTS alumni among the students and Prof. Shreedevi, along with some others from the department, met the Director of IIT Dharwad to impress upon him the impact of MTTS and its benefit to the participants. Based on this interaction, the Director waived off the accommodation charges, thereby reducing the financial burden of the camp on the Trust by about 25%.

Strategy and Outreach: In general, participation of students from the Northern Karnataka region in MTTS (or similar) activities had been very less. So, it was imperative to first of all make them aware of such a camp, and then encourage them to apply.

The ground work for this, in collaboration with Shashank S. (Ph.D. student, NITK, Surathkal), had started a couple of years before, as a part of the application monitoring for OFCM. We

contacted teachers from Karnataka who had recommended students for MTTS camps in earlier years, then followed up with calls to them to encourage students to apply, if needed. In this process, Shashank had collected the contact numbers of mathematics teachers from many colleges in and around Udupi and Mangalore. That effort had a visible effect, resulting in many applications from students of that region for OFCM.

Once the application portal for the InitMath camp was open, Shashank & I started the now-familiar application monitoring drill in a similar way, but continued building our outreach network more systematically. Whenever we spoke to a teacher, we asked them to connect us to colleagues in other colleges or other regions. We also searched online for B.Sc. colleges across Karnataka and found contact details of several mathematics teachers. Slowly, this has become a database of teachers from different parts of the state, that not only helped up for this camp, but may also prove useful for future camps.

Results and Impact: By the end of the application period, we had received 92 applications from 36 different institutes spread out over 15 districts of Karnataka. Nearly half of the applications were from government colleges. That itself felt like a success to me because we had been able to reach many colleges whose students had never sent applications to MTTS camps.

The conversations Shashank and I had with the teachers also made the selection process smoother; the selection team often relied on our inputs when a choice had to be made. At the end, 62 students (with 46 from Karnataka) were selected from 40 different institutes.

Coordination and Execution: Once participation was confirmed via a Google form, we created a whatsapp group with the participants. We prepared a brochure with basic information, including directions to the campus, and shared it with the students through the WhatsApp group. For many of them, this was their first time travelling outside their hometowns on their own, so the group and the brochure significantly reduced the number of phone calls a local organiser would otherwise receive for various clarifications. Even simple polls were helpful: asking students which districts they were coming from allowed them to connect and make travel plans together, while polling their arrival times helped us make food arrangements more efficiently.

Seeing the students arrive for the camp reminded me of my own first experience as a participant. For me, it was a full-circle moment. Many stars aligned, many pieces fell into place in order to make this happen. The camp felt deeply personal, and I am glad that I could play a part in making it happen.

Alumni Meet during Summer Camp 2025 at IISER Pune

Ajit Kumar, Managing Trustee, MTTS Trust

Several MTTS alumni, along with past faculty members and local coordinators associated with MTTS programmes over the years, participated in the inaugural and valedictory sessions of the MTTS 2025 Summer Camp held at IISER Pune. Their presence reflected the strong continuity of engagement within the MTTS community and served as a source of encouragement and inspiration for the participants.

As part of the programme, a special alumni interaction session was organized in which distinguished MTTS alumni currently working in academia and industry shared their professional journeys and experiences with the participants. We are grateful to Shri Sopan Shewale (MTTS 1993), Entrepreneur and Founder of Karmatika Insights Pvt. Ltd.; Dr. Abhijit Ranjekar (MTTS 1996, 1997), Head of the Generative AI Unit at Wipro; Dr. Devendra Shirolkar (MTTS 2003, 2005), Deutsche Bank Group; and Dr. Makarand Sarnobat (MTTS 2009–2011), Data Scientist at The Parker Avery Group, for their insightful and motivating interactions with the participants. Dr. Akanksha S. Kashikar (MTTS 2007, 2008), currently a faculty member in the Department of Statistics at Savitribai Phule Pune University, also addressed the participants and shared valuable perspectives from her academic journey.

All of them emphasized how the strong conceptual and foundational training provided through the MTTS Programme played a crucial role in shaping their analytical abilities, problem-solving skills, and professional confidence, enabling them to succeed in diverse domains including academia, industry, data science, and emerging areas such as Artificial Intelligence. The session served as a powerful source of motivation for the participants and further strengthened the growing MTTS alumni network.

Alumni Meet 2025, IISER Pune

Alumni at the MTTS2025 Inauguration, IISER Pune

Contribution Towards Learning Resources

Video Lectures by Prof. Kumaresan

In order to reach a wide audience, for learning mathematics online in the MTTS methodology, Prof. Kumaresan has been producing a number of video lectures and has made them available on YouTube. Till now more than 400 video lectures have been produced so far. A large number of students, researchers and teachers have been benefited by these video lectures.

These are for various UG/PG level topics, and are available on his YouTube channel: https://www.youtube.com/@kumarhcu

Books by MTTS Faculty

Several books have been written by resident faculties, based on years of experience in MTTS. These books have been widely acknowledged by teachers and students across the country and abroad.

SageMath

Prof. Ajit Kumar, associated with MTTS from his student days in 1996, to being managing trustee of the MTTS Trust since its formation, has given a series of lectures on SageMath, which are available at https://ajitmathsoft.wordpress.com/sagemath/

Expository articles by Prof. Kumaresan

Expository articles written by Prof. Kumaresan have benefited many learners, and have been downloaded innumerable times. They are categorized both by level and subject, can be searched by keywords, and are available for downloading at https://4dspace.mtts.org.in/ea

MTTS Classroom

The Moodle page for all MTTS Programmes (https://classroom.mtts.org.in/login/) is where class transcripts and Self-Assessment for the participants are available. (Login credentials are needed).
It is envisaged that MTTS Self-Assessment can be run through this forum, independent of camps.

MTTS YouTube Channel

The MTTS Trust has a YouTube channel(https://www.youtube.com/c/mttsprogramme), where online courses and discussions from past camps are available. Some of the MTTS online camps are also live streamed on this channel.

The MTTS Impact - In their own words

The program was very effective in building my confidence because the examples were well-chosen and appropriately targeted. I appreciate that the focus remained on core concepts without introducing advanced topics that could have been confusing.
Shreya Bijendra Pal, OFCM2025

The group discussion was so useful. It helps us to understand, clear doubts. The language barrier didn't even affect the discussion. For me, it was useful in gaining more knowledge. I don't know whether my help was useful but it was more than useful for me.
Aryaja P., InitMath Puducherry, Dec 2025

The programme is a mirror to me where I can see my face. It also makes me clear where I am, where I want to go, and also gives a path for it. I am thankful to each and every member of the team; (the mentors) are our doubt busters.
Sahana M Huggi, InitMath Karnataka, Jan 2026

I tried my best to pay attention the full day and honestly, I enjoyed it. I also tried answering whenever I could. I really like this strategy of raising hands, it gives me time to think, and I did think a lot, and will continue to think. I might not have 100% of the content, but I have definitely understood the importance of "thinking".
Saloni Raut, InitMath Karnataka, Jan 2026

Before coming to MTTS camp, I just solved some problems and learned the proofs and I thought I was done. But now I started thinking and asking several questions. After this programme also I will continue to think more.
Pratusha Ghosh, MTTS2025, Level O, IISER Pune

The camp gave us exposure to develop mathematical mindset. It also developed our communication skills and teaching style. It gave us a reality check on how we were reading math books. It helped me improve my understanding level and helped me to read math book on my own. Gave us a chance to explore good campuses and motivate us to study hard and dream of coming to such campuses.
Anonymous, MTTS2025, Level O, IISER Pune

In my case MTTS succeeded 100% in promoting independent thinking. The programme helped me develop the habit of thinking actively during the class and while reading the book. It also helped me to frame relevant questions while learning a concept.
Praveen K C, MTTS2025, Level 1, IISER Pune

MTTS is the best way to learn and understand 'Why' and 'How' of "mathematics". Heartily thankful for the opportunity to attend this camp. My fear to talk to others about the things that I don't understand very clearly has decreased a lot. After dinner GD sessions are not only useful for assignments and homeworks but also in meeting up new people and developing personality.
Anchal Verma, MTTS2025, Level 1, IISER Pune

