

# NORTH MAHARASHTRA UNIVERSITY, JALGAON

## SYLLABUS OF PRE PH.D.

### PAPER II: SUBJECT COURSE IN GEOGRAPHY (Theory)

#### DATA ANALYSIS AND ADVANCED CARTOGRAPHIC TECHNIQUES WITH THE HELP OF COMPUTER AND G.I.S.

##### OBJECTIVES:

- (1) The research of geography is based on data analysis and cartographic techniques. Considering the globalization in education, our research students should have the knowledge of GIS and Remote Sensing techniques. There for the main intension of this subject course is to train the research students with Computer Data Analysis and GIS.
- (2) Geographic information System (GIS) is a computer assisted system that automates the process of capturing, storing, updating, analyzing and displaying data. Geographic data such as, Aerial Photographs, Satellite Imageries and data related to geographic features etc could be digitally stored on computer. Considering these advanced techniques, this syllabus is designed.

##### SECTION (A):

#### **DATA ANALYSIS TECHNIQUES WITH THE HELP OF COMPUTER**

Sr No	Name of Topic	Unit	Sub- Unit	Periods
1	Introduction	M. S. Excel	Worksheet, Function of Menu, Tools, Formula bar, Data feeding-editing techniques, Cell reference, Absolute & Relative cell references, Chart Wizard. Editing charts.	02
2	Data Analysis Techniques	Data Analysis Tools	Auto Format, Conditional Formatting, Sort, Auto Filter, Advance Filter for data extract and filtering.	02
3	Data Analysis in Population Geography	Density	General, Nutritional, Economic, Agricultural and Caloric Densities	02
		Growth Rate	Natural & Actual Growth Rate	02
		Size of Family	Classification of Households, Farmers & Literate population.	02
		Birth & Death Rate	General, Crude birth and Death rate, Fertility Rate, Infant Mortality Rate	02
	Age and Sex Composition	Age- Sex Pyramid, Classification of Population according to Age Groups, Calculation of sex ratios for SC, ST, Religion, Occupation and literacy wise	02	
4	Data Analysis in Settlement Geography	Classification	Classification of Urban & Rural Settlements according to size of population, Classification of Towns and Rural Settlements according to function. Dispersion and Concentration of Settlements.	02
5	Data Analysis in Agricultural Geography	Data Analysis	Classification and Distribution of Crops, Crop Combination, Diversification, Concentration, Intensity of crops and indices related to research work.	04

6	Statistical Techniques	Techniques	Combination, Concentration. Correlation of Co-efficient. Correlation Matrix. Regression, Standard Deviation. Co efficient of Variation (CV). Students T, Z, Chi-square & F tests.	04
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### SECTION B

### ADVANCED CARTOGRAPHIC TECHNIQUES WITH THE HELP OF G.I.S

Chapter	Name of Topic	Unit	Sub- Unit	Periods
1	Introduction to G.I.S. Software	Auto CAD Map	Inter face, Tool bar, Layers, Function of Model, Layout, Map Drawing commands. Map Digitization	04
		Drawing Cleanup & Topology	Working with clean up command and Topology Building	02
2	Presentation of Population Data	Cartographic Techniques	Dot Map, Choropleth Map, Isopleth Map and Circle Cube maps Cartograms.	05
3	Presentation of Relief and Drainage	Cartographic Techniques	Contour Map, Relief Map Absolute & Relative Relief Map and Average slop map. Drainage Density, Frequency , Demarcation of watersheds, Analysis of Watersheds	02
4	Presentation of Climatic data	Cartographic Techniques	Climatograph, Wind Rose	01
5	ILWIS (GIS Software)	Tools	File menu:- <i>Create</i> - Point map, Segment map, Raster map, Presentation, Geo-reference, Coordinate system. <i>Import</i> : Map & table, Edit and Operation Menus	02
		Geo-reference	Geo-referencing of map	02
		Map Preparation	DEM, Slope map, Profile of Slope Analysis of slope. Population & Economic maps, Introduction to G.P.S.	02
6	Global Mapper & Surfer (GIS software)	Introduction	Introduction, Function and Tools of Global Mapper.	03
		Preparation of Maps	Preparation of Maps with the help of Global Mapper.	01

**Books : Section A:**

**Total Periods 48 Hours**

1. R.B.Mandal : Statistic for Geography and Social Science.
2. Triwartha : Elements of Climatology
3. R.L.Singh & Dutt P.K. (1968) : Elements of Practical Geography, Students Friend, Allahabad
4. Straghtler A: Physical Geography
5. King C.A.M. (1966) “Techniques in Geomorphology”, Edward Arnold,. London
6. Mathur: “Climatology Fundamental & Application”.
7. Miller Austin (1953) “The Skin of the Earth”, Methune & Co. Ltd., London
8. Gragory K.J. & Walling D.: “Drainage Basin Forms & Process”.

**Books : Section B:**

1. Monkhouse F.J & Wilkuison H.R. (1976) : Maps & Diagrams Methune & Co. London.
2. GIS AND Auto CAD MAP: ISBN-81-203-2519-2, Published by Asoke K. Ghosh, Prentice-Hall of

India Private Limited M-97. Connaught Circus, New Delhi-110001,

Printed by Makhijani at Rekha Printers Pvt.L.New Delhi-110020.

3. ILWIS 3.0 Academic User Guide: User Guide is given in the ILWIS software.

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**Weightage of Marks:**

<b>Section</b>	<b>No of Objective Questions</b>	<b>Marks</b>
<b>Section A</b> (Objective Questions on Excel worksheet and data analysis)	30	60
<b>Section B</b> (Objective Questions on Advanced Cartographic, G.I.S. & Statistical Techniques)	20	40
University Exam. on Objective Question*	50	100

\*North Maharashtra University will conduct examination of Pre Ph.D. Subject course