

## ABOUT THE GIAN COURSES

MHRD, Govt. of India has launched an innovative program titled “Global Initiative of Academic Networks (GIAN)” in Higher Education, in order to garner the best international expertise into our system. As a part of this, internationally renowned Academicians and Scientists are invited to augment the country’s academic resources, accelerate the pace of quality reforms and elevate India’s scientific and technological capacity to global excellence.

## OVERVIEW OF THE COURSE

The topics of the course, related to recent astrophysical and geophysical problems, are also very attractive to applied mathematicians. Sophisticated mathematical approaches applying wide spectra of numerical as well as analytic and asymptotic methods are necessary for successful and effective solutions of those physical problems. The first goal of the course is to motivate mathematicians to solve complex physical problems. Therefore, the course indicates an attractiveness and practical usefulness of topics related to the magnetic fields generation of cosmic bodies, in particular of the Earth and Sun. Understanding and the ability to predict the time behaviour of the last two fields has also enormous practical significance, and it is not yet solved. The second goal is to show how various branches of mathematics are indispensable in solving the problems of Convection and Dynamo Theory in astro- and geophysics. The 3rd goal is to introduce the basic physical background for the topics with emphasis on mathematical expression of this physics, i.e. to underline the correspondence between the physics and mathematics of the topics.

## COURSE CONTENTS

Foundations of Magnetohydrodynamics (MHD).

Dynamics of Rotating Fluids:

Rotating Magnetoconvection (RMC),  
Linear and nonlinear Models of RMC,  
Waves In Rotating MHD Systems,  
Numerical modeling in RMC

Dynamo Theory: Numerical Simulations of Dynamos,  
Natural Dynamos.

## ABOUT PROF. BRESTENSKÝ JOZEF



**Prof. Brestenský Jozef** is from Faculty of Maths, Physics and Informatics (FMPHI) in Comenius University (CU), Bratislava, Slovakia. He contributed his research knowledge in

different departments of CU such as Astronomy, Physics of the Earth and Meteorology, General Physics, Geomagnetism and Magnetohydrodynamics, and Natural Sciences. His research interests include Geophysics, Geophysical Fluid Dynamics, Planetary Magnetic Fields, Rotating Magnetoconvection, Cosmic Magneto-hydrodynamics, Solar Physics, Physics of everyday life and Applied Mathematics. He contributed his vast knowledge in the prestigious Scientific committees in different positions. He has been invited by the different prestigious universities, to name a few, Cambridge University, University of Hyderabad and NIT Warangal. He published his research work in high impact factor SCI journals which has a large number of citations.

## WHO CAN PARTICIPATE?

- If you are a mathematician/ physicist/ geophysicist / astrophysicist/ engineer/research scientist.
- If you are a undergraduate/postgraduate student / researcher / faculty or scientist from technical and academic institutions / from industry interested in learning to do research on MHD, RMC and dynamo theory.
- If you keen to learn how to apply mathematical methods in astro- and geophysical models

More details about the course and course structure can be obtained at

[http://www.gian.iitkgp.ac.in//files/brochures/BR1459831596Hydrodynamic\\_Stability\\_HP\\_Rani.pdf](http://www.gian.iitkgp.ac.in//files/brochures/BR1459831596Hydrodynamic_Stability_HP_Rani.pdf)



## Two Weeks GIAN Course

On

## Hydrodynamic Stability and Dynamo Theory

December 9 – 20, 2016

*International Faculty*

**Professor Brestenský Jozef**

*Faculty of Mathematics, Physics & Informatics  
Comenius University, Slovakia*

**Coordinator**

**H.P. Rani**

Organized

by

**DEPARTMENT OF MATHEMATICS**

**NATIONAL INSTITUTE OF TECHNOLOGY**

WARANGAL – 506 004

TELANGANA STATE – INDIA

## ABOUT THE INSTITUTE AND WARANGAL

National Institute of Technology (formerly Regional Engineering College), Warangal was established in 1959. Over the years it has developed into a premier Institution of higher learning and is ranked among the top technical education Institutions in India. There are 14 Departments offering eight undergraduate and 29 post-graduate programmes besides doctoral programmes. About 5,000 students across the country and about 500 international students pursue their education in the campus. It is a fully residential campus sprawling over 250 acres with excellent infrastructure in the form of state of art library, seminar halls, guest houses and laboratories.