The self-assessment really helped in my understanding of concepts. The subtleties of each question and the way they made me think and rethink was really remarkable. Kindly continue this and make more questions of different difficulty levels.
Amritha Pradeep, MTTS2025, Level 1, IISER Pune

One of the good things about this camp is that I get to meet a lot of like minded people. Its really fun to think and struggle together. It reminds me of 2 things: I am not alone and I am not special. During reading from the book sessions I developed a sort of algorithm-a set of guiding questions to ask while reading. I learned that one needs to slow down or even stop while reading in order to avoid being spoon-fed by the author, to prevent getting lost in jargon, and to strengthen independent thinking.
Sooraj Tidke, MTTS2025, Level 2, IISER Pune

I started to realise how to approach a problem. I started questioning myself at each step and its use in the proof.
Jeffrin Antony, MTTS2025, Level 2, IISER Pune

I never knew I could prove the theorem on my own using only definitions. I used to memorise things. Now I don't. I can even prove things in my mind. Self assessments were fun and addictive. They let us know which concepts to focus on.
Rupali Dhaygude, MTTS2025, Level O, Bharatidasan University,

I realized that proofs are not magical. There is a lot of thinking process behind each step. If we sit and think, even though it may take a long time, we can write proofs on our own.
Bhavya, MTTS2025, Level O, Bharatidasan University

Group discussions were useful as my peers showed me different ways to think about proofs and questions and made me realise the things which I thought were trivial were actually not that trivial.
MithunKumar Swain, MTTS2025, Level O, KIIT

Talking to mentors is very useful. Sometimes there are some doubts which we hesitate to ask teachers. Mentors are a bit like friends, bit like an elder brother/sister, a bit like teachers so it's easier to communicate with them.
Arnab Ghosh, MTTS2025, Level O, KIIT

The programme helped me think logically and solve problems independently, which I had never experienced in such an interactive way before.
Kamini Kaushal, InitMath Himachal Pradesh, Sept 2025

The programme promoted me to think independently on my own which is very different from monotonous teaching.
Hardik Khareja, InitMath Andhra Pradesh, Dec 2025

Thanks to all teachers and mentors for guiding me throughout this journey. I am going to try to continue this way of approaching and learning mathematics.
Tithi Ghosh, InitMath West Bengal, Oct 2025

MTTS taught me many things and I am surely going to carry them along with me and use then and I am surely going to recommend it to my classmates, teachers and mainly juniors.
Khushi Kumari, InitMath Asaam, Jan 2026

It changed my whole perspective of mathematics. I learnt that math is exploration and logic and not just calculations.
Ayush Rana, InitMath Uttarakhand, Mar 2026

NURTURING CRITICAL THINKING

Questions to ask to assess, improve and refine one's idea

Clarity	Could you elaborate further? Could you give me an example? Could you illustrate what you mean?
Accuracy	How could we check on that? How could we find out if that is true? How could we verify or test that?
Precision	Could you be more specific? Could you give me more details? Could you be more exact?
Relevance	How does that relate to the problem? How does that bear on the question? How does that help us with the issue?
Depth	What factors make this a difficult problem? What are some of the complexities of this question? What are some of the difficulties we need to deal with?
Breadth	Do we need to look at this from another perspective? Do we need to consider another point of view? Do we need to look at this in other ways?
Logic	Does all this make sense together? Does your first paragraph fit in with your last? Does what you say follow from the evidence?
Significance	Is this the most important problem to consider? Is this the central idea to focus on? Which of these facts are most important?
Fairness	Do I have any vested interest in this issue? Am I sympathetically representing the viewpoints of others?

The Foundation for Critical Thinking
800-833-3645 www.criticalthinking.org

Resource Persons, MTTS 2026

Advisors (All Three Camps)	
Programme Director	S. Kumaresan (Retd.), University of Hyderabad kumaresa.mtts@gmail.com
Academic Coordinator	G. Santhanam, GITAM University, Visakhapatnam gsanthana@gmail.com

KIIT Bhubaneswar (Level O, I, II)

Local Coordinator

Dr. Abhijit Sutradhar, abhijit.sutradharfma@kiit.ac.in

Instructors (Level O)	
Subject	**Name and Affiliation**
Foundations	Jay Mehta, Sardar Patel University, Vallabh Vidyanagar, Anand jaygmehta@gmail.com
Real Analysis	A. Satyanarayana Reddy, Shiv Nadar University, Delhi NCR satya8118@gmail.com
Linear Algebra	Ajit Kumar, ICT, Mumbai ajit72@gmail.com
Number Theory	Diganta Borah, IISER Pune dborah@iiserpune.ac.in
Riemann Integration	Janson Antony A., Keshav Mahavidyalaya, Delhi janson.math@gmail.com
Instructors (Level I)	
Linear Algebra	Ananthnarayan H., IIT Bombay ananth.mtts@gmail.com
Analysis	S Kumaresan, (Retd.), University of Hyderabad kumaresa.mtts@gmail.com Arindama Singh, IIT Madras asingh@iitm.ac.in
Topology	Darshana Likhada, Indian Institute of Teacher Education, Gandhinagar, darshanal@iite.ac.in Bhaba Kumar Sarma, IIT Guwahati bhabasarma@gmail.com
Algebra	A. J. Jayanthan, Kerala School of Mathematics ajjayanthan@gmail.com

Instructors (Level II)	
Subject	**Name and Affiliation**
Linear Algebra	Omkar Javadekar, CMI, Chennai omkarjavadekar@gmail.com
Analysis	S. Rajesh, IIT Tirupati srajesh@iittp.ac.in Dharmatti Sheetal, IISER Trivandrum sheetal.dharmatti@gmail.com
Topology	Vikram Aithal, ICT, Mumbai vikram.aithal@gmail.com
Algebra	Dhiren Kumar Basnet, Tezpur University, Tezpur dhirenmtts@gmail.com Dipankar Ghosh, IIT Kharagpur dipankar@maths.iitkgp.ac.in

Mentors (All Threee Levels)
Name and Affiliation
Dr. Amalesh Kumar Manna, KIIT Bhubaneswar
Dr. Amrutha Ruddaraju, BITS Pilani Hyderabad
Dr. Chellapillai D, CUTN, Thiruvarur
Mr. Franshu Mahipal, Tantia University, Sri Ganganagar
Dr. Gokulraj S., NIT Calicut
Mr. Jaykaran Singh, Rani Chandra Prabha Degree College, Khaga Fatehpur
Ms. Meghana Bhat, IIT Dharwad
Ms. Mugdha Pokharanakar, IISER Bhopal
Dr. Purbayan Chakraborty, IIT Guwahati
Mr. Sandeep Dass, IISER Mohali
Dr. Subhashree Patel, KIIT Bhubaneswar
Dr. Sunil Kumar Sharma, NSCBM Govt. Degree College, Hamirpur
Dr. Surendra Mishra, W R S Govt. College Dehri, Kangra
Dr. Vijil Kumar, KIIT Bhubaneswar

"I keep six honest serving men
They taught me all I know,
Their names are what and why and when
And how and where and who."
– Rudyard Kipling

IIST Thiruvananthapuram (Level O)

Local Coordinator
Dr Subramanain Moosath, smoosath@iist.ac.in,

Instructors (Level O)	
Subject	**Name and Affiliation**
Foundations	Uday Shankar Chakraborty, Assam University, Silchar uday.mtts@gmail.com
Real Analysis	S. Somasundaram, (Retd.) Manonmaniam Sundaranar University, Tirunelveli somutvl@gmail.com
Linear Algebra	Chandrasekharan A., CUTN, Thiruvarur chandru1782@gmail.com
Number Theory	Bhaba Kumar Sarma, IIT Guwahati bhabasarma@gmail.com
Riemann Integration	Kiran Behera, VIT Bhopal krn.behera@gmail.com
Group Theory	Arusha C., Shiv Nadar University, Chennai alphabeta487@gmail.com

