



दिल्ली विश्वविद्यालय
University of Delhi



Ministry of Education
Government of India

**MINISTRY OF EDUCATION
PANDIT MADAN MOHAN MALAVIYA
NATIONAL MISSION ON TEACHERS AND TEACHING**

**TEACHING LEARNING CENTRE
Ramanujan College**

In collaboration with

**DEPARTMENT OF MATHEMATICS
Ramanujan College**

Accredited Grade 'A' by NAAC
University of Delhi

REFRESHER COURSE IN MATHEMATICS

31 AUGUST - 14 SEPTEMBER 2021

CALL FOR REGISTRATION AND PARTICIPATION

SELF PACED | NO NOC REQUIRED | BENEFICIAL FOR CAS | E-CERTIFICATION

**FOR REGISTRATION VISIT
<https://rcmoocs.in/>**

**Last Date for Registration
30 August 2021**

REFRESHER COURSE IN MATHEMATICS

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ABOUT THE RAMANUJAN COLLEGE

Named after the great Indian Mathematician, Ramanujan College, is one of the Constituent Colleges of University of Delhi and is located in the well-known area of Kalkaji, near Nehru Place in South Delhi. Ramanujan College has been accredited grade "A" by the National Assessment and Accreditation Council (NAAC) in its First Cycle.

Ramanujan College was established in 1958 as an evening college for boys with just five programmes. The College opened its gate for women students in 1994 and became a full-fledged day college in 2012. For the past decade, the college has been on the path of unprecedented growth. With the introduction of many new courses, and the latest addition of B.Sc. (Hons) Environmental Science in 2020, the college at present offers sixteen undergraduate programmes in different disciplines including Humanities, Commerce, Sciences, Management and Vocation. This achievement, in alignment to the recommendations of the National Education Policy (NEP) 2020, makes the College a centre for interdisciplinary studies and research with a future focus on blended learning. It has gradually grown into a self-sufficient and self-reliant institution owing to its academic vigour and intellectual capital.



The College has highly qualified, committed, research-oriented and talented teaching faculty who encourage inter-disciplinary and blended learning mode to the teaching-learning process through innovation projects, conferences, seminars, talks and workshops. The teaching faculty adapts new pedagogic methods and uses latest available technology for an effective implementation of the curriculum. Many teachers of the College have been invited as valued resource persons and keynote speakers in national and international academic events.

Ramanujan College is also a Study Centre of Non-Collegiate Women Education Board (NCWEB), University of Delhi and Indira Gandhi National Open University (IGNOU) for various courses. The College also offers various short-term diploma, certificate, and executive development programmes on contemporary and skill-oriented themes. These are conceived and designed by faculty members in consultation with external experts. These add-on courses get exceptional response from the students and are conducted throughout the academic session. They are open to alumni and students of all the colleges. Some of these courses support the curriculum, some prepare the students for higher studies and also accelerate the professional growth.

The College has acquired many prestigious schemes of University Grants Commission (UGC) and Ministry of Education (MoE), erstwhile Ministry of Human Resource Development (MHRD):

2016

Deen Dayal Upadhyay Centre for Knowledge Acquisition and Up-gradation of Skilled Human Abilities and Livelihood (KAUSHAL) under which two vocational courses have started in Banking Operations and Software Development

2017

Teaching Learning Centre (TLC) under the Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNTT) scheme in which one lakh beneficiaries have been trained through more than hundred programmes till date

2018

National Resource Centre (NRC) for developing specialized Online and MOOC courses for teachers in the disciplines of Ethics, Human Rights and Environment under the Annual Refresher Programme in Teaching (ARPIT) scheme

The College has two peer-reviewed journal and each publishes one issue annually. The Ramanujan International Journal of Business and Research (ISSN: 2455-5959), is enlisted in UGC-CARE, while International Journal of Applied Ethics (ISSN 2321- 2497) has been in publication since 2010.

As an initiative towards students and teachers exchange Programme, the College has entered into Memorandum of Understanding(s) with foreign universities. It is also working in collaboration with other higher education institutions located in remote areas of the country, under the Vidya Vistar Scheme of the University of Delhi.

In pursuit of its vision: “Discover, Empower, Transform: Building A Better World”, Ramanujan College is today perceived as one of the best colleges in the country.

