

AG-308

Remote Sensing & GIS

Credit Hours 2+1

Prerequisite: F.Sc or Equivalent

Learning Outcomes

The students will be able to learn

- principles, concepts and applications of Geographic Information Systems (GIS) and Remote Sensing (RS):
- a decision support tool for planners
- managers of spatial information and to obtain information on the earth from deci-meter level to km level locally and globally.

Course Contents

An overview including background, history, need of remote sensing. Recent developments in remote sensing. Electromagnetic spectrum, Source and sensor. Physical terms and units, Radiometric terms and units. Thermal properties. Interaction of different wave-lengths with the earth's surface and vegetation.

Aerial Photographs: Films and cameras. Scale and corrections, displacement. Distance, area, height and slope measurements. Techniques of Photogeological mapping. Relation to topographic maps. Photo-interpretation drainage, vegetation, soils and rocks (with their structural attitude).

Aerial and satellite imagery: multi-spectral scanners. Sideways-looking airborne radar. Introduction to Digital Image Processing and GIS. Analysis of digital and raster data. Introduction to Earth Resource Satellites. Classification of landforms, land-cover and land use. Statics in field of geology and geomorphology.

Lab.

Terrain analysis using topographic maps, aerial photographs and satellite imageries. Techniques of photogeological mapping. Digital analysis of satellite data.

TEACHING – LEARNING STRATEGIES

- Lecture based examination
- Presentation/seminars
- Class discussion
- Quizzes

ASSIGNMENTS – TYPE AND NUMBER WITH CALENDAR

It is continuous assessment. The weightage of Assignments will be 25% before and after midterm assessment. It includes:

- classroom participation,
- attendance, assignments and presentation,
- homework
- attitude and behavior,
- hands-on-activities,
- short tests, quizzes etc.

ASSESSMENT AND EXAMINATIONS

Sr. No.	Elements	Weightage	Details
1.	Mid Term Assessment	35%	It takes place at the mid-point of the semester
2.	Formative Assessment	25%	It is continuous assessment. It includes: classroom participation, attendance, assignments and presentation, homework, attitude and behavior, hands-on-activities, short tests, quizzes etc.
3.	Final Assessment	40%	It takes place at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.

Books Recommended

1. Geomorphology: Earth Surface Processes and form by Aharma, V.K., 1986, McGraw Hill.
2. Geomorphology by charley, R.J., 1984, Methuen.
3. Image Interpretation in Geology by Drury, S.A., 1986, Allen & Unwin.
4. Remote Sensing and Image Interpretation by Lilles, T.M. and Kiefer, R.W., 1987, John Wiley & Sons.
5. Monitoring the Earth by Vita-Finzi, C., 2003 Oxford University Press.
6. Fundamentals of Geographic Information Systems by Demers, M.N., 2002, John Wiley & Sons.
7. Remote Sensing and Image Interpretation by Lillesand, T.M., et.al., 2003.
8. Concepts and Techniques of Geographic information system by Yeung, Lo.C.P. & Lal, A.K., 2003, Prentice Hall.
9. Aerial Photography and Image Interpretation, Kiser, J.D., Paine, D.P., 2003, John Wiley & Sons.
10. Remote Sensing: Principles & Applications by Panda, B.C., 2005, Viva Books Pvt. Ltd.