Warangal is the second largest city of the new state of Telangana. It is situated at a distance of 140 Km from the state capital Hyderabad (Nearest Airport). It is well connected by Rail (Kazipet Junction is 2 km away and Warangal Station is 12 Km away) and by Road (NH 202). Warangal is known for its rich historical and cultural heritage. It was the seat of erstwhile Kakatiya dynasty. It is the place of tourist attraction with a number of historical monuments like Thousand Pillars Temple, Warangal Fort, Bhadrakali Temple, Ramappa Temple and Laknavaram Lake.

## ABOUT DEPARTMENT

The Department of Mathematics was *established in 1959* and has always shared the vision of the institute in striving for excellence in teaching and research activities. Over the years, the department has evolved as one that provides excellent teaching and research in Applied Mathematical Sciences. The frontier areas of research of the department include: Fluid Mechanics, Bio-mechanics, Mathematical Modeling, Numerical Analysis, Finite Element Method, CFD, Optimization Techniques, Coding Theory, etc. Our Department is recognized by AICTE as the only QIP centre for PhD programmes among all NITS. The department started its M.Sc. Applied Mathematics course in the year 1970. In the context of changing needs of the software industry, the Department is also offering a Computer Oriented Mathematics course – M.Sc. (Mathematics and Scientific Computing). Recently the department has signed MoU with Indian Institute of Geomagnetism.

## HOW TO REGISTER?

**Stage – 1: Web (Portal) Registration:** Visit GIAN Website at the link:

<http://www.gian.iitkgp.ac.in/GREGN/index> and create login User ID and Password. Fill up the blank registration form and do web registration by paying Rs. 500/- online through Net Banking/Debit/Credit card. This provides him/her with life time registration to enroll in any number of the GIAN courses offered.

**Stage – 2: Course Registration (Through GIAN Portal):** Log in to the GIAN portal with the user ID and Password created in stage 1. Click on “**Course Registration**” option given at the top of the registration form. Select the Course titled “**Hydrodynamic Stability and Dynamo Theory**” from the list and click on “**Save**” option. Confirm your registration by Clicking on “**Confirm Course**”.

## REGISTRATION FEE (Excluding Lodging & Boarding)

Faculty & Scientists	<b>Rs. 4,000/-</b>
Participants from Industry/Training Organizations/Consultancy Firms	<b>Rs. 8,000/-</b>
Students and Research Scholars	
• Without Award of Grades	<b>Rs. 1,000/-</b>
• With Award of Grades	<b>Rs. 2,000/-</b>
Student Participants from Abroad	<b>USD 100</b>
Other Participants from Abroad	<b>USD 200</b>

The registration fee includes instructional materials, tutorials and computer use, free internet facility, working lunch, mid-sessions tea & snacks. Outstation participants will be provided accommodation and boarding in Visitors Block/Hostel in the campus on payment.

## SELECTION AND MODE OF PAYMENT

Selected candidates will be intimated through E-mail. They have to remit the necessary course fee to the Bank as per the details given below:

Account Name	GIAN NITW
Account Number	62447453600
Bank	State Bank of Hyderabad
Branch	REC Warangal (NIT Campus)
Branch Code	20149
IFSC	SBHY0020149
MICR Code	506 004 011
SWIFT Code	SBHYINBB018

\* The registration fee can be remitted through Demand Draft (DD) using the above Bank details and sent to the coordinator .

Total number of seats is limited to 50 only and will be filled on first come first basis.

Outstation participants requiring accommodation and boarding facilities have to pay extra at the guest house in addition to the course fee with the following rates:

A/C Room Rs. 150/- (or) Rs. 250/- (or)  
Rs.500/-per day (Triple/Double/Single sharing)  
Dinner @ Rs.100/-, Breakfast @ Rs. 50/-

## CONTACT DETAILS

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