



**AICTE Training and Learning
(ATAL) Academy**

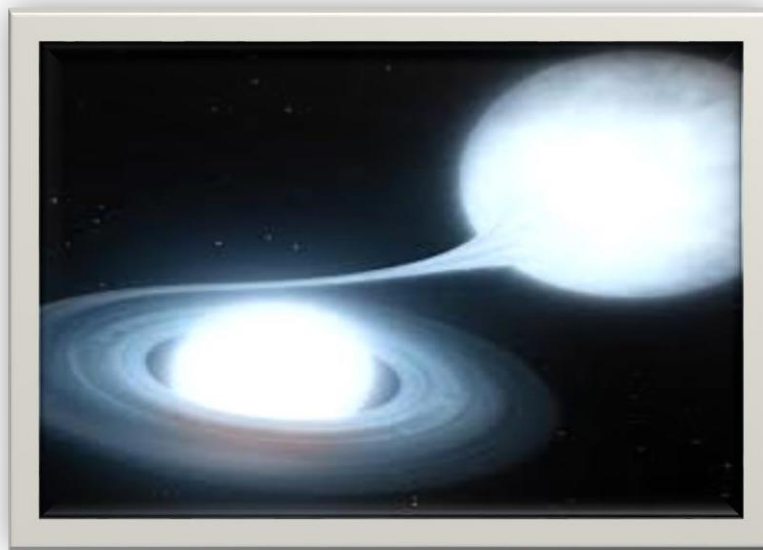


*TWO-WEEK ONLINE AND OFFLINE
FACULTY DEVELOPMENT PROGRAM*

ON

**MATHEMATICAL MODELING OF
DIFFERENTIALLY ROTATING STARS
IN STELLAR SYSTEM**

**October 31-November 11,
2022**



Organized by

**DEPARTMENT OF MATHEMATICS
Graphic Era Deemed to be University, Dehradun**

Dr. Seema Saini
Co-ordinator

Dr. Anju Saini
Co-coordinator

About AICTE Training and Learning:

AICTE is committed for development of quality technical education in the country by initiating various schemes launched by Govt. of India, Ministry of Human Resource Development e.g. SWAYAM, MOOCs, Start-up Initiatives, Prime Minister Kaushal Vikas Yojana (PMKVY), Sansad Adarsh Gram Yojana (SAGY), Swachh Bharat/Unnat Bharat Abhiyan, Yoga Activities etc. There is an urgent need to train the young generation in skill sector and having faculty & technicians to be trained in their respective disciplines. It was felt that Training with latest tools and technologies is vital to keeping an institute competitive and more productive. Training is required for increasing the knowledge and skills of students to make them more employable to acquire global competencies.

About Graphic Era:

The Graphic Era Educational Society established in 1993, is a non-profit organization that aims to mobilize world-class education and generate resources for providing and supporting quality education for all. Graphic Era Deemed to be University is the culmination of the vision of its founder, Prof (Dr) Kamal Ghanshala, who had the dream to change the destiny of thousands of youth, through quality and holistic education and his vision took a concrete shape in the form of Graphic Era Institute. In 2008, the Institute was accorded the status of Deemed University under Section 3 of the UGC Act, 1956 vide Notification F.9-48/2007-U.3 (A) dated August 14, 2008 and approved by Ministry of Human Resource Development, Government of India.

Graphic Era (Deemed to be University) has been conferred All-India NIRF Rank 75 in the Engineering Category, thus being accorded as the highest ranked Engineering University in Uttarakhand, after IIT Roorkee, in the MHRD NIRF (National Institutional Ranking Framework) Rankings in September 2021. The University has also been awarded All India Rank 98 in the University Category and All India Rank 64 in Management Category, establishing GEU as the highest-ranked university in Uttarakhand amongst all Government and Private universities in the state. GEU stands proud as the only university in Uttarakhand recognized as one among the top 100 Universities of the country, as an abode of learning and excellence, surpassing all parameters of assessment like teaching, learning, research, graduation outcome, outreach, industrial presence and more for Indian Institutions of higher education.

About Department of Mathematics:

The department of mathematics was established in 2008. The department of mathematics was created to improve the analytical skills of the students of different disciplines of the university by teaching them fundamentals and basics of advanced level courses of mathematics and allied subjects like Statistics and Probability, computer based numerical and statistical techniques, discrete structure, graph

theory etc. The syllabus of the different subjects of mathematics are revised time to time by the expert committee consisting of the faculty members from the pioneer institutes to keep the students of the university updated. The department actively participates in the design and development of various courses of under graduate and post graduate programs of different disciplines as per their requirements. The department has published research papers and books with IEEE, Elsevier, Springer, Emerald, Taylor & Francis, Mc Graw –Hill, world Scientific, Inderscience, IGI and many other publications.