ABOUT THE DEPARTMENT OF MATHEMATICS

The Department of Mathematics is one of the long-established departments of Ramanujan College. Earlier, B. A. Programme Mathematics and few courses (Business Statistics and Business Mathematics) of B. Com. (H) were handled by the Department of Mathematics. In the academic session 2013-14, the Department of Mathematics offered honours course in Mathematics under the FYUP scheme of courses which was later re-framed into three-year undergraduate course. Since 2016, the Department is admitting students in B.Sc. (H) Mathematics under the Choice Based Credit System (CBCS). Apart from honours course, the Department also offers Mathematics as a Discipline and Skill Enhancement Course in BA Programme and Generic Elective Course to other honours students.

The Department aims to create a solid foundation for the assimilation of mathematical concepts and structures and build mathematical skills like creative, logical and analytical thinking. Software such as Mathematica is used to increase the understanding of the fundamental mathematical concepts. It has a vibrant Society – "RamanuGen" that promotes student's interests in the subject by organizing activities with their enthusiastic involvement.

The Department has 9 faculty members with their research interests lying in Algebra, Graph Theory, Complex Analysis, Operator Theory and Applied Mathematics. The faculty are research-oriented and have been publishing research articles in peer reviewed National and International journals (specifically Scopus and Web of Science Journals). Faculty members have presented their work on international platform as well. They have been invited as resource persons or chairing the sessions in various academic events all over India. Some of them are also supervising the M.Phil. and Ph.D. students.

ABOUT THE TEACHING LEARNING CENTRE

Teaching Learning Centre (TLC) is mandated by the Ministry of Education (MoE) to organise Faculty Development Programmes (FDPs), Faculty Orientation and Induction Programmes (FIPs), discipline specific and interdisciplinary Refresher Courses, Conferences, Workshops, through offline and online modes. These programmes are based on in-depth subject knowledge, quantitative and qualitative research methodologies, and on an interdisciplinary approach as is envisaged in the National Education Policy (NEP), 2020.

The TLC, Ramanujan College has been set up with the aim of "Reaching the Unreached" teachers in terms of regional diversity and geographically remote areas of the country. It has successfully conducted more than hundred learner-centric programmes since October 2017 and trained over one lakh teachers across the country in various discipline specific and interdisciplinary programmes.



TLC Programmes adhere to the MoE and UGC Four Quadrant Approach

In the TLC Programmes, distinguished and internationally acclaimed resource persons deliver lectures and conduct sessions on wide ranging disciplines/topics of relevance in the contemporary and ever evolving global scenario to benefit the teaching fraternity, corporates and researchers. The sessions are also uploaded for larger audiences on the official [YouTube Channel](#) of the College. Ramanujan College is a pioneer in offering offline/online courses for faculty members of higher education institutions and research scholars through the customised Learning Management System (LMS), designed by the College's Research Development and Services Cell. It is predominantly participant-friendly and incorporates evaluation methods and comprehensive feedback systems to judge learning outcomes. The LMS is hosted on CLOUD with high scalability and reliability. The College has installed its own Cloud Infrastructure to host its servers for research and data analysis. The Blockchain technology is utilized and there is an inclusion of QR code, Barcode and Blockchain hash on the certificates, which provides authenticity and verifiability of the issued certificates by the TLC, Ramanujan College.

For the notification regarding recognition of the programmes conducted by TLC Ramanujan College for Career Enhancement Scheme (CAS) and the sanctity of the online courses for CAS, visit the [link](#)

ABOUT THE REFRESHER COURSE

With the advent of technology, e-learning is rapidly gaining importance and momentum. In line with the aim of the government of digitizing India with its “Digital India” Initiative, Educational institutions are working in tandem to help fulfill the goal.

The Refresher Course in Mathematics is an attempt in this direction to impart quality education in Mathematics to the undergraduate teachers of the country in the online mode. It will be of two weeks duration (31 August – 14 September 2021), with 12 working days (excluding Sundays and Gazetted Holidays). The course will consist of a minimum of 20 hours of video content (in the form of pre-recorded videos and live lectures) and 20 hours of non-video content. The course is being offered in a highly flexible format and can be done at own pace and within stipulated time. There are built-in assessment exercises and activities as parts of the academic progression in the course. At the end of the course, there will be a terminal assessment which will be conducted online. Successful participants of the online refresher course will be certified.

