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C-MMACS Academic Programme

In keeping with its objective of developing skill and expertise in Mathematical Modelling and Computer Simulation in the country, C-MMACS maintains an active academic programme. The activities span the entire spectrum from Ph D guidence to undergraguate/postgraduate student projects to specialized courses. Students and professionals from a wide spectrum of organizations including industries across the country have been benefiting from our various academic programmes over the years.

Highlights:

The year 2004-05 has been an active year in terms of various academic activities at C-MMACS. A number of training and exposure courses were organized for participants cutting across universities, research organizations and industries across the country. The year had also seen, as usual, a large number of students and trainees from various universities and institutions.

Inside

- *Ph.D Programme*
- *Seminars by Project Trainees (M.Tech Thesis/ BE/ MCA Projects)*
- *Courses at C-MMACS*
- *Faculty participation*

Ph.D Programme

S Raja (Guide: G Prathap, Co-Guide: P K Sinha)

R Muralikrishna (Guide: G Prathap)

P Jafarali (Guide: G Prathap, Co-guide: Mohammmed Ameen)

K Asokan (Guide: T R Ramamohan)

K Radhakrishnan (Guide: T R Ramamohan)

S Himesh (Guide: P Goswami, Co-guide: S V Goud)

K C Gouda (Guide: P Goswami)

Souvik Banerjee (Guide: Malay Mukul)

M S M Vijayan (Guide: Sridevi Jade)

Saigeetha Jagganathan (Guide: Sridevi Jade)

Seminars by Project Trainees
(M.Tech Thesis/ BE/ MCA Projects)

Gangan Prathap
Projection Theorem: A New Eye to FEM, Himanshu Mishra, Punjab Engineering College, Chandigarh, 01 July 2004.

Order! Order! Order! Analysis of Finite Periodic Structures, Himanshu Mishra, Punjab Engineering College, Chandigarh, 01 July 2004.

P Goswami
A Mesoscale Model Configuration for Simulation of Tropical Cyclones, Veena S and Vineetha V, Cochin University of Science and Technology, 7 April 2004.

Malay Mukul
Computation of Finite Strain Using Normalized Centre-to-Centre Method from Thin Sections of Rocks, Raghavendra S P, Kuvempu University, Shimoga, 14 June 2004.

Imtiyaz A Parvez
A GUI Package Development for Earthquake Catalogue Analysis using C & Open GL, Lalatedu Patra, Khallikote College, Berhampur, Orissa, 16 July 2004.

Image Processing and Digitization of 2-D Geological Cross Section, Ananda C Hiremath, S J C E College, Mysore and Naveen Kumar, Mangalore University, Mangalore, Dr I A Parvez, 02 August 2004.

G K Patra
An implementation of Elliptic Curve Cryptography, Ashwini K, Rohini R K, Sandhya Rani N, East Point College of Engineering & Technology, 19 May 2004.

An Implementation of FTP using Random Key Generation Algorithm, Badrinath K, Venkata Ravanappa A R, Gopal Krishna M and Nagaraj V T, U V C E College, Bangalore University, Bangalore, 11 June 2004.

Java based Hypertext Utility, P S Veena, Bapuji Institute of Engineering & Technology, Davangere, 16 July 2004.

Development of a Secure Communication Using Digital Signature, G Anil Srinivas, NITK, Suratkal, 23 July 2004.

G K Patra / V Anil Kumar
FTP Bounce Attack and Intrusion Detection System, Raghava K M, Saikiran K, Shrikanth S Naikar, Sudhindra S, Sri Revana Siddeshwara Institute of Technology, 21 May 2004

G K Patra / A Mandal
Study of Cryptanalytic Attacks on Neural Cryptography, Mihir Ranjan Dash, Annamalai University and Chetan Mishra, Utkal University, 17 May 2004.

P S Swathi
A Four Component Ecosystem Model for the Arabian Sea Test Bed, M S Hari, Birla Institute of Technology & Science, Pilani, 9 December 2004.

K Sangeeta / A Mandal
A GUI for Creating Geometry in Engineering and Scientific Problems, S Sudha, The American College, Madurai, 18 March 2005.

R P Thangavelu / V Anil Kumar
Analysis of Distributed Denial of Service Attacks, Harish T V, Manu Prasad, Vijay Bhaskar, B T L Institute of Technology, 21 May 2004.

A Simulation Study of the Impact of Congestion Related Packet Loses on Modern TCP, Shravan Kumar Jha, Computer Science Department, Tezpur University, 31 May 2004.

R P Thangavelu / A Mandal
Software Tool for Visualization of Cyclone Tracks 3.0, P Eswaran, Institute of Road & Transport Technology, Erode, 7 April 2004.

S Bhogle / R P Thangavelu
Web Based System for Making Online Appointment, Alok Kumar Suman, Computer Science Department, Tezpur University, 31 May 2004.

