

Skill Enhancement Courses (3 Credits Each)

(refer to common pool)

| Semester | Course Code | Title of the Paper |
|-----------------|--------------------|---------------------------------|
| FIRST | SEC S1 | Thematic maps |
| THIRD | SEC S3 | Remote Sensing |
| FOURTH | SEC S4 | Geographical Information System |

Skill Enhancement Course (SEC)

Course Name: Thematic Maps

Paper Code:S1

Total Credits: 3

Course outcomes

- General understanding of map characteristics and map design.
- Understanding the techniques of preparing different thematic maps

Course content

1. Maps – Classification and Types; Principles of Map Design. Cartographic Overlays – Point, Line and Areal Data.
2. Diagrammatic Data Presentation – Line, Bar and Circle.
3. Thematic Mapping Techniques – Properties, Uses and Limitations; Areal Data -- Choropleth, Dot, Proportional Circles; Point Data – Isopleths.

Reading list

1. Singh, R. L, and Dutta, P. K., (2012): *Prayogatama Bhugol*, Central Book Depot, Allahabad
2. Cuff, J. D. and Mattson, M. T., (1982): *Thematic Maps: Their Design and Production*, Methuen Young Books
3. Dent, B. D., Torguson, J. S., and Holder, T. W., (2008): *Cartography: Thematic Map Design* (6th Edition), McGraw Hill Higher Education
4. Gupta, K. K. and Tyagi, V. C., (1992): *Working with Maps*, Survey of India, DST, New Delhi.
5. Kraak, M.J. and Ormeling, F., (2003): *Cartography: Visualization of Geo-Spatial Data*, Prentice-Hall.

Course Name: Remote Sensing
Paper Code: S3
Total Credits: 3

Course outcomes

- This paper intends to introduce students to the interface of Remote Sensing.
- It seeks to develop new insights among students on the relevance of geospatial studies within the field of geography.

Course outcomes

- The paper remains useful for students in developing skills in spatial data analysis if they wish to pursue a research programme.
- The students will be equipped with the application of remote sensing in various fields.

Course content

1. Remote Sensing: Definition, Development; Platforms and Types. Application of Remote Sensing in Forests Monitoring, Water Resources and Natural hazards.
2. Aerial Photography and Satellite Remote Sensing: Principles, Types and Geometry of Aerial Photograph; EMR Interaction with Atmosphere and Earth Surface; Satellites – geostationary and remote sensing (Landsat and IRS) and Sensors, Resolution (spatial and temporal).
3. Introduction to Image Processing and Data Analysis: Geo-Referencing; Editing and Output.

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).

Course Name: Geographical Information system
Paper Code: S4
Total Credits: 3

Course objectives

- This paper intends to introduce students to the interface of Geo-technological science and application.
- It seeks to develop new insights among students on the relevance of geospatial studies within the field of geography.

Course outcomes

- The paper remains useful for students in developing skills in spatial data analysis if they wish to pursue a research programme.
- The students will be equipped with the application of GIS in various fields.

Course content

1. GIS Data Structures: Types (spatial and Non-spatial), Raster and Vector Data Structure.
2. Functions in GIS- Overlay function, rubber sheeting, big data .
3. Interpretation and Application of GIS: Land use/ Land Cover, Urban Sprawl Analysis, crime study.

Reading list

1. Anji Reddy, M. (2008): Textbook of Remote Sensing and Geographic Information System, B.S. Publication, Hyderabad
2. Nag P. and Kudra, M., 1998: Digital Remote Sensing, Concept, New Delhi.
3. Rees W.G., 2001: Physical Principles of Remote Sensing, Cambridge University Press.
4. Singh R. B. and Murai S., 1998: Space-informatics for Sustainable Development, Oxford and IBH Pub.
5. Campbell, J. B., (2007): Introduction to Remote Sensing, Guildford Press.