**SHYAMA PRASAD MUKHERJI COLLEGE FOR WOMEN**

**Department of Geography**

**TEACHING PLAN JULY 2022-NOVEMBER 2022**

**COURSE AND YEAR: B.A (HONOURS) III YEAR**

**SEMESTER: V**

**TAUGHT INDIVIDUALLY OR SHARED: INDIVIDUALLY**

**PAPAER: REMOTE SENSING AND GIS (Practical)**

**FACULTY: MD. ARIF HUSAIN**

**NO. OF CLASSES (PER WEEK): 06**

**Course Objectives:**

* The course aim is to give basic technical knowledge and practical experience in digital
* remote sensing.
* Knowledge and practical experience in handling satellite images focusing on hands-on
* experience of image pre-processing, enhancement and classification;
* Better understand the techniques for the study of land use land cover and urban study.

**Learning Outcome:**

* This is a practical, hands-on course; when you have completed it, you will be able to:
* Explain principles of remote sensing, different satellite systems and sensors;
* Perform image pre-processing, enhancement and classification and interpretation of
* satellite images;
* Apply Image preprocessing for land use land cover and urban studies;

**Teaching Plan**

**Unit: 1**

1. Remote Sensing and GIS (2-3 Classes, 3rd week of July)
2. Definition and Components of RS/GIS (2-3 Classes, 3rd week of July)
3. Development of RS/GIS (2-3 Classes, 4th week of July)
4. Platforms and Types of RS/GIS (2-3 Classes, 4th week of July)

**Unit: 2**

1. Aerial Photography and Satellite Remote Sensing (5-6 classes, 1st week of August)
2. Types and Geometry of Aerial Photograph (5-6 classes, 2nd week of August)
3. Principles of Remote Sensing (2-3 classes, 3rd week of September)
4. EMR Interaction with Atmosphere and Earth Surface (2-3 classes, 3rd week of August)
5. Satellites (Landsat and IRS) and Sensors (5-6 classes, 4th week of August)

**Unit: 3**

1. GIS Data Structures (2-3 classes, 1st week of September)
2. Spatial and Non-spatial (2-3 classes, 1st week of September)
3. Raster and Vector Data Structure (2-3 classes, 2nd week of September)

**Unit: 4**

1. Image Processing-Digital and Manual (2-3 classes,2nd week of September)
2. Data Analysis: Pre-processing-Radiometric and Geometric Correction (5-6 classes, 3rd week of September)
3. Enhancement – Filtering (2-3 classes, 4th week of Septembe)
4. Classification - Supervised and Un-supervised (5-6 classes, 4th week of Septembe)
5. Geo-Referencing; Editing and Output; Overlays (5-6 classes, 1st week of October)

**Unit: 5**

1. Interpretation and Application of Remote Sensing and GIS (5-6 classes, 2nd week of October)
2. Land use/ Land Cover (5-6 classes, 3rd week of October)
3. Urban Sprawl Analysis (5-6 classes, 4th week of October)
4. Forests Monitoring (5-6 classes, 1st and 2nd week of November)

**Methodology of Teaching**: Interactive Lectures, Thorough discussion and illustrations.

**Practical Record**

A project file consisting of 5 Exercises on using any GIS Software on above mentioned themes in the syllabus.

**Assessment**

**Criteria of Assessment-**

1. Practical Record

2. Assignment- Question to be answered based on the units taught

3. Test- 2 Tests minimum. If need be one more will be taken.

**Tentative Dates of Assessment:**

2nd week of September (Assignment)

2nd Week of October 2022 (Test)

1st week of November 2022 (Test)

Semester Exams in November 2022

**Reading List**

1. Campbell J. B., 2007: *Introduction to Remote Sensing*, Guildford Press.

2. Jensen J. R., 2004: *Introductory Digital Image Processing: A Remote Sensing Perspective*, Prentice Hall.

3. Joseph, G. 2005: *Fundamentals of Remote Sensing*, United Press India.

4. Lillesand T. M., Kiefer R. W. and Chipman J. W., 2004: *Remote Sensing and Image Interpretation*, Wiley. (Wiley Student Edition).

5. Nag P. and Kudra, M., 1998: *Digital Remote Sensing*, Concept, New Delhi.

6. Rees W. G., 2001: *Physical Principles of Remote Sensing*, Cambridge University Press.

7. Singh R. B. and Murai S., 1998: *Space-informatics for Sustainable Development*, Oxford and IBH Pub.

8. Wolf P. R. and Dewitt B. A., 2000: *Elements of Photogrammetry: With Applications in GIS*, McGraw-Hill.

9. Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi

10. Chauniyal, D.D. (2010) Sudur Samvedan evam Bhogolik Suchana Pranali, Sharda Pustak Bhawan, Allahabad