

Spatial Modelling and Analysis of Environmental Systems using open source tools

Overview

Natural resources and Environmental Systems exhibit a high level of spatial and temporal variability depending on the scale at which a process or phenomenon is considered. Hence, we often collect Geo-spatial data using different methods of ground survey, ground based sensors and satellite based sensors at varying levels of spatial resolution. For understanding the process, we often have to integrate geo-spatial data from different platforms and resolutions, called geospatial modelling.

This course will provide Theory and practice of applying geo-spatial data for resource inventory and analysis, biophysical process modeling, and land surveys. Emphasizes use and evaluation of spatial analytical methods applied to agronomic and environmental systems and processes. Laboratory section is used to process, analyze, and visualize geo-spatial data of interest to the student, ending in a comprehensive student project.

This course is aimed at Graduate and senior undergraduate students who want to advance their understanding of geographic information science and technology, including introduction to the R environment for (spatial) statistical computing and visualization, and the QGIS open-source GIS. This will be especially useful for students starting a graduate research project that uses spatial information in natural resource management, hydrology, ecology, and soil science. The following are the expected learning outcome from the course:

- Student is able to analyze complex spatial problems with appropriate theory and tools
- Enhance student skills in processing, analyzing, and visualizing spatial data; with emphasis on open-source computer programs and publically-available data
- Provide opportunities to analyze students' own geospatial data under instructor supervision

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| Dates for the Course | 11th June 2018 to 23rd June 2018 |
| Host Institute | IIT Madras |
| No. of Credits | 2 |
| Maximum No. of Participants | 30 |
| You Should Attend If... | <ul style="list-style-type: none">▪ You work in the areas of GIS, remote sensing and natural resources systems▪ you are a student or faculty from academic institution interested in learning the concepts of geoinformatics |
| Course Registration Fees | <p>The participation fees for taking the course is as follows: Student Participants: Rs.2,000 Faculty Participants: Rs.5,000 Government Research Organization Participants: Rs.5,000 Industry Participants: Rs.10,000</p> <p>The above fee is towards participation in the course, the course material, computer use for tutorials and assignments, and laboratory equipment usage charges. <u>Accommodation is not a part of registration fee.</u></p> <p>Mode of payment: Online transfer: (Preferred) Account Name: CCE IIT Madras Acc. No.: 3640111110 Branch: SBI, IIT Madras Branch, Chennai , IFSC Code: SBIN0001055 OR Demand draft in favour of "Registrar, IIT Madras" payable at Chennai. The demand draft is to be sent to the Course Coordinator at the address given below.</p> |
| Accommodation | <p>The participants may be provided with hostel accommodation, depending on the availability, on payment basis. Accommodation is not a part of registration fee. Request for hostel accommodation may be submitted through the link: http://hosteldine.iitm.ac.in/iitmhostel</p> |

Course Faculty



Dr D (David) G Rossiter is an Adjunct Associate Professor at Cornell, where he teaches a one-semester graduate course in spatial modelling for agronomic, natural resources and environmental issues. David is a well-regarded research leader in the field of Geo-spatial modelling analysis, specifically to soil and environmental systems, and has more than 60 peer-reviewed publications. David retired from University of Twente, Faculty ITC, Netherlands, in August 2014 after 17 years service and was invited to join ISRIC as an in-house strategic consultant. He also works at ISRIC-World Soil Information in Wageningen (NL) as guest researcher on digital soil mapping, and for the past six years he has done collaborative research and teaching during the fall months in Nanjing (China) either at the Soil Science Institute, Chinese Academy of Sciences, and/or at Nanjing Normal University's Graduate Faculty.



Dr. Balaji Narasimhan, is an Associate Professor in the Department of Civil Engineering, IIT Madras. He has over 12 years of experience in the use of GIS and remote sensing tools for hydrologic model development. He was also a Member of "Think Tank" for development of Water Resources Information System (WRIS), Ministry of Water Resources, Govt. of India. His fields of interests include, hydrologic modelling of floods, Irrigation water management, and Hydroinformatics.

Course Coordinator

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For detailed syllabus please look at:
URL: http://www.civil.iitm.ac.in/balaji_edu