COMPUTER PROCESSING OF SATELLITE DATA

Course Name	Course ID	Prerequisites
COMPUTER PROCESSING OF SATELLITE DATA	*ESR 423*	*ESR 301/ESR 421*

Course Description

Remote sensing systems characteristic and orbits. Processing of satellite images in geological applications. Pre-processing treatments comparison and rectification of digital scenes, computer classification of satellites digital data and construction of thematic maps.

Course Objectives

1. Understanding of the reflectance properties of various Earth surface materials.
2. Examine how digital remote multi-spectral scanner data are collected and processed.
3. Become familiar with the basic, elementary mathematical and statistical concepts used in computer-assisted digital remote sensing data analysis.
4. Classification and geometric and radiometric transformations of satellite remote sensing data.
5. Gain experience in the use of a state-of-the-art computer hardware and software system for digital image processing.
6. Develop an organized, logical approach to computer-assisted processing of Earth resources satellite data for effective geological studies.

General References for the Course: (Books/Journals…*etc*.)

Students in this course can read from:
1. *Image Interpretation in Geology,* by Drury, S.A., 1987. London: Allen & Unwin.
2. *Interpretation of Aerial Photographs, 4th Edition,* by Avery, T.E., and Berlin,

G.L., 1985. Minneapolis, USA: Burgess Publishing Co.
3. *Introductory Digital Image Processing - A Remote Sensing Perspective,* by Jensen, J.R., 1986. Prentice-Hall, Englewood Cliffs, New Jersey, U.S.A.
4. *Remote Sensing and Image Interpretation,* by Lillesand, T.M., and Kiefer, R.W., 1994. New York: John Wiley and Sons.
5. *Remote Sensing: Principles and Interpretation, 3rd Edition,* by Sabins, F.F., 1997. W.H. Freeman and Co., New York.
6. The course involves a computer usage. ERDAS software is needed during the course.

List of URLs for this Course

- www.icess.ucsb.edu/esrg/Publications/AGU_paper.pdf
- www.osdpd.noaa.gov/COB/COB.html
- www.agu.org/eos_elec/00289e.html
- www.agu.org/eos_elec/00289e.html

Course Outcome

The student will be able to process the satellite images in geological applications. He will also learn the following:

1. Student can collect and process digital remote sensing data.
2. Student can understand computer assisted remote sensing data analysis.
3. Student can evaluate utility MS data in geological applications.
4. Student can compare and contrast satellite remote sensing data of different resolutions (*i.e.*, Landsat-TM *vs.* MSS).