Mentors (Level O)
Name and Affiliation
Dr. Harinarayanan G, Govt. College, Kasargod
Dr. Priyanka Sangal, Ram Chandra Uniyal Govt. PG College, Uttarkashi
Ms. Jyoti, NIT Hamirpur

InitMath 2026, Uttarakhand

IIT Jammu (Level O)

Local Coordinator

Dr. Arvind Kumar, arvind.kumar@iitjammu.ac.in
Dr. Rajiv Kumar, rajiv.kumar@iitjammu.ac.in

Instructors (Level O)	
Subject	**Name and Affiliation**
Foundations	Anuwedita Singh, IIIT Gwalior anuweditavishen@gmail.com
Real Analysis	P. S. Srinivasan, Bharatidasan University, Tiruchirappalli pssrinimaths@gmail.com
Linear Algebra	Rohit Mishra, IIT Gandhinagar rohit.m@iitgn.ac.in
Number Theory	Sachchidanand Prasad, IIIT Delhi speinstene26@gmail.com
Group Theory	Shameek Paul, RKMVERI, Kolkata shameek.rkmvu@gmail.com

Mentors (Level O)
Name and Affiliation
Dr. Gaurav Upadhyay, IILM University, Greater Noida
Dr. Harshita Madduri, NIT Kurukshetra
Dr. Madhu Gupta, IIT Gandhinagar
Dr. Manushi Gupta, JK Lakshmipat University, Jaipur

"Do not satisfy your vanity by teaching them great many things. Awake their curiosity. It is enough to open their minds, do not overload them. Put there just a spark. If there is some good inflammable stuff it will catch fire."

– Anatole France

KIIT, Bhubaneswar (Participants)

Selection Id (MTTS2026-)	Name and Institute Details
KIIT-LO-01	Mr. Aditya Agarwal, Amity University Noida
KIIT-LO-03	Mr. Rishu Kumar Dwivedi, Institute Of Science, Banaras Hindu University
KIIT-LO-04	Ms. Taramati Parmar, DKV Arts & Science College, Jamnagar
KIIT-LO-05	Ms. Yashvi Maulik Gosai, Bahauddin Science College, Junagadh
KIIT-LO-06	Mr. Umeshkumar Amarjibhai Tirgar, Govt. Science College, Gandhinagar
KIIT-LO-07	Mr. Harsh Sureshbhai Rathwa, V.P.& R.P.T.P. Science College, Vallabh Vidhyanagar, Anand
KIIT-LO-09	Mr. Rishabh Tiwari, Narsee Monjee Institute of Management Studies, Mumbai
KIIT-LO-10	Kum. Vaishnavi Vinod Boricha, SVKM's Mithibai College (Autonomous), Mumbai
KIIT-LO-12	Ms. Amrita Kiran, RIE Bhopal
KIIT-LO-13	Mr. Yash Gour, RIE Bhopal
KIIT-LO-14	Mr. Harsh Mishra, Dr. Hari Singh Gour Vishwavidyalaya, Sagar
KIIT-LO-16	Mr. Mukesh Kumar, Hemchand Yadav Vishwavidyalaya, Durg
KIIT-LO-17	Kum. Tulesh, Govt. Nagarjun PG College Of Science, Raipur
KIIT-LO-18	Mr. Patne Sravan Kumar, Loyola Academy, Secunderabad
KIIT-LO-19	Kum. Athram Nirmala, TGTWR Degree College for Girls, Utnoor
KIIT-LO-20	Kum. Naitham Rajitha, TGTWR Degree College for Girls, Utnoor
KIIT-LO-21	Ms. Hemalatha Gudimetla, Govt. Degree College, Ramachandrapuram
KIIT-LO-22	Mr. Pendyala Sai Rohith, Govt. Degree College, Ramachandrapuram
KIIT-LO-25	Mr. Amogh Kulkani, St. Joseph's University, Bengaluru
KIIT-LO-27	Mr. Vinay B C, GM University, Davanagere
KIIT-LO-28	Mr. Nagaraj S Bande, NV Degree College, Kalaburagi
KIIT-LO-30	Mr. P Prakash, Vivekananda College, Madurai

Selection Id (MTTS2026-)	Name and Institute Details
KIIT-LO-31	Ms. Anandhitha Balaji, Vellore Institute Of Technology, Katpadi
KIIT-LO-32	Ms. Harinika K, Vellalar College For Women, Erode
KIIT-LO-33	Mr. Ajay Tharsan K, PSG College Of Arts & Science, Coimbatore
KIIT-LO-36	Ms. Fathimathul Nidha E M, Sir Syed College, Kannur
KIIT-LO-37	Ms. Meenu S, Cochin University Of Science & Technology, Kalamassery
KIIT-LO-40	Ms. Hansika Mittal, IISER Thiruvananthapuram
KIIT-LO-42	Mr. Swastik Sar, Ramakrishna Mission Vidyamandira, Belur
KIIT-LO-43	Mr. Priyotosh Sarkar, Banwarilal Bhalotia College, Paschim Bardhaman
KIIT-LO-46	Ms. Aashika Bhandari, Nar Bahadur Bhandari Degree College, Tadong
KIIT-LO-48	Ms. Srabani Sahoo, Ramadevi Women's University, Bhubaneswar
KIIT-LO-49	Ms. Ashasingh, Kalinga Institute Of Social Sciences, Bhubaneswar
KIIT-LO-50	Ms. Muktasamad, Kalinga Institute Of Social Sciences, Bhubaneswar
KIIT-LO-51	Ms. Nayanimambalaka, Kalinga Institute Of Social Sciences, Bhubaneswar
KIIT-LO-52	Kum. Jajanika Giri, Bhadrak Autonomous College, Bhadrak
KIIT-LO-53	Ms. Swati Shreeya Sahoo, Maharaja Purna Chandra (autonomous) College, Baripada
KIIT-LO-54	Ms. Ankita Mendili, Govt. Autonomous College Phulbani
KIIT-LO-55	Ms. Meghana Priyadarsini Pradhan, Veer Surendra Sai University Of Technology, Burla
KIIT-LO-56	Mr. Imkongchatak Longkumer, Kohima Science College
KIIT-LO-57	Ms. Akshita, Ranchi Women's College
KIIT-LO-58	Ms. Kumari Reena Tudu, Ranchi Women's College
KIIT-LO-59	Mr. Vivek Kumar, Marwari College Ranchi
KIIT-LO-60	Mr. Shubhamkumar, Central University Of Jharkhand, Ranchi
KIIT-LO-61	Mr. Soubhik Mahato, Central University Of Jharkhand, Ranchi
KIIT-LO-62	Ms. Deepali Priya, Central University Of Jharkhand, Ranchi