The main objective of the refresher course is to equip and motivate the participants with basic as well as advanced knowledge of various topics in the field of Mathematics for quality teaching and research. The Programme is discipline specific and will provide a forum to participants to keep themselves abreast of the latest advances in various areas of Mathematics with experienced and eminent resource persons from reputed institutions like Dresden University of Technology (Germany), Tata Institute of Fundamental Research (TIFR), Indian Institute of Science (IISc), Indian Institute of Technology (IIT), Indian Statistical Institute (ISI), Indian Institutes of Science Education and Research (IISER), National Institute of Technology (NIT), Shiv Nadar University, University of Kashmir, University of Jammu, University of Delhi and Central University of Rajasthan.

EXPECTED OUTCOMES

The success of an academic learning event is measured in terms of outcomes one gets. Successful completion of this Refresher Course in Mathematics will result core knowledge and understanding of several topics of Mathematics including Functional Analysis, Algebra, Partial Differential Equations (PDE), Complex Analysis and related Mathematical Representations of Physical Phenomenon in PDE which are used in Mathematical Modeling.

Apart from the above core areas of Mathematics, participants will get exposed to various software training modules like Matlab/Scilab, Mathematica and R-Software, which will enable learners to apply them in their research and in teaching. There is a special focus on mathematical typesetting software LaTeX, which will come handy to all the participants enabling them to write research paper in a very professional outlook.

An extra and much needed part of this course is Python Programming, which will enhance learners' understanding and skill in effective data analytics, Machine Learning and artificial intelligence.

ELIGIBILITY

The Refresher Course is open to Faculty members (regular/ad-hoc/temporary/Contractual/Guests) from any University/College, registered M.Phil./Ph. D. research scholars and interested Post Graduate Students in the disciplines of Mathematics, Statistics, Computer Science, Physical Sciences and its allied fields.

REGISTRATION PROCESS

- **Registration Fee : INR 1450/- (Non-Refundable)**
- **Last Date for Registration : 30 August 2021**
- **All those who meet the eligibility criterion are required to register and pay registration fee of INR 1450/- by visiting rcmoocs.in**
- **After successful registration & payment, the participants will receive a confirmation via email. Please keep checking the spam folder of the email as the bulk email sent may end up in the spam folder.**
- **An official group has been made for communication with the participants on "Telegram." You are therefore requested to install the Telegram App either from the Play Store or App Store. The link to join the official group will be provided in the confirmation mail.**

IMPORTANT

- The Refresher Course begins on 31st August 2021. The detailed day-wise Programme schedule will be communicated only to the registered participants before the start of Refresher Course. Please monitor the corresponding Telegram Group regularly.
- The sessions on various themes of the Refresher Course will be conducted either live or through pre-recorded videos via Ramanujan College Web portal.
- As this Refresher Course is being organized under the prestigious PMMMNMTT scheme of the Ministry of Education, we at TLC, Ramanujan College, give prime importance to willing and serious participants who are eager to learn.
- Attempting and submitting all the quizzes and assignments are mandatory to avail of the programme completion certificate. The average score of all the quizzes must be at least 40%.
- Graded certificates on the basis of performance will be awarded to the participants.
- As a part of the Ministry of Education's requirement under the PMMMNMTT scheme, all participants need to submit online feedback for each session.
- Failing to meet any of the above conditions will result in denial of a certificate of completion to the participants.

**No Objection Certificate (NOC) or Leave is NOT
REQUIRED to participate in the Programme**

**For further queries, please mail us at:
mathematics@ramanujan.du.ac.in**

TEACHING LEARNING CENTRE, RAMANUJAN COLLEGE

DIRECTOR

DR. S. P. AGGARWAL (PRINCIPAL)

ASSISTANT DIRECTORS

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DR. NIKHIL RAJPUT, Assistant Professor, Department of Computer Science

TLC STAFF

Mr. Akhil, Mr. Anil, Mr. Prashant, Mr. Sanchit and Mr. Vinod

ORGANIZING BOARD OF THE REFRESHER COURSE

CONVENOR

DR. RAJESH SINGH, Assistant Professor, Department of Mathematics

CO-CONVENOR

DR. VIRENDRA KUMAR, Assistant Professor, Department of Mathematics

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TECHNICAL TEAM

DR. NIKHIL RAJPUT, Assistant Professor, Department of Computer Science
MR. VIPIN RATHI, Assistant Professor, Department of Computer Science

STUDENT TEAM

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