

# **The Global Open University Nagaland ,India**

of Health, Medical and Technological Sciences, GANGTOK

M.Sc 1<sup>st</sup> year syllabus

## **FUNDAMENTALS OF COMPUTERS**

*MASTER OF SCIENCE*

**GEO-INFORMATICS**

**PAPER - I**

History of computers, technical evaluation of computers, computer architecture, data representation, basic architecture, computer software concepts, major types of softwares, software generations, application software for computers, database management system, data communications, communication channels, internet basics, overview.

## **ELEMENTS OF PHYSICAL GEOGRAPHY**

*MASTER OF SCIENCE*

**GEO-INFORMATICS**

**PAPER - II**

Nature of physical geography, origin of the earth, age of the earth, structure of the earth's interior, continents and ocean basins, theory of isostasy, glacial and periglacial landforms, desert and tropical landforms, coastal features, environmental controls, dispersal and adaptation, major natural ecosystems, physical geography and man, modification of the ecosystems.

## **GEOGRAPHICAL INFORMATION SYSTEMS**

*MASTER OF SCIENCE*

**GEO-INFORMATICS**

**PAPER - III**

Introduction to GIS, defining GIS, an overview of GIS industry and GIS software, why implement A GIS?, GIS data sources collection and entry, GIS data formats and standards, types of GIS analysis, the economics of GIS base map accuracy, GIS data quality, planning A GIS, implementing A GIS, selecting A GIS, four leading GIS vendor's products in review, key to successful GIS implementation, a case study.

## **PRINCIPLES OF REMOTE SENSING**

*MASTER OF SCIENCE*

**GEO-INFORMATICS**

**PAPER - IV**

Introduction to remote sensing, remote sensing data acquisition alternatives, analog image digitization, image processing systems, digital image processing, initial statistics extractions, multivariate image statistics, initial display alternatives and scientific visualization, scientific visualization, remote sensing data, microwave remote sensing, the radar principle, interpreting SAR images.

## **SPATIAL DATABASE DESIGN & MANAGEMENT**

*MASTER OF SCIENCE*

**GEO-INFORMATICS**

**PAPER - V**

Object modelling and geodatabases, modeling objects with GIS, how maps inform, the utility of maps, smart features, the qualities of features, managing work flow with versions, using versions, geodatabase design guide, model the user's view, define entities and relationships, identify representation of entities, match to GIS software data model, organize into geographic datasets.

## **MAP DIGITIZATION USING AutoCAD**

*MASTER OF SCIENCE*

**GEO-INFORMATICS**

**PAPER - VI**

Introduction to AutoCAD, advantages of cad, features of AutoCAD, frequently asked questions, parts of the computer, dos, function of a computer, AutoCAD commands, point entry format, menu structure and screen of AutoCAD, starting, saving the drawings, enquiry commands, display commands, files, blocks, concept, layers concept, system variables, industry drawings, map digitization.

## **MODERN CARTOGRAPHY TECHNIQUES**

*MASTER OF SCIENCE*

**GEO-INFORMATICS**

**PAPER - VII**

Modern cartography techniques, mapping the use and misuse of lands, cartology - a resource to relief, computer application in 3-D perspective cartography, cartographic data, derivatives, thematic overlays and applications, digital cartography or GIS for resource management and planning, digital cartography specifications for forest surveys, cartography by men versus cartography by computers, digital cartography : perspective of the geoscientific community, image understanding techniques, for onboard digital cartography, use of photogrammetry for creating a cartography database, application of digital cartography for development planning process, digitization process, cartography of forest type thematic maps, modern cartography and geographic information.

**M.Sc.2<sup>nd</sup> year syllabus**

## **MODELLING AND VISUALIZATION OF SPATIAL DATA**

*MASTER OF SCIENCE*

**GEO-INFORMATICS**

**PAPER - VIII**

GIS data representation, the fundamentals of GIS, the structure of geographic data, the catalog and connections to data, the shape of features, geometry and features, linear modelling with networks, modelling infrastructure, cellbased modelling with resters, representing geography with rasters, surface modelling with tins, finding locations, converting locations to map features.

## **INTERNET BASED GIS**

*MASTER OF SCIENCE*

**GEO-INFORMATICS**

**PAPER - IX**

Internet mapping : serving geographic data on web, public accesss GIS, disaster response networks, a GIS on every desktop, building an internet based spatial data library, national real estate finder, bioregional geographic information server, airport noise and the community, service technician routing, highway management information systems, internet yellow pages, scientific data publishing, maps and data servers.

## **TOOLS FOR MAP ANALYSIS**

*MASTER OF SCIENCE*

**GEO-INFORMATICS**

**PAPER - X**

Image enhancement, image reduction and magnification, spatial filtering to enhance low-and high frequency details and edges, special transformations, thematic information extraction, introduction, supervised and unsupervised classification, lineage (Genealogy) of maps and databases, digital change detection, general steps required to perform change detection.

## **LAND USE PLANNING USING GIS**

*MASTER OF SCIENCE*

**GEO-INFORMATICS**

**PAPER - XI**

Planning support systems : a new perspective on computer - aided planning, locational models, geographic information and planning support systems, sketch planning : systematic methods in planning and its support, structure of planning support system for urban development, integrated land use and transport modeling : the tranus experience, theoretical framework of tranus.

## **RESOURCES MANAGEMENT USING GIS**

*MASTER OF SCIENCE*

**GEO-INFORMATICS**

**PAPER - XII**

Managing natural resources, oil and gas exploration, agriculture deforestation, air pollution, air pollution, mining borate ore, clean water, reclaiming brownfields, costal protection, forest and wildfires, endangered species, disaster planning and recovery, conservation in classrooms, GIS data for natural resource applications, spatial and attribute data, image data.

## **INFORMATION EXTRACTION FROM IMAGES**

*MASTER OF SCIENCE*

**GEO-INFORMATICS**

**PAPER - XIII**

Basic principles of photogrammetry, basic geometric characteristics of arial photography, photographic scale, ground coverage of arial photographs, area measurements, introduction to visual image interpretation, fundamentals of visual image interpretation, basic visual image interpretation equipment, land use/land cover mapping, geological and soil mapping, agricultural applications.

**PAPER XIV -**

**Master Thesis**

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**Ph 4462033**