About the FDP:

Faculty members are the back-bone of any educational institution because they are responsible for influencing students' futures. Faculty development refers to a range of activities that are perceived to help academicians in improving their professional skills that are vital for carrying out their teaching, research or administrative activities in their field. Faculty development endorses the educational improvements and strategies that are dignitary and are executed in a professional manner. Professional organizations and experts have recommended FDPs for greater awareness and attainment of knowledge in teaching and learning.

Programme Objective:

- ✚ To provide training to foster curiosity, creativity, and imagination in young minds and make the fun with MATHEMATICS and SCIENCE.
- ✚ The evolution of rotating stars through mathematical modeling.
- ✚ Using computer codes for stellar structure and stellar pulsations and apply it to determine the equilibrium models and trace the evolutionary tracks of realistic models.
- ✚ Young children will get a chance to work with tools and equipment to understand what, how and why aspects of STEM (Science, Technology, Engineering and Math).

Topics to be Covered:

- ✚ Stars, binary stars and stellar variability.
- ✚ Star formation and stellar evolution.
- ✚ Formation and evolution of Galaxies.
- ✚ Theoretical and numerical astrophysics.
- ✚ Development of observing facilities for astronomy.
- ✚ Sun and related phenomena.
- ✚ Analytic studies and numerical simulations.
- ✚ Facts about Stellar formation.
- ✚ Mathematical Modeling of star formation in the Galaxy.

- ✚ Coding in C++.
- ✚ Coding in MATLAB.

Expected Outcomes:

At the end of successful completion, the participants would be able to:

- ✚ Understand the recent developments in Mathematical sciences.
- ✚ Understand the applications of Mathematics in real world engineering applications of Industries.
- ✚ Develop a conceptual approach of teaching mathematics.
- ✚ Identify the areas of current and ongoing research in Mathematical Modeling areas.
- ✚ Understand how the solar energy offers clean power with social and economic benefits.

Resource Persons:

Experienced Faculties from premier Institutions / Industrial experts will deliver the lecture and handle the practical sessions.

Who can apply:

The FDP is open to faculty members of the AICTE approved institutions, research scholars, PG Scholars, participants from Government, Industry (Bureaucrats/ Technicians/ Participants from Industry etc.). Faculty members, research scholars, PG Scholars of host Institution are eligible to attend.

Faculty Development Program on Mathematical Modeling of Differentially Rotating Stars in Stellar System

Week-1: Programme Schedule [31 October - 05 November 2022] Online

Day/Session	Name	Event	Affiliation	Time
Day-1 Session-1	Dr. Mohd. Tamsir	Numerical Solution of PDE by using Finite Difference/Collocation Method	Jazan University, Saudi Arabia	7:00-7:50
Day-1 Session-2	Dr. Mohd. Tamsir	Numerical Solution of PDE by using Finite Difference/Collocation Method (Cont...)	Jazan University, Saudi Arabia	8:00-8:50
Day-1	Dr. Mohd. Tamsir	Interactions Session 1	Jazan University, Saudi Arabia	9:00-9:30
Day-2 Session-1	Dr. Krishna Pratap Singh	Natural Language Processing and Computer Vision	IIT Allahabad	7:00-7:50
Day-2 Session-2	Dr. Krishna Pratap Singh	Natural Language Processing and Computer Vision (Cont....)	IIT Allahabad	8:00-8:50
Day-2	Dr. Krishna Pratap Singh	Interactions Session 2	IIT Allahabad	9:00-9:30
Day-3 Session-1	Dr. Sachin Kumar	Dynamical behaviour of challenging nonlinear partial differential equations	Delhi University	7:00-7:50
Day-3 Session-2	Dr. Sachin Kumar	Dynamical behaviour of challenging nonlinear partial differential equations (Cont....)	Delhi University	8:00-8:50

