SEMESETR-III

GEOG. 604: BASIC CARTOGRAPHY 3(2-1)

Course Objectives

This course is designed to provide the knowledge and skills for understanding the process of map making, and to acquaint students with new technology use in map making.

Learning Outcomes

The students will be able to apply the techniques and principles of map making and designing for map creation and be able to read and coordinate various sheets for making mosaic.

Course Outline

1. **Introduction**
   - Nature, scope and evolution.
2. **Scales**
   - Types
   - Construction.
3. **Map Projections**
   - Types of Map Projections
   - Choices, construction and utility.
4. **Map Making**
   - Necessity and types of maps
   - Essentials of map making.
5. **Methods of Map Making**
   - Isopleth Maps (Isothermal, isobaric)
   - Choro-pleth (density maps)
   - Dot maps
   - Diagrammatic maps
6. **Digital Cartography**
   - History, developments and advantages of computerize cartography
   - Advance techniques: CAD, GIS & GPS.
   - Technology and Cartography: Numerical and digital cartography
   - Traditional Cartography: Automated and numerical cartography
   - Coordinate Systems: Ellipsoid (Geodetic/Geographic) Coordinates, Cartesian Geocentric & Planar Cartographic Coordinates.
   - Data Capture: Data types – point, line, areal features; Raster data; sources, scanning, digitization, storage
   - Symbolization: Symbol and graphic variables, symbolization problems & colours.
   - Layout Design: Primary, secondary elements; Annotation; Lettering, color, font.
7. **Topographic Surveying**
   - Meaning and definition, types of surveying, characteristics, importance and application in various sectors.
   - Plane Table Survey: Equipments required for plane-table survey, Plane table survey-Radiation and Intersection method.
   - Prismatic Compass Survey: Systems of expressing bearing, Whole circle System, Quadrant system, Prismatic compass traverse methods, Open Traverse, Closed Traverse, Correction of bearing and closing of error by Bowditch method.
   - Chain-Tape Survey: Equipments and Methods for chain – tape Survey
   - Geodetic Surveying: Definition and methods, triangulation, benchmarks, spot heights and reduced levels, interpolation, contouring.

- Theodolite: The Instrument, types, advantages and disadvantages and application.
- Dumpy level: The instrument, types, advantages and disadvantages and application.
- Total Station: The instrument, types, advantages and disadvantages and applications, various components, methods of surveying and supported GIS software.
- Global Positioning System: GPS, Components, Application of GPS and Data collection, Prepare map using Surfer Software.

Field Visit

Visit to Survey of Pakistan, Quetta, to observe the process of map making.

Lab. Work

Construction of scales, projections, and understanding scale relationship with maps area, distance calculation of area on the map; symbolization process; development of maps; digital cartography, isopleth, choro-pleth and diagrammatic maps.

***Note*:** The students are required to record the exercises in practical notebook duly signed.

Recommended Books

1. Grampton, J. W. (2010) “Mapping”, John Wiley & Sons, New York.
2. Robinson, A. et.al. (2002) “Elements of Cartography”, John Wiley, New York.
3. Lawrence (2001) "Cartographic Methods", Methuen London.
4. R.L. Singh (1998) "Elements of Practical Geography", Kalyani Publ. Delhi.
5. Khan M.Z. (1998) “Text Book of Practical Geography”, concept publishing co., New Delhi.
6. R.L. & Singh R.P. (1993) “Elements of Practical Geography”, Kalyani Publisher, New Dheli.
7. Raisz (1992), "Principles of Cartography", McGraw Hill.
8. Deshpande, G.B.(1991) “Surveying”, Everest publishing house, Pune, India.
9. Carey, H. Helen. (1983) “How to Use Maps and Globes”, Franklin Watts, UK, York.