Selection Id (MTTS2026-)	Name and Institute Details
KIIT-L1-03	Ms. Deepika, Shyama Prasad Mukherji College for Women
KIIT-L1-04	Mr. Anmol Sharma, General Shivdev Singh Diwan Gurbachan Singh Khalsa College, Patiala
KIIT-L1-05	Ms. Jaspreet Kaur, Shri Sanatan Dharam Girls College, Bathinda
KIIT-L1-09	Ms. Aashi Saini, N.R.E.C. College, Bulandshahr
KIIT-L1-10	Mr. Abhishek Rajan, Chatrapati Sahu Ji Maharaj University, Kanpur
KIIT-L1-11	Mr. Harshit Bhatt, MB Govt. PG College, Haldwani
KIIT-L1-12	Mr. Kushagra Upadhyay, Dayalbagh Educational Institute, Agra
KIIT-L1-13	Mr. Utkarsh Tiwari, Dayalbagh Educational Institute, Agra
KIIT-L1-14	Mr. Shivam Maheshkumar Vadgama, D.K.V. Arts & Science College, Jamnagar
KIIT-L1-15	Mr. Chaudhari Prince Shaileshbhai, Bahauddin Science College, Junagadh
KIIT-L1-16	Ms. Kavya Mayurbhai Patel, Indian Institute Of Teacher Education, Gandhinagar
KIIT-L1-18	Mr. Shaikh Faisal Akhtar Wasim Akhtar, SIES College Of Arts, Science & Commerce (autonomous), Mumbai
KIIT-L1-20	Mr. Shlok Debkumar Dhara, Nowrosjee Wadia College, Pune
KIIT-L1-21	Ms. Siddhi Dhiraj Kothawade, Abasaheb Garware College Of Arts & Science, Pune
KIIT-L1-22	Mr. Aayush Sachiien Jachak, Sir Parshurambhau College, Pune
KIIT-L1-23	Ms. Shreya Singh, Flame University, Pune
KIIT-L1-25	Mr. Teerath Verma, Dr. Hari Singh Gour Vishwavidyalaya, Sagar
KIIT-L1-26	Ms. Suhani Ghode, OP Jindal University, Raigarh
KIIT-L1-27	Mr. Viramalla Sai Teja, Vivekananda Govt. Degree College, Hyderabad
KIIT-L1-29	Ms. Ashitha M, St. Aloysius College (autonomous), Mangaluru
KIIT-L1-31	Mr. Vishweshwar R, Ramakrishna Mission Vivekananda College (autonomous), Chennai
KIIT-L1-33	Ms. A P Abinaya Sree, Kalinga Institute Of Social Sciences, Bhubaneswar
KIIT-L1-34	Mr. Aakash, Sri S. Ramasamy Naidu Memorial College, Sattur

Selection Id (MTTS2026-)	Name and Institute Details
KIIT-L1-35	Ms. Kalaiselvi V, Vellalar College For Women, Erode
KIIT-L1-36	Ms. Devidharshini L, PSG College Of Arts & Science, Coimbatore
KIIT-L1-37	Ms. Hanna Sharafuddeen K, Govt. Brennen College, Thalassery
KIIT-L1-38	Ms. Ananya Shibu P, Providence Women's College, Kozhikode
KIIT-L1-39	Ms. Ameena Sherin Tp, Dr. Gafoor Memorial MES Mampad College, Malappuram
KIIT-L1-40	Mr. Barun Roy, Ramakrishna Mission Vivekananda Centenary College, Rahara
KIIT-L1-43	Mr. Mithun Kumar Swain, Buxi Jagabandhu Bidyadhar Autonomus College, Bhubaneswar
KIIT-L1-46	Ms. Puspagond, Kalinga Institute Of Social Sciences, Bhubaneswar
KIIT-L1-47	Ms. Kabita Bera, Govt. Women's College, Baripada
KIIT-L1-48	Ms. Shibakanti Panigrahi, Veer Surendra Sai University Of Technology, Burla
KIIT-L1-49	Sri. Omprakash Padhan, Larambha College, Larambha
KIIT-L1-53	Mr. Saibal Saha, Tripura University, Agartala
KIIT-L1-54	Ms. Sayantani Bhattacharjee, NIT Agartala
KIIT-L1-57	Ms. Leena Soreng, St. Xavier's College, Ranchi
KIIT-L1-58	Mr. Ramashankaryadav, Central University Of Jharkhand, Ranchi
KIIT-L1-59	Ms. Hema Kumari, Langat Singh College, Muzaffarpur
KIIT-L1-60	Ms. Ambe Kumari, C. M. Science College, Darbhanga
KIIT-L1-61	Mr. Shivam Raj, Thakur Prasad College, Madhepura

"The only instruction which a teacher can give, in my opinion, is to think in front of his students."

– Henri Lebesgue

Selection Id (MTTS2026-)	Name and Institute Details
KIIT-L2-02	Ms. Kunti Sao, IIT Delhi
KIIT-L2-03	Kum. Tripti Mishra, Jawaharlal Nehru University, New Delhi
KIIT-L2-04	Mr. Mohit, Kurukshetra University
KIIT-L2-05	Kum. Sanjana, IIT Ropar
KIIT-L2-08	Mr. Goyam, Panjab University, Chandigarh
KIIT-L2-09	Ms. Bhivanithakur, NSCBM Govt. College Hamirpur
KIIT-L2-12	Mr. Shakir Manzoor, Central University of Kashmir, Ganderbal
KIIT-L2-13	Ms. Riya Yadav, University Of Allahabad, Prayagraj
KIIT-L2-14	Ms. Deepanshi Agarwal, Banaras Hindu University
KIIT-L2-15	Mr. Rishabh Pandey, Kashi Naresh Govt. PG College, Bhadohi
KIIT-L2-16	Mr. Akshay Kumar Singh, Bareilly College, Bareilly
KIIT-L2-17	Mr. Nilay Dosad, MB Govt. PG College, Haldwani
KIIT-L2-18	Kum. Deepanshi Jain, Dayalbagh Educational Institute, Agra
KIIT-L2-20	Ms. Avani Hamir Solanki, Indian Institute Of Teacher Education, Gandhinagar
KIIT-L2-21	Ms. Patel Krishnaben Dilipbhai, Sardar Patel University, Vallabh Vidyanagar, Anand
KIIT-L2-22	Ms. Chaitali Vinod Belsare, The Maharaja Sayajirao University Of Baroda, Vadodara
KIIT-L2-23	Mr. Tushar Daila, IIT Bombay, Mumbai
KIIT-L2-24	Ms. Rasika Sanjay Kasare, University Of Mumbai
KIIT-L2-25	Ms. Aastha Ashokbhai Ramoliya, Savitribai Phule Pune University
KIIT-L2-26	Ms. Naragude Shweta Shivaji, Swami Ramanand Teerth Marathwada University, Nanded
KIIT-L2-27	Mr. Simpul Padhan, VNIT Nagpur
KIIT-L2-29	Ms. Priti Kumari, IISER Bhopal
KIIT-L2-30	Mr. Priya Ranjan Santi, Indira Gandhi National Tribal University, Amarkantak

Selection Id (MTTS2026-)	Name and Institute Details
KIIT-L2-31	Mr. Tadinada Kartheek, IIT Hyderabad
KIIT-L2-32	Mr. Arijitmukherjee, SRM University, Amravati
KIIT-L2-33	Ms. Vaibhavi, Poornaprajna College, Udupi
KIIT-L2-34	Ms. Bhoomika Vasudeva Udupa, IIT Dharwad
KIIT-L2-36	Ms. Divya M, Loyola College, Chennai
KIIT-L2-37	Mr. Atul Kumar, IIT Madras
KIIT-L2-38	Mr. Sreehari M N, Pondicherry University, Puducherry
KIIT-L2-39	Kum. Sushree Bijayalaxmi Biswal, Pondicherry University, Puducherry
KIIT-L2-41	Ms. Jeyarubasri T, Bharathidasan University, Tiruchirappalli
KIIT-L2-42	Ms. Vinodini, The Gandhigram Rural Institute (deemed To Be University)
KIIT-L2-45	Mr. Narayanan S, Kerala School Of Mathematics, Kozhikode
KIIT-L2-46	Ms. Maanasa K, NIT Calicut
KIIT-L2-47	Ms. Ishah K K, IISER Thiruvananthapuram
KIIT-L2-48	Ms. Nivedita Prasad, Indian Institute Of Engineering Science & Technology, Shibpur
KIIT-L2-49	Mr. Shinjan Mukherjee, Ramakrishna Mission Vivekananda Educational & Research Institute, Belur
KIIT-L2-52	Ms. Lilimanitudu, Kalinga Institute Of Social Sciences, Bhubaneswar
KIIT-L2-53	Ms. Saunribeshra, Kalinga Institute Of Social Sciences, Bhubaneswar
KIIT-L2-54	Ms. Laxmipriya Panda, Shailabala Women's Autonomous College, Cuttack
KIIT-L2-55	Kum. Aparna Sahu, Sambalpur University
KIIT-L2-56	Ms. Ratnashree Mishra, Sambalpur University
KIIT-L2-57	Ms. Anita Mundalohar, Govt. Autonomous College Rourkela
KIIT-L2-63	Mr. Piyush Kumar, College Of Commerce, Arts & Science, Patna
KIIT-L2-64	Ms. Saniya Raj, IIT Patna
KIIT-L2-66	Ms. Ritika Singh, Central University Of Jharkhand, Ranchi

