



TEACHING LEARNING CENTRE

Ramanujan College
(Accredited Grade 'A' by NAAC)
University of Delhi

in collaboration with

DEPARTMENT OF PHYSICS
Harish Chandra Post Graduate College
Varanasi, Uttar Pradesh

and

DEPARTMENT OF PHYSICS
Hemvati Nandan Bahuguna Garhwal University
Srinagar, Garhwal, Uttarakhand

under the aegis of

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

are organising an

ONLINE TWO-WEEK REFRESHER COURSE IN

PHYSICS

27 October - 10 November 2021

CALL FOR REGISTRATION
AND PARTICIPATION

RAMANUJAN COLLEGE

Ramanujan College is a constituent College of the University of Delhi (DU). It is inspired by the life and work of Srinivasa Aiyangar Ramanujan, one of the world's greatest mathematicians. The College has been accredited Grade "A" by the National Assessment and Accreditation Council (NAAC) in its First Cycle. It is located in the well-known area of Kalkaji, near Nehru Place, in South Delhi.

The College was established in 1958 as an evening college for boys with just five programmes. Since 2010, Ramanujan College has been expanding and now with the latest addition of B.Sc. Environmental Sciences (Hons) in 2020, it at present offers sixteen undergraduate programmes in different disciplines. 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.

Ramanujan College was awarded the Deen Dayal Upadhyay - Knowledge Acquisition and Upgradation of Skilled Human Abilities and Livelihood (DDU KAUSHAL) Kendra in 2016 by the UGC, under which two vocational courses were started in Banking Operations and Software Development.

The College has conducted a Course on Human Rights, Environment and Ethics through its National Resource Centre (NRC), under the Annual Refresher Programme in Teaching (ARPIT) scheme of Ministry of Education (MoE). This Course was uploaded on MoE's Massive Open Online Course (MOOC) platform SWAYAM and many participants registered for it.

Ramanujan College 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.

The 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 is the Study Centre of School of Open Learning (SOL), Non-Collegiate Women Education Board (NCWEB) and Indira Gandhi National Open University (IGNOU) for various courses. As an initiative towards students and teachers exchange programmes, the College has entered into Memorandum of Understanding(s) with foreign universities. It is also working for collaboration with other higher education institutions located in remote areas of the country, under the Vidya Vistar Scheme of the University of Delhi.

The prestigious Teaching Learning Centre was awarded to Ramanujan College in 2017 by the Ministry of Education, under the Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNTT) scheme.

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.



TEACHING LEARNING CENTRE RAMANUJAN COLLEGE

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.

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.

Enrichment Spectrum at the TLC, Ramanujan College

- Transforming teachers into knowledge-creators
- Emphasis on creating self-learning space for participants
- Interaction with eminent scholars and academicians
- Four Quadrant Approach (e-tutorial, e-content, Self-Assessment and Web Resources).
- Regular follow-up with the participants through Google Classroom/ Telegram/ Discussion Forum.
- Adaptation skills for the dynamic contemporary environment
- Augmentation of professional capabilities and research-based knowledge
- Inter and cross-disciplinary methodologies of study
- Co-creation and mutual contribution between participants and facilitators
- Formation of knowledge capital
- Online certificates using the Blockchain Technology to ensure authenticity and verifiability

HARISH CHANDRA POST GRADUATE COLLEGE

Harish Chandra Postgraduate College, Varanasi is a Govt. aided college and is one of the premier seat of learning of Eastern U.P. under the auspices of Harish Chandra Vidyalyaya Samiti (a non-profitable charitable institution registered under Indian Society Act 1860.) Bharatendu Harishchandra, the profounder of the modern Hindi Language founded this institution with five students of the locality in 1866. By 1910, the institution had started High School Classes. The Intermediate Classes started in year 1939. The Undergraduate Classes in Arts and Commerce began on oct. 4, 1951. At first; the college was affiliated to Banaras Hindu University. The recognition of the Law Classes was made possible in the year 1958. However, owing to certain amendments and changes in the rules and regulation of B.H.U., the college shifted its affiliation with

the University of Gorakhpur in the year 1960. Consequently, the B.Ed. Classes began the same year, whereas recognition for B.Sc. classes in Maths. Group and Bio. Group was granted in the year 1963 and 1974 respectively. With the establishment of the Purvanchal University, Jaunpur the college was affiliated to this University in 1987-88. From the session 2009-10, the affiliation of the college is shifted to M.G. Kashi Vidyapeeth, Varanasi.

