TYPE OF COURSE : Rerun | Elective | PG/UG
COURSE DURATION : 4 weeks (26 Jul'21 - 20 Aug'21)
EXAM DATE : 26 Sep 2021

INTENDED AUDIENCE: Under and post-graduate engineering and post graduate science students/Faculty

PRE-REQUISITES: Current students of engineering, post graduate science students and PhD students should have basic knowledge of GIS and Remote Sensing

INDUSTRY SUPPORT: Geoinformatics companies, e.g NIIT, ESRI India, Leica Geoinformatics, MapmyIndia, ISRO, etc.

COURSE OUTLINE:
The proposed course provides basic understanding about digital elevation models (DEMs) and their applications in Civil Engineering and Earth Sciences. Further, various DEMs, their source, generation techniques, derivatives, errors and limitations would be discussed extensively. Surface Hydrologic Modelling using DEMs, Modelling derivatives and their applications would also be discussed.

ABOUT INSTRUCTOR:
Dr. Arun K. Saraf obtained PhD. (Remote Sensing) from University of Dundee, United Kingdom. Presently he is working as Professor in the Department of Earth Sciences, Indian Institute of Technology, Roorkee, and teaches courses on Geographic Information Systems (GIS), Advanced GIS, Remote Sensing, Geomorphology etc. to under- and post-graduate students. He was also Head of Department of Earth Sciences between Jan. 2012 & Feb. 2015. He was first in the country to introduce GIS course to post graduate students in the year 1990. In 1986, he was awarded “National Fellowship to Study Abroad” by Govt. of India for his doctoral degree. Further, in 1993 he was awarded Indo USST Fellowship and worked in Goddard Space Flight Centre, NASA, USA for Post Doctoral Research. He has been also awarded National Remote Sensing Award-2001 by Indian Society of Remote Sensing.

COURSE PLAN:

**Week 1**: Concept of digital elevation model (DEM) and it's implementation. Various techniques to generate digital elevation models-Part 1, Part 2 & 3, Importance of spatial resolution with DEMs

**Week 2**: Accessing the quality of DEM, Integration of DEMs with satellite data, Common derivatives and Crashing network

**Week 3**: DEMs derivatives - 1, DEMs derivatives - 2, DEMs derivatives - 3, DEMs derivatives - 4, DEM based Surface Hydrologic Modelling - 1

**Week 4**: DEMs based Surface Hydrologic Modelling (contd.) DEMs and dam simulation and its application in groundwater hydrology Applications of DEMs in solar and wind energy potential estimations Applications of DEMs in Viewshed and Flood Hazard Mapping DEMs Sources Limitations and future of Digital Elevation Models