Day-3	Dr. Sachin Kumar	Interactions Session 3	Delhi University	9:00-9:30
Day-4 Session-1	Dr Benoit Huard	Modelling and applications in biological systems	Northumbria University, Newcastle, UK	7:00-7:50
Day-4 Session-2	Dr Benoit Huard	Modelling and applications in biological systems [Cont...]	Northumbria University, Newcastle, UK	8:00-8:50
Day-4	Dr Benoit Huard	Interactions Session 4	Northumbria University, Newcastle, UK	9:00-9:30
Day-5 Session-1	Dr. Manish Kumar Khandelwal	Hydrodynamic stability analysis	IITDM Chennai	7:00-7:50
Day-5 Session-2	Dr. Manish Kumar Khandelwal	Hydrodynamic stability analysis (Cont...)	IITDM Chennai	8:00-8:50
Day-5	Dr. Manish Kumar Khandelwal	Interactions Session 5	IITDM Chennai	9:00-9:30
Day-6 Session-1	Prof. Arvind Kumar Lal	Application of Numerical Methods/Astrophysics	Thapar University, Patiala	7:00-7:50
Day-6 Session-2	Prof. Arvind Kumar Lal	Application of Numerical Methods/Astrophysics	Thapar University, Patiala	8:00-8:50
Day-6	Prof. Arvind Kumar Lal	Interactions Session 6	Thapar University, Patiala	9:00-9:30

Week-2: Programme Schedule [07 - 11 November 2022] Offline

Days	Session	Name	Topic	Affiliation	Time
Day-1 (Monday) 07-11-2022					
Day-1	Inauguration Session		Welcome Session	Graphic Era Deemed to be University, Dehradun	9-9:30
	Session 7	Prof. V.K. Katiyar	Yoga for Stress Management	Patanjali University, Haridwar	9:30-12:00
	Lunch				12:00-13:00
	Travel for Visit				13:00-14:00
	Visit				14:00-16:00
	Travel Back				16:00-17:00
Day-2 (Tuesday) 08-11-2022					
Day-2	Session 8	Dr. Sushil Kumar	An Introduction to collocation methods and its applications to solve differential equations.	SVNIT Surat, Gujarat	9.30 -12:00
	Article 1 Discussion				12:00 -13:00
	Lunch				13:00 -14:00
	Session 9	Dr. Priya Matta	Modeling using Python programming language	Graphic Era (Deemed to be) University, Dehradun	14:00-16:00
	Teaching Practice				16:00-17:00
Day-3 (Wednesday) 09-11-2022					
Day-3	Session10	Dr. Ram Jiwari	Numerical Analysis and Simulations of PDEs	IIT Roorkee	9.30 -12:00
	Article 2 Discussion				12:00-13:00
	Lunch				13:00-14:00
	Session11	Dr. Sunil	Theoretical Astrophysics	Graphic Era Hill University, Dehradun	14:00-16:00
	Teaching Practice				16:00-17:00
Day-4 (Thursday) 10-11-2022					

Day-4	Session 12	Dr. Ashok Kumar	Computational Fluid Dynamics	HNB Garhwal Central University	9:30-12:00
	MCQs				12:00-13:00
	Lunch				13:00-14:00
	Session 13	Dr. Komal	Numerical Analysis	Doon University, Dehradun	14:00-16:00
	Teaching Practice				16:00-17:00
Day-5 (Friday) 11-11-2022					
Day-5	Session 14	Dr. Trilok Kumar Saini	Networking and Systems for Satellite communication	DEAL, DRDO, Dehradun	9.30 -12:00
	Visit Report (Team)				12:00-13:00
	Lunch				13:00-14:00
	Reflection Journal				14:00-15:00
	Feedback				15:00-16:00
	Valedictory				16:00-17:00

Registration Details:

- ✚ All the participants are requested to register online by visiting <https://www.aicte-india.org/atal> on or before 25th October, 2022. (FDP Application No: 1650258353)
- ✚ Registration for all the participants is mandatory.
- ✚ The number of participants will be limited to 50. Selection will be made on First – come – First serve basis (Subject to fulfilling the eligibility criteria).
- ✚ The FDP begins on 31st October 2022.
- ✚ As the FDP is being organized under the prestigious AICTE Training and Learning (ATAL) Academy, we at Graphic Era Deemed to be University, Dehradun give prime importance to willing and serious participants who are eager to learn. In this context, it should be noted that certificates will be awarded to only those participants who will be present and engaged during each session of the FDP. Therefore, it is compulsory for participants to attend all the sessions in order to receive certificate of participation.
- ✚ The certificates shall be issued to those participants who have attended the program with minimum **80% of attendance** and scored **minimum 60% marks** in the test.
- ✚ All participants need to submit feedback form.

Note: After successful registration, participants are requested to join the official group to communication on “WhatsApp”. The link to join the official group would be provided in the confirmation email.

Committee:

Chief Patron:

Prof (Dr.) Kamal Ghanshala, *President*, Graphic Era (Deemed to be University), Dehradun, India

Patrons:

Prof (Dr.) R C Joshi, *Chancellor*, Graphic Era (Deemed to be University), Dehradun, India

Prof (Dr.) Sanjay Jasola, *Vice Chancellor*, Graphic Era (Deemed to be University), Dehradun, India

Co-ordinator:

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