The college has Postgraduate in the subjects-Commerce, Statistics, Hindi, Mathematics, Physics, Chemistry, Botany, Zoology, Political Science, English and Psychology. Having crossed different stages of development, the college now runs five full-fledged faculties of Arts, Commerce, Science, Education and Law, where studies of different subjects at Undergraduate and Postgraduate levels are being carried out. The institution is now emerging as a centre for Research Work in different subjects in the faculties of Arts, Science and Commerce. Currently, more than 8000 students are enrolled under different courses in Harish Chandra Post Graduate College.

Some of the old graduates of this institution have rendered valuable services to humanity and to the nation in different fields. Late Lal Bahadur Shastri, Ex- Prime Minister of India, Late V.P.Koirala, Ex-Prime Minister of Nepal, Late Dr.Sampurnanand, Ex-Chief Minister of U.P., Late T.N.Singh, Ex-Governor of West Bengal, Late Brig. Usman, and Prof. Alok Kumar Chakrawal, Vice Chancellor of Guru Ghasidas Vishwavidyalaya, Bilaspur can be quoted as a few instances.



DEPARTMENT OF PHYSICS

HARISH CHANDRA POST GRADUATE COLLEGE

Department of Physics, Harish Chandra Post Graduate College has started the undergraduate classes B.Sc. in year 1963 and the postgraduate classes M.Sc. in year 2013. The department has eight sanctioned posts for teaching in undergraduate and postgraduate classes. The department also runs the research program (PhD) in different fields of physics including theoretical (Space plasma physics) and experimental physics (Soft condensed matter, material sciences, thin films, solar cell, nanomaterials). Major project has also been conducted under DST Fast Track for Young Scientists scheme. Faculty of the department has also participated in fully funded Autumn College in Plasma Physics (2003), ICTP, Trieste, Italy, Western Pacific Geophysical Meeting (2004) Honolulu, USA, and Autumn College in Plasma Physics (2005), ICTP, Trieste, Italy through Berkener Travel Fellowship (2004) American Geophysical Union (AGU) USA and URSI Young Scientist (2005). Number of research papers have been published in international journals (SCI and web of science indexed). Currently more than 800 students are enrolled in undergraduate program and 80 students in postgraduate program in the department. Number of students have been qualified GATE, CSIR-JRF NET and other national level examinations. Alumni of department of physics are holding various reputed administrative, academic and research post in premier government institutions.

HEMVATI NANDAN BAHUGUNA

GARHWAL UNIVERSITY

Hemvati Nandan Bahuguna Garhwal University was established as a State University vide U.P. State Government notification no. (10)/(865)/15/(75)(85)/64 dated 23 November 1973. It has a rare distinction of taking birth through a powerful popular movement during early seventies in the last century. This movement symbolized

and aspirations of the masses of the region of Garhwal for the development through higher education. The people of this remote mountainous region agitated for opening a university at this small but historic semi rural town of Srinagar. It was an expression of the quest for empowering their future generations for overcoming endemic economic and social backwardness, geographic and environmental constraints, re-assertion of cultural identity and harnessing of the local natural and human resources for development.

The university was converted to a Central University on 15th January 2009 by an Act of Parliament i.e. the Central Universities Act 2009. The University, thus been entrusted with new responsibilities to guide its students, faculty and all other stakeholders to achieve excellence in academics and strive for all round development of the students. Since its inception, the University has shown commitment towards regional and community development which is inherent in its teaching courses, research agenda and other outreach and extension initiatives. The synergy derived from circumstances of its genesis still inspires and promotes its vision for future. However, being a Central University, HNBGU has a Pan-India appeal and draws students from various pockets of the country.

The University, nestled in the lap of Himalayan ranges in the Garhwal region of Uttarakhand, is a residential cum affiliating institution of higher learning. It has jurisdiction over seven districts of Garhwal region of Uttarakhand. The University has three Campuses distantly located from each other – Birla Campus, Srinagar Garhwal with its extension at Chauras Campus, B. Gopal Reddy (BGR) Campus, Pauri and Swami Ram Teerth (SRT) Campus, Badshahithaul, Tehri. In addition, there are 121 colleges and institutes affiliated to it, spreading over seven districts of Garhwal region of Uttarakhand. In University campuses the undergraduate, post-graduate and research programmes are being offered in various disciplines. Besides conventional courses under different streams of studies, the University has introduced some regionally relevant courses that are of greater significance for the mountainous areas.

