**LESSON PLAN 2022-2023**

GEOGRAPHIC INFORMATION SYSTEM (PRACTICAL) SEMESTER III

(GEOGRAPHY HONS. 2nd YEAR) SEC PAPER

PAPER TAUGHT INDIVIDUALLY BY DR GARGI KAR MAJUMDAR

**Course Objectives:**

1. The course aim is to give basic understanding of concept of GIS, its definitions and components;

2. To gain working experience geographical data collection using GPS;

3. To do analysis and application of geographical data in land use, urban sprawl, and forest study.

**Program Outcome:**

This is a practical, hands-on course; when completed , students will be able to

1. Develop basic understanding of GIS software and GPS ;

2. Understand GIS Data Structures and GIS Data Analysis ;

3. Apply GIS for natural resource management, urban and land use land cover study;

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| **CHAPTER** | **NO. OF LECTURES** | **TEACHING METHOD** | **REFERENCE BOOK** | **ASSESSMENT** |
| **1.** **GIS : Definition and Component (Need and Application of GIS)** | 2 Week (26th Aug –14th Sep) | Interactive session supplemented with practical demonstration of usage of Q-GIS software | 1. Burroughs, P.A., and McDonnell, R.A. (2000) Principles of Geographical Information System-Spatial Information System and Geo-statistics. Oxford University Press  2. Heywood’s, I., Cornelius, S and Carver, S. (2006) An Introduction to Geographical Information system. Prentice Hall.  3. Nag.P. (2008) Introduction to GIS , concept India, New Delhi. | . **Practical Record**  A project file consisting of 4 Exercises on using Q- GIS Software on above mentioned themes in the syllabus.  1.Assignemnet submission from 1st unit on 11th Sep,2022  2. Theory Test on 4th week of September 2022.  3. Practical Test from unit 4 by 3rd week of Oct’2022  4. Practical File Submission (1st Week of December, 2022.  5. Semester end practical exam by 2nd week of Dec, 2022. |
| **2**. **Global Positioning System (GPS) –**  2.1 Introduction and Principles of GPS | 1.5 Week (15th Sep- 23rd Sep) | Interactive session supplemented with practical demonstration of use of GPS machine and related exercises. | 2. Burrough, P.A., and Mc Donnell, R.A. (2000) Principals of geographic information system – spatial information system and geo-statistics : oxford university press. |  |
| 2.2 Uses of GPS | 2 Weeks (26th Sept -7th October) | Interactive session and Illustrations. | 1. Nag.P. (2008) Introduction to GIS , concept India, New Delhi.  2. Singh, R.B. and Murai, S. (1998) space informatics for sustainable development, oxford and IBH, New Delhi. |  |
| **3. GIS Data Structures**:  3.1 Types (spatial and Non-spatial ) | 2 Weeks (10th October – 21st Oct) | Interactive Lectures, Thorough discussion and illustrations. | 1. Burroughs, P.A., and McDonnell, R.A. (2000) Principles of Geographical Information System-Spatial Information System and Geo-statistics. Oxford University Press |  |
| 3.2 Raster and Vector Data Structure. | 2days (28th October to 31st October). | Explanation of the content using PPT | Singh, R.B. and Murai, S. (1998) space informatics for sustainable development, oxford and IBH, New Delhi. |  |
| **4. GIS Data analysis : 4.1** Inputs; Geo Referencing ; Editing, output and query; overlay. | 1 week (1st November- 7th November) | Explanation of the concept with practical demonstration of geo-referencing and digitization | 1. Nag.P. (2008) Introduction to GIS , concept India, New Delhi.  2. Singh, R.B. and Murai, S. (1998) space informatics for sustainable development, oxford and IBH, New Delhi. |  |
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| **5. Applications of GIS**: 5.1 Land Use Mapping | 1.5 Weeks (26th Oct – 6th Nov) | Practical exercises. | Q-GIS online manual. |  |
| 5.2 Urban sprawl analysis and Forest Monitoring | 1.5 week (9th Nov-18th Nov). | Practical demonstration | 1. Bhatta, B. (2010) Analysis of urban growth and sprawl from remote sensing , springer, Berlin Heidelberg.  2. Burrough, P.A., and Mc Donnell, R.A. (2000) Principals of geographic information system – spatial information system and geo-statistics : oxford university press.  3. Chauniyal, D.D.(2010) Sudur samvedan evam bhogolik suchana pranali, sharda pustak Bhavan Allahabad. |  |

**E Reference:**

1. <https://docs.qgis.org/2.18/en/docs/gentle_gis_introduction/introducing_gis.html>

2. https://education.nationalgeographic.org/resource/geographic-information-system-gis

**3. https://www.garmin.com/en-IN/aboutgps/**