✧ Overview of the Course

Earth has limited water resources, which are varied spatially and temporally. In addition to that, stress on water resources has been increasing day by day. The stress on water resources will further increase due to climate change, which is likely to alter the components of hydrological cycle such as rainfall, evaporation, runoff, and so on. Semi-arid regions of the developing world, which are already facing major water resource management and food security problems, are likely to be the most severely impacted. This emphasizes the need to assess and take consideration to climate change impacts in the adaptive management of water resources in semi-arid regions.

Several numerical methods are available to understand the climate systems and their change. Regional Climate Models are very much useful for analysis of climate extremes, which are necessary for assessment of risk and vulnerability to hydro- climatological hazards such as flood and drought conditions in the specified areas. Weather Resource Forecast (WRF) model is widely used for climate prediction purposes. Different aspects of climate prediction and modelling, down-scaling, and impact analysis are part of the course syllabus for water resources engineering, environmental engineering and remote sensing and GIS graduate students of Civil Department of NIT Warangal. Many students are already using climate model output in their research work for modeling the various aspects of the water resources, so this course is relevant for engineering students.

The main contents of the proposed course are: climate systems, numerical methods, statistical methods, regional climate models, and dynamical down-scaling using the Weather Research and Forecasting (WRF) model. The course will also include hands-on activities using WRF-ARW model.

✧ Course Objectives:

The primary objectives of the course are to:

- Expose participants to the climate systems and numerical methods to model those systems
- Enhance the skills of participants in using the WRF model
- Build in confidence and capability amongst the participants in the application of Regional climate models and the R software
- Provide exposure to practical problems and their solutions, through case studies and live projects in the field of climate prediction

✧ International Faculty:

Dr. Michel D. S. Mesquita is the Head of Research and Development at Future Solutions in Norway. He is also a Research Scientist at Uni Research Climate and the Bjerknes Centre for Climate Research. He has a master's degree in geophysics and climate science from the University of Bergen (Norway), and in 2009, he earned a PhD degree in Atmospheric Sciences from the University of Alaska Fairbanks (USA). He has 48 publications on large- scale dynamics, including sea-ice-atmosphere interaction, storm tracks, teleconnectivity, downscaling, climate modeling, hydrology, science education, and climate ecology. His work also includes a Nature Climate change paper about the role of uncertainty in regional and global climate models. Michel worked as the Principal Investigator of the C-ICE project, funded by the Norwegian Research Council, which focuses on understanding how melting of Antarctic sea ice could affect the Indian summer monsoon. He is currently the Principal Investigator of the PREPARE project, funded by the Norwegian Ministry of Foreign Affairs and the Norwegian Embassy in India, which focuses on creating a climate extreme atlas for engineers and decision makers. Michel has also been a Visiting Faculty at TERI University in India and has previously worked as a Group Leader of the Regional Climate Modeling group at Uni Research, managing 20 research scientists, and a co-Leader of the RG5 modelling group at the Bjerknes Centre. He has also developed the software: e-WRF, "WRF for educational purposes," and he is the founder of the m2lab.org science education programme, which has educated more than 600 researchers worldwide (on WRF, R, and Bayesian statistics).

✧ Who can participate?

Field engineers or research scientists working in the fields of climate science, climate change impact studies

Students or faculty from academic institution interested in learning how to work/carrying out research in climate prediction and climate change impact studies.

✧ Evaluation and Grading

Students registered with grading will be evaluated for two credits based on continuous evaluation in tutorials, mid-term and end of course examinations. Grade will be awarded based on the performance in the evaluation.

✧ How toRegister?

Stage-1: Web Portal Registration:

Visit 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 the user with life time registration to enroll in any number of GIAN courses offered.

Stage-2: Course Registration:

Login to the GIAN portal with the user ID and Password already created in Stage 1. Click on Course Registration option at the top of Registration Form. Select the Course titled "Numerical Climate Prediction" from the list and click on save option. Confirm your registration by clicking on Confirm Course.

✧ Registration Fee:

Faculty & Scientists	**Rs. 4000/-**
Participants from Industry/ Consultancy Firms	**Rs. 8000/-**
Students & Scholars	**Rs. 2000/-**
Participants from outside India **Students** **Faculty**	 **US $100** **US $200**

The Registration fee includes instructional material, laboratory use and session teas. The outstation participants will be provided with boarding and lodging on additional payment of Rs. 4,000/- in Student Hostel on sharing basis.

✧ 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.

Outstation participants requiring accommodation and boarding facilities have to pay Rs. 4,000/- in addition to the course fee.

Account Name	**GIAN NITW**
Account No.	**62447453600**
Bank	**State Bank of India**
Branch	**REC Warangal (NIT Campus)**
Branch Code	**20149**
IFSC	**SBIN0020149**
MICR Code	**506004011**
SWIFT Code	**SBININBB018**

Candidates registering early will be given preference in the short listing process. For any queries regarding registration of the course, please contact the Course Coordinator.

Dr. K. Venkata Reddy, Coordinator
Associate Professor,
Department of Civil Engineering,
National Institute of Technology Warangal
Warangal 506004, Telangana State
Tel: +91 870 2462142 (O), +91 8332969245 (Mob)
Email:kvreddy229@gmail.com,kvreddy@nitw.ac.in

Dr. M. Shashi, Coordinator
Assistant Professor
Department of Civil Engineering,
National Institute of Technology Warangal
Warangal 506004, Telangana State
Tel: +91 870 2462149 (O), +91 8332969257 (Mob)
Email: mshashi@nitw.ac.in

✧ About GIANCourse:

Ministry of Human Resource Development (MHRD), Government of India (GoI) has launched an innovative program titled "Global Initiative of Academic Networks (GIAN)" in higher Education, in order to garner the best international experience. As 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 the Institute and Warangal:

National Institute of Technology, Warangal (NITW) formerly known as RECW is the first among seventeen RECs set up in 1959. Over the years, the Institute has established itself as a premier Institution in imparting technical education of a very high standard, leading to B.Tech, M.Tech and Ph.D. programmes in various specializations of Science and Engineering streams. Warangal is known for its rich historical and cultural heritage. It is situated at a distance of 140 km from Hyderabad. Warangal is well connected by road and rail. National Institute of Technology, Warangal campus is 3 km away from Kazipet railway station and 12 km away from Warangal railway station. The nearest airport is Hyderabad.

✧ About the Department

The Department of Civil Engineering offers B.Tech programme in Civil Engineering, 7 M.Tech programmes including Transportation Engineering and PhD programme. The Department is a recognized QIP centre since 1978. The Department has well established and well equipped laboratories. The Department has experienced faculty engaged in teaching, research, capacity building activities and industry extension services. Faculty members represent several policy making and professional bodies. The Department has liaison with reputed industries and R&D organizations.

The department offers M. Tech RS&GIS program with intake of 25 students. Since its inception, the RS&GIS section is actively engaged in Research and Consultancy Projects like, Climate change impact studies, Watershed modeling, Rural and Urban system development, Mapping of heritage sites, WebGIS, Asset mapping etc.

GIAN
GLOBAL INITIATIVE OF ACADEMIC NETWORKS

MHRD
Govt. of India

2 Week GIAN Course on

NUMERICAL CLIMATE PREDICTION

18th – 29th June 2018

Call for Registration and Participation

International Faculty

Dr. Michel D. S. Mesquita
Head, Research and Development
Future Solutions, Norway
Research Scientist, Uni Research Climate
Norway

Course Coordinators

Dr. K. Venkata Reddy
Dr. M. Shashi

Department of Civil Engineering
National Institute of Technology Warangal
Warangal 506 004, Telangana, India