IIST Thiruvananthapuram (Participants)

Selection Id (MTTS2026-)	Name and Institute Details
IIST-LO-02	Ms. Areeba, Jamia Millia Islamia, New Delhi
IIST-LO-04	Mr. Harsha Laxman Lamani, Ahmedabad University
IIST-LO-05	Ms. Kashvi Virag Thacker, St. Xavier?s College Ahmedabad
IIST-LO-06	Ms. Chandni Dharmesh Raykundaliya, V.P.& R.P.T.P. Science College, Vallabh Vidhyanagar, Anand
IIST-LO-07	Ms. Janvi Pappu Patel, Maharaja Sayjirao University Of Baroda, Vadodara
IIST-LO-08	Mr. Advait Mohanty, Nilkamal School Of Mathematics, Applied Statistics & Analytics, Mumbai
IIST-LO-10	Ms. Yannah Angelica Marchon, Dhempe College Of Arts & Science, Panaji, Goa
IIST-LO-11	Kum. Bhavya Fadte, Govt. College Of Arts, Science & Commerce, Khandola, Goa
IIST-LO-12	Ms. Sarvadnya Savalo Chodankar, Govt. College Of Arts, Science & Commerce, Sanquelim, Goa
IIST-LO-13	Ms. Melita Meena Rodrigues, HPSM's Ganpat Parsekar College Of Education, Harmal, Goa
IIST-LO-14	Mr. Pruthvi Ganesh Chavan, Nowrosjee Wadia College, Pune
IIST-LO-15	Ms. Aadya Singh, Fergusson College, Pune
IIST-LO-16	Kum. Janhavi Nilesh Kshirsagar, MES Abasaheb Garware College, Pune
IIST-LO-17	Kum. Nagalagaonsharanavvarigappa, MES Abasaheb Garware College, Pune
IIST-LO-18	Ms. Durga Chetan Deshmukh, Sir Parshurambhau College, Pune
IIST-LO-19	Mr. Pujari Anil Lingappa, D. B. F. Dayanand College Of Arts & Science, Solapur
IIST-LO-20	Mr. Samarth Sachin Tavate, Karmaveer Bhaurao Patil Mahavidyalaya, Pandharpur
IIST-LO-21	Mr. Kalithkar Yogendra Rao, Vivekananda Govt. Degree College, Hyderabad
IIST-LO-22	Ms. Burrasathwika, University Of Arts & Science, Hanamkonda

Selection Id (MTTS2026-)	Name and Institute Details
IIST-LO-23	Mr. Vangeti Abhilash, Lal Bahadur College, Warangal
IIST-LO-25	Ms. Kuruva. Anitha, Cluster University, Kurnool
IIST-LO-26	Ms. Vaddenemeswari, Silver Jubilee Govt. College, Kurnool
IIST-LO-27	Mr. B Shalem Raju, B V Raju College (A), Vishnupur, Bhimavaram
IIST-LO-28	Ms. Chaya M S, Sarada Vilas College, Mysore
IIST-LO-29	Ms. Sai Lakshmi K, Sri Dharmasthala Manjunatheshwara College, Ujire
IIST-LO-33	Ms. Priyadharshini.b, Guru Nanak College, Chennai
IIST-LO-37	Ms. Priyadharshini, Nehru Memorial College, Tiruchirappalli
IIST-LO-38	Ms. Kaleeswari, Lady Doak College, Madurai
IIST-LO-39	Mr. Nagendran, Thiagarajar College, Madurai
IIST-LO-40	Mr. Saravana Kumar.v, Ayya Nadar Janaki Ammal College, Sivakasi
IIST-LO-41	Ms. Muthuselvi R, St. Xavier's College (autonomous), Palayamkottai
IIST-LO-42	Ms. P.reshiya, Tirunelveli Dakshina Mara Nadar Sangam College, Tirunelveli
IIST-LO-43	Ms. C Hari Arul Keerthika, V. O. Chidambaram College, Thoothukudi
IIST-LO-44	Ms. Gayathri K N, Nehru Arts & Science College, Kanhangad
IIST-LO-45	Ms. Sonu Maria Seemon, NIT Calicut
IIST-LO-46	Ms. Maryam Waduda, Farook College (autonomous), Kozhikode
IIST-LO-47	Kum. Jinsi At, Pockersahib Memorial Orphanage College, Thirurangadi
IIST-LO-48	Ms. Niveda P, Govt. College Chittur
IIST-LO-49	Ms. Megha Prasannan, Govt. College Kattappana
IIST-LO-50	Kum. Surya S, St. John's College, Anchal
IIST-LO-51	Mr. Ankur Saha, Indian Association For The Cultivation Of Science, Jadavpur
IIST-LO-53	Mr. Ritwik Maity, Ramakrishna Mission Vivekananda Centenary College, Rahara
IIST-LO-54	Mr. Arindam Das, Banwarilal Bhaloia College, Asansol
IIST-LO-56	Mr. Deeptesh Behera, Buxi Jagabandhu Bidyadhar Autonomus College, Bhubaneswar

Selection Id (MTTS2026-)	Name and Institute Details
IIST-LO-57	Mr. Bishnu Kumar Nayak, Institute Of Mathematics & Applications, Andharua
IIST-LO-58	Ms. Tamanna Dhir Deo, Institute Of Mathematics & Applications, Andharua
IIST-LO-59	Mr. Janaki Prasad Mohapatra, Dhenkanal Autonomous College, Dhenkanal
IIST-LO-60	Mr. Priyabrat, Binayak Acharya College, Berhampur
IIST-LO-61	Mr. Bhaskar Kumar, Bihar National College, Patna
IIST-LO-63	Mr. Aditya Kumar, Langat Singh College, Muzaffarpur

InitMath 2025, NIT Hamirpur, HP

InitMath2026, IIT Dharwad, KA

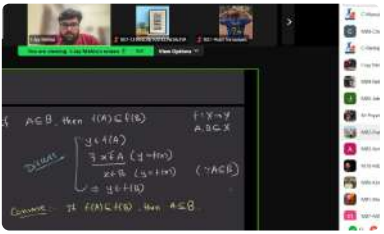
MTTS2025 Inauguration KIIT. Orissa

Overture, Manipur

"Believe nothing
Merely because you have been told it. Or because it is traditional.
Or because you yourself have imagined it.
Do not believe what your teacher tells you,
merely out of respect for the teacher.
But whatever, after due examination and analysis, You find to be conducive to the good,
The benefit,
The welfare of all beings,
That doctrine believe and cling to, And take it as your guide."

– Gautam Buddha

Preparation for OFCM 2025, Meeting with Mentors



Typical OFCM Classroom

IIT Jammu (Participants)

