



PHOTO GEOLOGY IN TERRAIN EVALUATION (PART – 2)

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IIT Kanpur

TYPE OF COURSE : Rerun | Elective | UG/PG

COURSE DURATION : 8 weeks (20 Jul'20 - 11 Sep'20)

EXAM DATE : 27 Sep 2020

INTENDED AUDIENCE : B.E/B.Tech, B.Sc

PRE-REQUISITES : Basic knowledge of Earth Science or Physical Geography is recommended.

COURSE OUTLINE :

The course introduces the student to a globally applied tool known as Photogeology or Geo-photography; a technique first structured by the United States in late 19th century and later incorporated in United State Geological Survey. The weekly modules will demonstrate the concept and principles of Photogeology and its applications in real life. Students will learn reading the aerial and satellite photographs under the stereoscope and to generate a 3D view of the terrain. Using this tool they will be able to extract all types of information of the earth surface for various engineering and scientific purpose and projects. Students will have wonderful experience of aerial view of the earth surface and will extract information of landforms, sub-surface structures, and rock types etc. to perform terrain evaluation.

ABOUT INSTRUCTOR :

Prof. Javed Malik earned his Ph.D in 1998 from M.S. University Baroda, Vadodara, Gujarat (Geology), and did Post-Doctorate (Japan Society for Promotion of Science) from (1999-2001) Hiroshima University, JAPAN.

* He Joined IIT Kanpur in 2001.

* Areas of Specialization are : Active Tectonics, Paleoseismology and Paleo-tsunami

COURSE PLAN :

Week 01 : Introduction to Physical and Structural geology, Introduction to Physical and Structural geology - Related Exercise on Identification of structures, Introduction to Lithology – Sedimentary Rocks.

Week 02 : Introduction to Lithology – Sedimentary Rocks, Metamorphic Rocks, Igneous Rocks.

Week 03 : Fluvial Geomorphology – Exercise on Landform Mapping, Coastal and Aeolian Landforms, Active Tectonics and Geomorphology.

Week 04 : Active Tectonics and Geomorphology, Morphometric Analysis – Exercise on performing Morphometric Analysis, Photogeology in Lithological Mapping.

Week 05 : Introduction to Photogeology and its Applications, Aerial Photography/ Satellite Imaging and their Applications, Aerial/ Satellite Photographs and Exercise on handling photographs, Principles of Stereoscopia and Exercise on creating 3D image using Stereoscope

Week 06 : Photogrammetry – Exercise on Elements of Photo Interpretation and Line of Flight, Photogrammetry – Exercise on Photographic Measurements and Photo Scale, Role of Vertical Exaggeration in Photogrammetry - Related Lab Exercise, Role of Relief Displacement in Photogrammetry - Related Lab Exercise, Concept of Stereoscopic Parallax - Related Lab Exercise

Week 07 : Introduction to Lithology – Sedimentary Rocks, Introduction to Lithology – Metamorphic Rocks, Introduction to Lithology – Igneous Rocks –, Related Exercise, Introduction to Physical and Structural geology, Introduction to Physical and Structural geology

Week 08 : Introduction to Physical and Structural geology - Related Exercise on Identification of structures, Fluvial Geomorphology – Exercise on Landform Mapping, Fluvial Geomorphology – Exercise on Terrace Mapping, Morphometric Analysis – Exercise on performing Morphometric Analysis, Generation of Anaglyph using Stereo-pair in ENVI software – Lab Exercise