REGISTRATION FORM

Name: ____________________________
Designation: ______________________
Department: _______________________
Academic degree: __________________
Address: ..........................................................
............................................................................
City: ........................................ Pin code : .....................
Mobile No: .........................id:.....................................

Category of participant:
Faculty/student/Research Scholar of NITK Yes/No
Participants from other institution Yes/No
Industrial Participant Yes/No
Foreign Participant: Yes/No
NITK Accommodation Required: Yes/No

Payment Mode: DD for registration fee should be drawn in favor of the Director, NITK, Surathkal, payable through any Nationalized Bank at Surathkal/ Mangalore.

□ I agree to attend the course for the entire duration.

Signature of the participant:

Signature of the sponsoring authority with seal:
Date: ____________________
Place: ____________________

CONTACT DETAILS
Dr. N. Gnanasekaran
Assistant Professor
Department of Mechanical Engineering
National Institute of Technology Karnataka
Srinivasanagar, Mangalore-575025.
Email id: gnanasekaran@nitk.edu.in
Contact: +917204877348

ACCOMMODATION
A limited number of in campus accommodation can be provided at institute’s hostel and guest house for which the participants have to pay accommodation charges. Participants have to send a special request through mail to the coordinator.

ABOUT INSTITUTE AND SURATHKAL
National Institute of Technology Karnataka (NITK), Surathkal – venue of the course - is one of the “Institutes of National Importance” in the country fully funded by the Ministry of Human Resource Development (MHRD), Govt. of India. The institute has an impressive infrastructure with state of art facilities in all the departments for teaching, research and consultancy. The institute is located 22 km north of Mangalore city. NITK nestles between the verdant mountain ranges of Western Ghats on one side and vast tranquil blue water of the Arabian Sea on the other. NITK celebrated Golden Jubilee in the year 2009-2010. Weather is pleasant in the month of November with temperatures ranging from 20 to 30°C. NITK is a focal point of visits to important places of pilgrimage and Archaeological sites.

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.

ABOUT DEPARTMENT
The Department of Mechanical Engineering established in 1960, the oldest and largest department of NITK, has traversed the path of knowledge dissemination and generation as well as delivering over 4000 Mechanical Engineering graduates to the Nation. Over these 55 glorious years, it has carved a niche for itself in the key areas of teaching, research, consultancy, administration and community services. Academic Programmes leading to B. Tech. degree in Mechanical Engineering, M. Tech. degree in Manufacturing, Design and Precision, Mechatronics and Thermal Engineering and full time PhD degree are currently offered by the department. The department has also been recognized as QIP centre for M.Tech and Ph.D in Mechanical Engineering.

A short term course on
Inverse Heat Transfer
November 7-11, 2016
International Faculty
Prof. Helcio Rangel Barreto Orlande
Dept., of Mechanical Engineering, PEM-COPPE, Federal University of Rio de Janeiro-UFRJ, Brazil.

Coordinator
Dr. N. Gnanasekaran

Organized by
DEPARTMENT OF MECHANICAL ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY
KARNATAKA
SURATHKAL-575025
OVERVIEW OF THE COURSE

Inverse heat transfer problems deal with the estimation of unknown quantities appearing in the mathematical formulation of physical processes in thermal sciences, by using measurements of temperature, heat flux, radiation intensities, etc. Originally, inverse heat transfer problems have been associated with the estimation of an unknown boundary heat flux, by using temperature measurements taken below the boundary surface of a heat conducting medium. On the other hand, recent technological advancements often require the use of involved experiments and indirect measurements, within the research paradigm of inverse problems. Nowadays, inverse analyses are encountered in single and multi-mode heat transfer problems, dealing with multi-scale phenomena. Applications range from the estimation of constant heat transfer parameters to the mapping of spatially and timely varying functions, such as heat sources, fluxes and thermo physical properties.

COURSE CONTENTS

Classical Regularization Techniques
- Calculation of sensitivity coefficients.
- The Levenberg-Marquardt method.
- Tikhonov's regularization.
- Alifanov's iterative regularization.

Markov Chain Monte Carlo Methods
- Bayesian framework.
- Maximum a Posteriori Objective Function.
- Metropolis-Hastings Algorithm.
- Markov Random field priors.
- Approximation Error Model.

State Estimation and Particle Filter Methods
- The Kalman Filter.
- State Estimation Problem.
- Algorithms for simultaneous estimation of parameters and state variables.

ABOUT Prof. ORLANDE

Helcio Rangel Barreto Orlande obtained his B.S. in Mechanical Engineering from the Federal University of Rio de Janeiro (UFRJ) in 1987 and his M.S. in Mechanical Engineering from the same university in 1989. After obtaining his Ph.D. in Mechanical engineering in 1993 from North Carolina State University, he joined the Department of Mechanical Engineering of UFRJ and where he was Department Head during 2006-2007. His research areas of interest include the solution of inverse heat and mass transfer problems, as well as the use of numerical, analytical, and hybrid numerical-analytical methods of solution of direct heat and mass transfer problems. He is the co-author of several books and more than 200 papers in major journals and conferences. He has been elected as distinguished Professor by the Mechanical engineering classes of UFRJ in 1996 and from 1999 to 2006. He is the recipient of the Young Scientist Award in 2000 and of the State Scientist Award in 2002, both given by state of Rio de Janeiro. From 2004–2006, he was elected as the Secretary of the Thermal Sciences Committee of ABCM—Brazilian Society of Mechanical Sciences and Engineering, a sister society of ASME. He is an associate editor of Heat Transfer Engineering and Inverse Problems in Science and Engineering.

WHO CAN PARTICIPATE?

1) Executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories.
2) Students at all levels (B.Tech /M.Sc/M.Tech/Ph.D) or Faculty from reputed academic institutions and technical institutions.
3) Faculty members working in Engineering Colleges in Mechanical, Production, Industrial Engineering and allied Department.

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 enrol 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. Click on “Course Registration” option given at the top of the registration form. Select the Course titled “Inverse Heat Transfer” from the list and click on “Save” option. Confirm your registration by Clicking on “Confirm Course”.

REGISTRATION FEE (Excluding Lodging & Boarding)

<table>
<thead>
<tr>
<th>Category</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty and Scientists</td>
<td>Rs.2,000/-</td>
</tr>
<tr>
<td>Participants from Industry/Training Organizations/Consultancy Firms</td>
<td>Rs.10,000/-</td>
</tr>
<tr>
<td>Students and Research Scholars</td>
<td>Rs.1,000/-</td>
</tr>
<tr>
<td>Other Participants from Abroad</td>
<td>US $500</td>
</tr>
</tbody>
</table>

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