Workshop on Largescale Ocean Modelling in Southern Asia, at C-MMACS, Co-ordinator: P S Swathi, October 4 - 14 2004

The aim of the workshop was to acquaint Asian Researchers to the fundamentals of ocean climate models, with focus on a state-of-the-art model. The experts (*V Balaji*, Scientist, GFDL, Princeton, New Jersy, USA, *M J Harrison*, GFDL, Princeton Forrestal Campus, Princeton, USA, *S M Griffies*, Head, Ocean Group, GFDL, Princeton Forrestal Campus, Princeton, USA, *Maria Benito Herrero*, SGI, USA) participated in the workshop aimed to pedagogically explain via a series of lectures, certain fundamentals of modern physics, numeric and general model structure. In addition they assisted Indian researchers in porting the code on to our computer platforms and provided consultation in setting up various model configurations and analysis methods. The workshop provided impetus for integrated modelling activities in several areas, and also built up the resource potential to fully exploit the power of OGCMs.

C-MMACS Training Programme on GPS Theory, Data Collection, Processing and Analysis, Co-ordinator: Sridevi Jade, 26 October - 6 November 2004.

Global Positioning System (GPS) is a satellite Navigation system illuminated by a constellation of 24 GPS satellites. The main objective of the course was to impart theoretical knowledge and practical capability in GPS data handling, processing and analysis. Though the course is mainly focused on GPS hazard assessment, it also aimed at giving a wide range of knowledge on GPS and its applications. It included extensive training on GPS data analysis and processing using state-of-the-art data processing software (GAMIT/GLOBK).

C-MMACS Course on Mathematical Modelling and Computer Simulation, Co-ordinator : M K Sharada, 14-18 March 2005.

The Training Programme is oriented for Scientists, Engineers and Students working in or interested in studying mathematical modelling and computer simulation and its application to Physical, Chemical or Biological sciences, etc. Minimum operational knowledge on Unix operating system was required. The main objective of the course is to impart theoretical knowledge in Principles of Mathematical Modelling, Application of Mathematical Modelling techniques in physical, chemical & biological systems, Numerical Techniques for Solving Differential Equations, Software Tools for Solution of Equations and Analysis of the Model Results.

DST Sponsored Brainstorming Workshop on Tectonic Geomorphology, IIT Kanpur, May 5, 2004.

Malay Mukul
Neotectonics and Tectonic Geomorphology
Global Positioning System (GPS) Geodesy and its Application to Lithospheric Deformation

Workshop on Mathematical Modelling and Computer Simulation, MES College, bangalore, Co-ordinator : M K Sharada, September 2004.

Gangan Prathap, Mathematical Modelling, Inaugural Lecture.

K S Yajnik, Growth and Decay through the Eyes of a Modeller.

M K Sharada, Effect of Non-linear Mortality &Self-grazing of Zooplankton on the Dynamics of a simple Marine Ecosystem Model.

P S Swathi, Applications in Oceanography.

Sridevi Jade, GPS Overview.

N K Indira, Applied Statistical Techniques for Real Data Analysis.

Malay Mukul, Modelling Natural Systems - Process and Response Models.

K Sangeeta, Overview of the Finite Element Method.

Intensive course cum workshop on large Scale Ocean Modelling, C-MMACS, Bangalore, 4-14 October 2004.

R P Thangavelu, Using PBSPro for workload management.

Training Programme on GPS Theory, Data Collection, Processing and Analysis, C-MMACS, 26 October - 6 November 2004.

V K Gaur
GPS Theory.
GPS Reference Frames.
Location based services.
Modelling Strategies - Forward and Inverse Modelling.

Sridevi Jade
GPS Geodesy .
Positioning using GPS Observables.
Sources of GPS Errors.
Handling GPS Errors.
GPS Data Processing Theory.
Introduction to GAMIT/GLOBK Theory.
GAMIT Theory.
GPS for Atmospheric Modelling
GPS for Atmospheric Modelling.
Water Vapour Estimation from GPS Data.
Global Kalman Filter Theory.
GPS Geodesy for Crustal Deformation Studies.
GLOBK Contd.

Malay Mukul
GPS Data Collection.
Pre-Processing GPS Data.
GPS for Ionospheric Studies.
Sources of Surface deformation - What do your results mean?

G K Patra
Introduction to GAMIT/GLOBK & UNIX Operating System.
Installation of GAMIT/GLOBK.

UGC sponsored refresher course in Mathematics, Gandhigram Rural Institute, Dindigul, 15-27 November 2004.

R P Thangavelu
An introduction to High Performance Computing.
High Performance Computing Applications: An Overview.

Course on Mathematical Modelling and Computer Simulation, C-MMACS, 14-18 March 2005

K S Yajnik, Introduction to Model.

V K Gaur, Introduction to Inverse Theory.

Gangan Prathap, Measurements, Mathematics & Models.

N K Indira, Statistical Methods.

C Kalyani Devsena, Introduction to Software Packages for Visualisation.

T R Krishna Mohan, Non-linear Dynamics.

T R Ramamohan, Qualitative Theory of Solutions of Dynamical Systems.

R P Thangavelu, Scientific Computing at C-MMACS: An overview.

K Sangeeta, Introduction to Matlab.

M K Sharada, Mathametical Modelling of Marine Ecosystem: An Overview.

P S Swathi, Numerical Analysis.