DEPARTMENT OF PHYSICS

HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY

Physics department was established in the year 1962 as one of the Science departments of Birla Government Degree College, Srinagar (Garhwal). This was upgraded to Post Graduate level in the year 1972. The department in Pauri and Tehri campus was established in 1972 and 1973 respectively with undergraduate course in Physics. In 1992 post graduate course was started with specialization in electronics at Pauri campus whereas it was started at Tehri campus in 1990. University took over the department of Physics as Centre for under graduate, Post graduate teaching and research activities in Physics. Research in Solid state Physics, Mathematical Physics and Spectroscopy began with the establishment of Garhwal University. The Department has been identified under DST-FIST programme for strengthening the research facilities and established a Computer Lab. Various research schemes under DST, UGC, MNES, UCOST etc. have been successfully completed in the Department.

Faculty members of the department are actively engaged in research in the different fields namely (a) Condensed Matter Physics/Materials Science Experimental Studies preparation, characterization and measurements ferroelectric systems/Poly crystals, ultrasonic investigations of Polymers and liquids; Theoretical studies of dielectric and ferroelectric properties of crystals; Theoretical studies of high temperature superconductors; theoretical studies of thermal properties of ferroelectrics, (b) Fluorescence spectroscopy- energy transfer, Solar Photo thermal and Photovoltaic devices, (c) Nuclear and Particle Physics/Astroparticle Physics- Theoretical studies of monopoles, Gauge theory, Super symmetry and cosmology etc. and (d) Mathematical Physics- Theoretical studies and Simulation techniques.

The department is well equipped for research work with instruments like Fluorescence Spectro Photometer (Perkin Elmer), UV and Visible Spectroscope (Perkin Elmer), Ultrasonic interferometer, High Temperature Furnace, Mossbauer Effect and Gamma ray spectrometer.

The faculty members have published 54 research papers and have participated in 16 Seminars/Workshops/Conferences during the year 2011-12. At present work is going on in 05 research projects in the department.



CONCEPT NOTE

Physics is a core field of research with enormous applications in basic and applied sciences. Concepts of physics are dispersed from the heart of atoms' nuclei to giants of the celestial world. The understanding of fundamentals of various potential fields of physics and critical analysis of concurrent research has a pivotal role for individuals working in the area of physics for lab-to-industry implementations. The study of different fields of theoretical and experimental physics assists in the development of the scientific temper for conducting outstanding research work that may significantly contribute to developing new concepts, technologies and for enhancing the existing ideas. Such concurrent knowledge also helps in developing innovative teaching pedagogy.

This refresher course has been designed to address the needs of theory, experimentations, and industrial applications. The proposed training program would help researchers, faculties in formulating appropriate strategies to face the upcoming challenges.

THEMES

- **Liquid Crystals**
- **Space Physics**
- **Plasma Physics**
- **Nanomaterials**
- **Atmospheric Sciences**
- **Quantum Physics**
- **Thin Films**
- **Solar Cells, Solar Photo thermal and Photovoltaic devices**
- **Spectroscopy**
- **Fluorescence spectroscopy**
- **Molecular Spectroscopy**
- **Fiber Optics**
- **Applications in Medical Physics**
- **Nuclear and Particle Physics**
- **Condensed Matter Physics/Materials Science**
- **Superconductors**
- **Mathematical Physics- Theoretical studies and Simulation techniques**

REGISTRATION PROCESS & PAYMENT DETAILS

ELIGIBILITY

Faculty members (regular/adhoc/temporary) and research scholars from Physics and allied disciplines are eligible to apply for this programme.

All those who meet the eligibility criterion are required to register and pay a **Non-Refundable fee of INR 1450/- by visiting**

rcmoocs.in

REGISTRATION DEADLINE: 26 October 2021

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:

- Registration is mandatory for participation.
- Attempting and submitting all the quizzes and assignments are mandatory, and each participant should score a **minimum of 50% in total** to avail of the programme completion certificate.
- Graded certificates on the basis of performance will be awarded to the participants.

- As 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**
- **The Course is beneficial for the Career Advancement Scheme (CAS)**

For further information, write to us at:

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