Selection Id (MTTS2026-)	Name and Institute Details
IITJ-LO-01	Mr. Sachin Chhokra, Sri Venkateshwara College, New Delhi
IITJ-LO-03	Mr. Sudhanshu, Keshav Mahavidyalaya, Delhi
IITJ-LO-07	Mr. Sreejit Dey, Ashoka University, Sonipat
IITJ-LO-08	Ms. Hani Sharma, IIT Ropar
IITJ-LO-10	Ms. Jasleen Kaur, Govt. Mohindra College, Patiala
IITJ-LO-11	Mr. Varinderjeet Singh, Akal University, Talwandi Sabo
IITJ-LO-12	Mr. Shubham Anand, Central University Of Punjab, Bathinda
IITJ-LO-13	Ms. Anchal Sharma, Panjab University, Chandigarh
IITJ-LO-14	Ms. Komalpreet Kaur, Panjab University, Chandigarh
IITJ-LO-16	Mr. Arpit, Wazir Ram Singh Govt. PG College, Kangra
IITJ-LO-17	Ms. Shivali Thakur, Netaji Subhash Chander Bose Memorial Govt. College, Hamirpur
IITJ-LO-18	Ms. Suhani Bhushan, Netaji Subhash Chander Bose Memorial Govt. College, Hamirpur
IITJ-LO-19	Mr. Samridh Kumar, Govt. Maulana Azad Memorial PG College, Jammu
IITJ-LO-20	Ms. Gauri Maheshwari, Central University of Jammu, Samba
IITJ-LO-21	Mr. Sandeep Singh Thakur, Govt. Degree College Udhampur
IITJ-LO-22	Ms. Chahatgupta, Govt. Girdari Lal Dogra Memorial Degree College Hiranagar
IITJ-LO-23	Mr. Mohammad Salim Baba, Central University of Kashmir, Ganderbal
IITJ-LO-25	Mr. Asrar Ul Haq, Islamic University Of Science & Technology, Awantipora
IITJ-LO-26	Mr. Aditya Koul, Amity University Noida
IITJ-LO-27	Ms. Aafia Naushad, Shiv Nadar University, Delhi NCR
IITJ-LO-28	Mr. Abhinav C, Aligarh Muslim University
IITJ-LO-29	Ms. Nausheen, University Of Allahabad, Prayagraj
IITJ-LO-30	Mr. Sameer Srivastava, Bhavan?s Mehta Mahavidyalaya, Bharwari

Selection Id (MTTS2026-)	Name and Institute Details
IITJ-LO-31	Ms. Kiran Dhanai, Ram Chandra Uniyal Govt. PG College Uttarkashi
IITJ-LO-32	Ms. Sushmita Rana, Ram Chandra Uniyal Govt. PG College Uttarkashi
IITJ-LO-34	Mr. Sumit Chandra Barsila, Soban Singh Jeena University, Almora
IITJ-LO-35	Ms. Khushi Jaiswal, Siddharth University, Kapilvastu
IITJ-LO-36	Ms. Pooja Kumari, Dayalbagh Educational Institute, Agra
IITJ-LO-37	Mr. Cheeku Kushwah, Vivekanand Global University, Jaipur
IITJ-LO-38	Ms. Akshara Jain, Banasthali Vidyapith, Tonk
IITJ-LO-39	Ms. Mahima Yadav, Banasthali Vidyapith, Tonk
IITJ-LO-41	Mr. Dheeraj Lunawat, Govt. Dungar College, Bikaner
IITJ-LO-43	Ms. Rudrakshi Trivedi, Lachoo Memorial College Of Science & Technology , Jodhpur
IITJ-LO-45	Ms. Khushi Kumari, Arya Vidyapeeth College (autonomous), Guwahati
IITJ-LO-47	Mr. Subrajeet Ghose, Goalpara College, Goalpara
IITJ-LO-48	Mr. Devid Rabha, Dudhnoi College, Dudhnoi
IITJ-LO-52	Ms. Neha Kumari Yadav, Digboi College (autonomous), Digboi
IITJ-LO-53	Ms. Priyanka Mazumder, Digboi College (autonomous), Digboi
IITJ-LO-56	Ms. Arpita Sutradhar, Maharaja Bir Bikram College, Agartala
IITJ-LO-58	Mr. Jay Raj Kumar, NIT Agartala
IITJ-LO-59	Ms. Aparna Kesri, Magadh Mahila College, Patna
IITJ-LO-60	Ms. Richa Singh, NIT Patna
IITJ-LO-61	Kum. Uma Kumari, Patna Women's College, Patna
IITJ-LO-62	Ms. Arti Kumari, Dayanand Anglo Vedic PG College, Siwan

"The best way of overcoming a difficult problem is to solve in some particular easy cases. These give much light into the general solution. By this way, Newton says, he overcame the most difficult things."
– David Gregory

Be Rational, Be in Q
A trek during MTTS2025, IISER Pune

InitMath2026, North Bengal University

"Newton, when questioned about his method of work, could give no other answer but that he was wont to ponder again and again on a subject... Scientists and artists both recommend persistent labour "
– Newton

How to derive the maximum benefit out of the programme

- **Participate actively in the classroom discussions:** As a rule, the teachers will develop the theme from the answers provided by you to their questions. Make an honest attempt to answer them. If you are afraid of making mistakes, you will never learn or improve.
- **Discuss mathematics with teachers, mentors and peers:** Feel free to discuss mathematics with the teachers, mentors, as well as with other participants. Mathematics is best learnt from discussions. This is also a quicker way of learning than reading books or attending lectures passively. Please work on the assignments given by the teachers on the same day. Even if you could not solve it, the mere attempt will help you follow the next day?s classroom discussions, as well as the hint/ solution offered by the teacher later. Go through the excerpt from Polya?s ?How to Solve It?? given in the souvenir. Try your best to adopt the techniques as much as possible.
- **Learn to think:** It is not our aim to introduce you to a lot of jargon. Instead, we want to promote active learning of the subject and original thinking, to make you gain a perspective and see the essential beauty of the subject. For this reason, we have devised syllabi in such a way that they will have a lot in common with what you might have learnt already.
- **Reflect on topics in the evenings:** As you will have less time after the day?s work, we suggest that you make it a point to understand everything in the classroom itself and use the evenings to reflect up on the day?s material. To achieve this, you have to be alert and stop the teachers if they go too fast or you do not understand certain points.
- **Engage and maximize the face-to-face interactions**: Use this opportunity of meeting experts and other talented students by means of interactions and discussions.
  - Use your communication devices sparingly during the camp, and keep social media activity to a minimum. You can always get back to them once you go back!
  - Even though you will be provided a lot of reading material, we suggest that you use them sparingly during the camp. You can always learn from them once you go back!

Reiterating what is said above, remember that the camp aims to provide you with an intellectual ambience which will motivate you to rise higher and realize your potential.

MTTS2026 - FAQ

The following is a list of some of the frequently asked questions about the annual summer camp, and their answers.

For how many years has the programme been conducted?

The programme has been conducted since 1993.

Who organizes the MTTS Programmes?

Since its inception, the annual summer camp has been organized by a group of committed mathematicians under the leadership of Prof. S. Kumaresan, while he had been working in Mumbai University and University of Hyderabad. As the MTTS activities broadened, a national core committee was formed to advise, organize, and supervise various aspects of the MTTS programmes. On the occasion of the silver jubilee of MTTS, the members of this committee formed a non-profitable educational trust entitled "MTTS TRUST " to carry forward this endeavour. From 2018, all camps under the MTTS umbrella are being conducted by the MTTS Trust.

What is the basis of selection for participating in the camp?

The selection depends mainly on the following two criteria: (i) a consistent academic record and (ii) the recommendation letter of a teacher, who is mathematically well-acquainted with the applicant. *The selection is very much influenced by the specifics rather than by the general comments in the recommendation.*

Is there any fee to be paid by the students?

Absolutely none. In fact, the Trust reimburses travel (sleeper/2nd class railway fare by the shortest route), provides books and reading materials, and gives free lodging and food during the period of the camp to all the participants.

Is there any scholarship available for the participants (after the camp) for pursuing higher studies in mathematics?

No, but there may be follow-up activities for students from the current camp.

Will the participants receive any certificate at the end of the camp?

All participants who attend the camp for the entire period will receive a certificate of participation.

Will the camp help the students in getting jobs? In getting admissions in good institutions?

The main aim of the camp is to train the students so that they can work independently, achieve a high level of confidence in the learning/understanding of mathematics, to give them a global perspective about mathematics, and to make them enjoy doing mathematics. We do NOT think of this camp as a job-training programme. However, the knowledge and attitude acquired during the camp, if further cultivated by the participants, seem to help them achieve better goals in their career, (academic or otherwise). It is also envisaged that if the participants choose the teaching profession, they will be able to impart mathematical

knowledge in a more interactive manner and motivate students for further study.

Can you say something about the way the training is carried out? How are the courses different from the ones we have at the colleges?

Radically different. In fact, it takes about three days for the participants to get used to our way of doing things. The faculty is from various leading institutions of the country and is not confined to the host institute. People who are experts in the field, who are known for their teaching and have a commitment towards high quality mathematics in India are chosen to teach the courses.

The teachers keep asking questions, sometimes well-formulated, sometimes vague, to demonstrate how mathematics is discovered. They often develop a proof from the ideas given by the students and ask them to write in the way a textbook will present it. There will be a great deal of pressure on you to think on your own and actively participate in the course. See the section titled MTTS Pedagogy for more details.

The camp also provides a platform for students with (linguistically, culturally, and mathematically) varied backgrounds to come together and interact with peers and experts in the field. This serves two purposes: i) the participants come to know where they stand academically and what they must do to bring out their full potential and ii) they establish a rapport with other participants and teachers which help them shape their career in mathematics.

Are there tests at the end of the camp?

It is our belief that one should learn mathematics for its own sake and for the love of it rather than focusing one's attention on the tests.

However, there will be writing assignments for each of the courses. You will be asked to submit them the next day. These written assignments will be corrected and may be discussed in the classroom or individually. *The main aim of this exercise is to improve your writing skills.* You may discuss your assignments with anybody and consult books if necessary. But the most important requirement is that at the time of writing, you should be on your own. There may also be online self-assessment activities. *These are not intended to grade you, but are rather aimed at giving you an opportunity to keep track of your improvements during the camp.* Take the self-assessment seriously.

Our institute requires us to complete an internship in the summer. If I successfully complete the Summer Camp, will I get an internship certificate?

If you successfully complete the Summer Camp, you will receive a participation certificate. In case you need internship certificate, *you can also request an internship certificate by paying a nominal fee.*

However, no tests are conducted and marks are awarded. The internship certificate awarded by the MTTS Trust will mention courses, the topics covered, duration of the course and the methodology of the learning. *It is your responsibility to check with your institute if this satisfies their requirement for a summer internship.*

Can you say something about the student seminars?

The participants interested in giving seminars should talk to a teacher of their level. Depending on the interest of the participants, the teacher will suggest some topics and reading material. The participant may discuss the topic with the teachers to acquire more insight before giving the seminar. Usually, such seminars are of 15-30 minutes duration. Sometimes, a longer presentation is shared by a group of students. While they present the topic,

the speakers among them are chosen randomly. This ensures that each member of the group understands, and is comfortable with the entire topic.

Is it possible to change the level after joining the camp?

Yes. In fact, we offer even more flexibility. If some participants of a particular level know and are good at a particular subject of their level, they may be allowed to go for the same subject at a higher level. Similarly, if they lack either the background or find a particular subject difficult, they may attend the same subject at a lower level. The timetable is drawn up to facilitate this migration. For example, Algebra will be taught at the same time for Levels I and II.

What subjects are taught? Are they pure or applied?

The emphasis is on so-called pure mathematics. The courses are on linear algebra, algebra, analysis, geometry, number theory, topology, etc. It is our firm belief that a deeper understanding of these subjects is a must whether you wish to pursue pure or applied mathematics.

What is the medium of instruction?

The medium of instruction is English. It is very essential that the participants should be able to communicate in English, at least in mathematics. If you have any difficulty, please talk to a teacher or mentor of your level. We shall find a way to mitigate your difficulty.

Do we have to have a great deal of background in mathematics?

No. The courses are usually designed in such a way that 30-40% of the concepts may already be familiar to most of the students. The main aim of the course, as was mentioned above, is to promote thinking. As a matter of fact, *it was observed in the past that the students who learn a topic for the first time in the camp have performed better as the courses progressed.* It is not our aim to introduce a lot of jargon to the students. (You cannot master any language by learning the dictionary by heart!) Instead, we introduce the very basic concepts, use well-chosen examples, and train the students thoroughly.

Are there similar camps for mathematics teachers conducted by the MTTS Trust?

To spread the MTTS methodology to a larger number of students, a camp for teachers called Pedagogical Training for Mathematics Teachers (PTMT) was started over a decade ago. The suggestion for this came from the participants of earlier camps. The participants of PTMT are introduced to the MTTS methodology, so that they can adopt it in their regular teaching. More details on this camp can be obtained from the MTTS website.

How can I organise a MTTS camp in my college/ university/ institution?

The application process for organising any of the camps under the MTTS umbrella is detailed on the MTTS Trust website. This includes Overture, InitMath, PTMT or any of the Summer Camps.

If you are a faculty and are enthusiastic about organising one of these at your institution, you can apply online by following the process described at
https://mtts.org.in/training-programmes/organize-mtts-initmath-ptmt

If you are a student, who wishes to have such a camp at your institute, you may request some interested faculty member to apply for the same.

A question less frequently asked: How can we help the MTTS Trust in achieving its goals?

In many ways. To start with, you may inform your juniors, and others, who exhibit a certain amount of motivation, and who have an aptitude for mathematics, about the MTTS activities and encourage (and in case of difficulties, help) them to apply. Having undergone this training, you will be in a better position to judge which students from your college will be suitable for this activity more than the teachers, who may not have any idea of this camp. *Ask them to apply for the camp, only if you feel that they are keen to think, and ready to work very hard.*

Secondly, you may share a copy of the Souvenir with committed teachers, and students of your college. In particular, share this with the teacher who recommended you. This will enable them to encourage suitable students to future camps.

Thirdly, you may offer seminars at your institute about the way we teach. Your friends will also have a taste of the way mathematics is taught in a typical MTTS camp. (See the writeup titled InitMath Follow-up: Peer Learning Sessions, for an example.)

Fourthly, you may inform us of teachers who are likely to be interested in this mode of teaching. We are constantly on the look-out for motivated teachers who are willing to mentor or teach in various MTTS camps. We also allow teachers to participate in the onsite camps if they want to know how training is imparted. For this purpose, interested teachers may visit for a week or two, and observe an InitMath camp or the summer camp. They should write to the MTTS Trust about this. Such participation is only by invitation. Those invited by us will be reimbursed the travel expenses and provided the local hospitality.

If you want students in and around your college to benefit from MTTS teaching methodology, you can request your teachers to organise one of the MTTS camps at your college. You can also contribute significantly in this effort; see the account titled Behind the Scenes - InitMath Karnataka at IIT Dharwad for an example of how you can do so.

Finally, you can also help financially by donating to the MTTS Trust. So far the Trust has been able to organize a limited number of camps with the help of funding from the National Board for Higher Mathematics (NBHM). Expansion of these camps will require a lot of infrastructural resources, both human as well as material. The financial implications require the support of MTTS well-wishers like you. Any amount, however small, is welcome. For more details, please see the back cover.

For examples of what other alumni have done, see the section on alumni contributions starting on Page 23 in the MTTS2024 Souvenir. (https://mtts.org.in/downloads/mtts2024-souvenir).

"I hear, I forget.
I see, I remember.
I do, I understand."

– A Chinese Saying

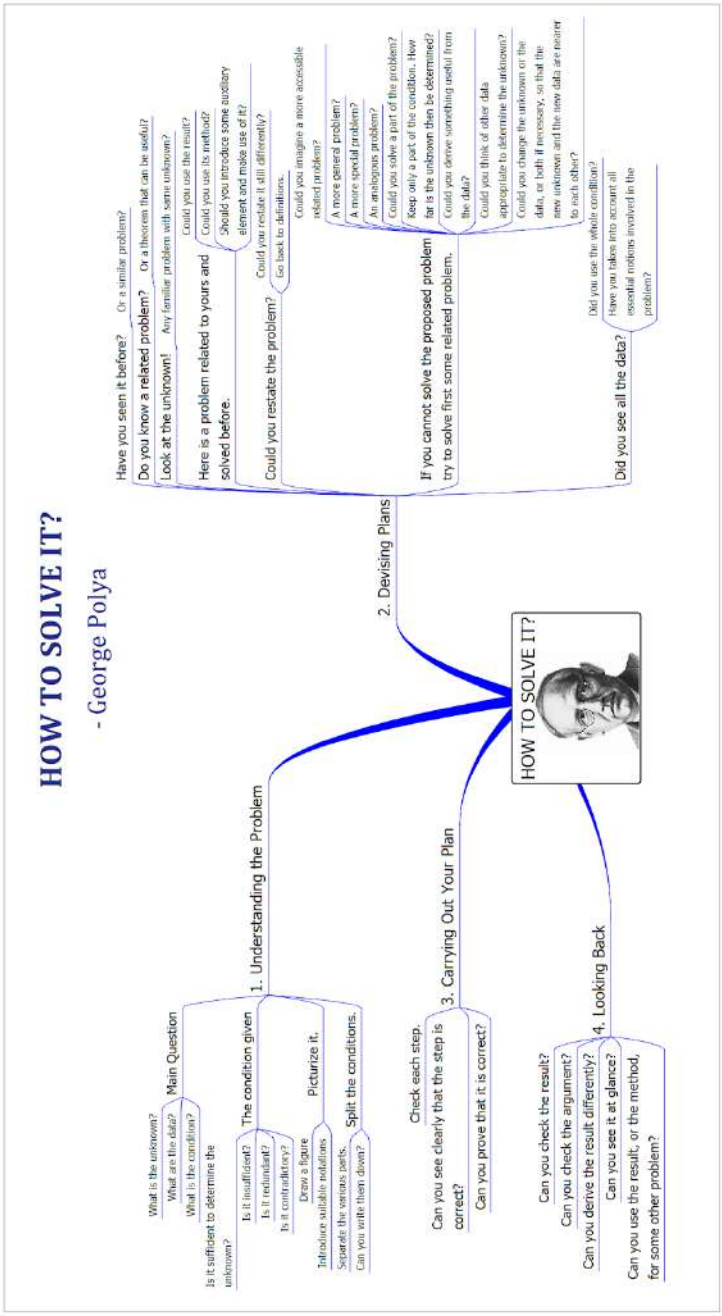
InitMath 2025, NIT Hamirpur

InitMath2025, Amity University, MP

InitMath2026, DHSK College, Dibrugarh

MTTS2025, Bharatidasan University

"It is the supreme art of the teacher to awaken joy in creative expression and knowledge."
– Albert Einstein


HOW TO SOLVE IT?
- George Polya
HOW TO SOLVE IT?
1. Understanding the Problem
What is the unknown?
What are the data?
What is the condition?
Main Question
Is it sufficient to determine the unknown?
Is it insufficient?
Is it redundant?
Is it contradictory?
The condition given
Draw a figure
Introduce suitable notations
Picturize it.
Separate the various parts.
Can you write them down?
Split the conditions.
2. Devising Plans
Have you seen it before?
Or a similar problem?
Do you know a related problem?
Or a theorem that can be useful?
Look at the unknown!
Any familiar problem with same unknown?
Could you use this result?
Here is a problem related to yours and solved before.
Could you use its method?
Should you introduce some auxiliary element and make use of it?
Could you restate the problem?
Could you restate it still differently?
Go back to definitions.
Could you imagine a more accessible related problem?
If you cannot solve the proposed problem try to solve first some related problem.
A more general problem?
A more special problem?
An analogous problem?
Could you solve a part of the problem?
Keep only a part of the condition. How far is the unknown then be determined?
Could you derive something useful from the data?
Could you think of other data appropriate to determine the unknown?
Could you change the unknown or the data, or both if necessary, so that the new unknown and the new data are nearer to each other?
Did you see all the data?
Did you use the whole condition?
Have you taken into account all essential notions involved in the problem?
3. Carrying Out Your Plan
Check each step.
Can you see clearly that the step is correct?
Can you prove that it is correct?
4. Looking Back
Can you check the result?
Can you check the argument?
Can you derive the result differently?
Can you see it at glance?
Can you use the result, or the method, for some other problem?

Be a partner to MTTS Endeavours

So far the MTTS Trust has been able to organize all its training camps with funding predominantly from the NBHM. However, to make the benefits of MTTS reach the large portion of the target audience, broadening of these programmes and therefore expansion of infrastructural resources, both human as well as material, are necessary. The financial implications require the support of MTTS well-wishers like you. The Trust thanks its well-wishers and solicits their financial support. Any amount, however small, is welcome, from the patrons who would like to support this endeavour. The following are some headings under which contributions can be made:

- Camp Organization:
  - For organising an InitMath/PTMT/Summer camp.
  - For organising an Overture camp at a location of your choice.
  - For organizing a regional Online Foundation Course in Mathematics.
  - For organizing an online Statistics camp.
- Participant Support:
  - Support for women participants.
  - Scholarship for top performing participants.
  - For procuring books for distribution to participants.
- Operational Support:
  - For publication of programme souvenirs, articles and books.
  - For maintenance of the MTTS website and online system management.
  - For travel expenses to explore and identify training needs.
  - For processing of applications; selection of participants.
  - For organization of infrastructural facilities for the camps.
  - For maintenance and running expenses of the trust
- General Donation.

We are very happy to inform you that the MTTS Trust has been registered under section 80G (5) (vi) of the Income tax act 1961, and hence donations are eligible for a tax benefit of 100% deduction under the Section 80G, *provided you are filing your income tax returns under the old tax regime.* We appeal to you to give donations to the Trust generously and hope that you will not miss this opportunity to serve the cause of mathematics in India.

Please do not forget to visit https://4dspace.mtts.org.in/donations and give your details for a receipt on your donations. The receipt will be sent to you by email.

The MTTS Trust thanks you for your continued support!

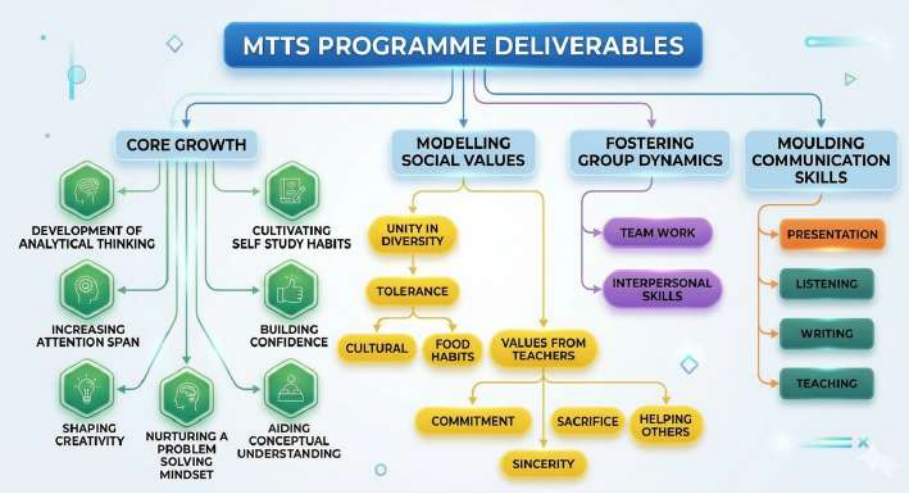
Note: We cannot accept foreign contributions as per the existing government rules. Payments from Indian citizens from Indian bank accounts alone can be accepted.

Bank Details
Name of the account: MTTS TRUST
A/C No. 39809195527
Name of Bank: State Bank of India
Branch: VJTI, Matunga (Mumbai)
IFSC Code: SBIN0011075

Contact Details
Dr. Ajit Kumar,
Managing Trustee, MTTS TRUST
Email: mttstrust@gmail.com,
Mobile: 9004047941

MTTS2025, IISER Pune

Credits
Design of the Souvenir and Illustrations :
Ms. Prapti Tala and Mr. Y. Venkata Subbaiah (MTTS Alumni)
Photos:
Faculty and students of various MTTS camps



InitMath 2026, IIT Dharwad

MATHEMATICS TRAINING & TALENT SEARCH PROGRAMME (MTTS)

Skill Building in Higher Mathematics since 1993
Organized by MTTS Trust
Funded by: National Board for Higher Mathematics

https://mtts.org.in/ mttstrust@gmail.com