

Tilak Maharashtra Vidyapeeth, Pune

GEOGRAPHY SYLLABUS

GC 201 Statistical Methods in Geography

Sr. No.	Topic	Subtopics	Learning Points	Periods
CREDIT 1				
1.	Geographical data	1. Nature 2. Scales of measurement 3. Types of statistics	1. Spatial and temporal 2. Discrete and continuous data 3. Grouped and ungrouped data Nominal, ordinal, interval and ratio scales. Descriptive and inferential	3
2.	Descriptive statistics	Analytical methods	Meaning, description and calculation of mean, median, variance, standard deviation, skewness and kurtosis.	4
3	Concept of probability	Methods of determination	1. Normal probability distribution, 2. Determination of the probability of a continuous random event using normal distribution. 3. Determination of the probability of a discrete random event using Binomial and Poisson distributions.	8
CREDIT 2				
4.	Time series analysis	Meaning, and definition of time series, methods of analysis	1. Properties of a time series, trends and periodicity. 2. Calculation and plotting of running means (3 and 5) 3. Curve fitting by method of least squares.	7
5.	Bivariate analysis	Correlation and regression	1. Concept of bivariate correlation and regression 2. Calculation of Pearson's product moment correlation coefficient 3. Calculation, plotting and interpretation of linear regression equation 4. Concept of residuals and explained	8

			variance	
CREDIT 3				
6.	Inferential statistics	1. General requirements for conducting an inferential Statistical test 2. Testing of hypothesis	1. Population and sample, Meaning of unbiased random sample 2. Standard error estimates of mean and standard deviation. Meaning and definition of : 1. Null and alternative hypothesis. 2. Level of significance (Rejection level) 3. Degrees of freedom 4. Parametric and non parametric tests Application of following tests: 1. Non- parametric test, chi squared test a. Two or more samples, b. Using relative frequency table 2. Parametric tests, a Student's test (comparison of sample means) b. ANOVA(Analysis of variance)	5 10

(Note: Use of calculators is allowed at the time of semester-end Examination)

Reference Books

1. Ebdon David (1989). Statistics for Geographers
2. King, (1975). Statistical Geography
3. Norcliffe G.B. (1977). Inferential statistics for Geographers (Hutchinson, London)
4. Rogerson P.A. (2001). Statistical methods for Geography (SAGE pub., London, New Delhi)
5. Karlekar Shrikant & Kale Mohan (2006): Statistical analysis of Geographical data, Diamond publ, Pune



GC 202 Political Geography

Sr. No.	Topic	Subtopics	Learning Points	Periods
CREDIT 1				
1.	Scope of Political Geography	Methodological Development, approaches to the study of political geography	Approaches to the study of Political Geography, Functional approach, World-system approach, Behavioral approach, Territorial approach, Humanistic approach, Structural approach, Marxist approach, Centrifugal and Centripetal forces, Unified field approach/theory, Territory and territoriality.	5
2.	Historical perspective on the development of Political Geography	Contributions viewpoints of various scholars to the study	Contribution of Frederic Ratzel, D. Whittles Isaiah Bowman, R. Hartshorne and H. Mackinder	5
		Development of geopolitical thought	Concept of Geopolitics, R. Keller's concept. Development of German Geopolitics - Haushofer and F. Ratzel's concept of Lebensraum	
3.	Geographical perspectives on the formation Geographical and growth elements of states	Geographical elements and the State	Factors controlling the growth, character and development of the State - Area and location of the State. Geographical location -Astronomical, Relative location, and strategic location. Buffer states.	5
		State area and equation of power	Size and shape (compact, elongated, fragmented) Exclaves and enclaves. Influence of climate, terrain, topography, resources, quality of population, government system and defense capabilities of the State, Function of early feudal states, modern states.	
		Problems of multi-ethnic states.	Political conflicts between ethnic groups of States. Destabilization and disintegration of States due to ethnic issues.	
CREDIT 2				
4.	Nation-States and nation	Nation-State as a spatial entity	Typology of Nationalism - State nationalism, Unification nationalism, Separation nationalism, Liberation:	3

	building Concept of Nationalisms		nationalism and Renewal Nationalism. National identity. Iconography of symbols. Changing Perspectives of nation-states.	
5.	Frontiers and Boundaries.	Distinction between Frontiers and Boundaries. Classification of International boundaries	Characteristics of Frontiers, - Definitions. Genetic classification. Antecedent, Subsequent, Superimposed and Relict boundaries. Morphological classification. Natural Boundaries - mountains and hills. Rivers and lakes Forests and Swamps and deserts, Rivers as international boundaries, Arbitrary and Geometrical boundaries, Cultural boundaries.	6
6.	Global geopolitical and Geostrategic views	Land, sea and air power. Land power versus sea power. Concept of Sea power.	Geostrategic views of A.T. Mahan, H. Mackinder, Spykman and Cohen, Heartlevel Theory, Rimland Theory, Geopolitical Realms and Geostrategic Regions, Shatter belts, Power blocs.	6
CREDIT 3				
7.	Geopolitical Significances of Seas and Oceans	Strategic importance of seas and oceans in the Exploration and exploitation of mineral and marine resources. Concept and measurement of territorial seas	Claims to islands, territorial seas and Law of the Seas. EEZ of territorial seas.	5
		Emerging geostrategic issues in the Indian Ocean Region (IOR)	Superpower rivalry in the Indian Ocean. Security concerns.	
8.	Global environmental and geopolitical change	Political Geography and Environmental resources. Role of water and energy resources. Problems of multiethnic states	Resources and national policies. Environmental degradation and threats to national growth. Problem of nuclear weapon and toxic wastes. Oil as a strategic weapon. Problems of environmental refugees.	5
9.	Political Geography of contemporary India	Contemporary issues	Changing political map of India. 1. Emergence of new States. 2. Unity and diversity. 3. Internal and external security. 4. Insurgency in border States.	5

			5. Geopolitical dimensions of trans-boundary water sharing. 6. Interstate water disputes.	
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Reference Books

Political Geography

- 1 Alexander, L. M., 1963, World Political Patterns, Ran McNally, Chicago
- 2 Blij H. J. de and Glassner, Martin, 1968, Systematic Political Geography, John Wiley, New York
- 3 Dikshit R.D., 1984 Political Geography: The Discipline and its Dimensions, Tata McGraw-Hill Publishing Co. Ltd., New Delhi
- 4 Dikshit R.D., 1999 Political Geography: A Century of Progress, Sage, New Delhi.
5. Dikshit, R.D., 1996, Political Geography: A Contemporary Perspective. Tata McGraw Hill, New Delhi
6. Fisher Charles A., 1968, Essays in Political Geography, Methuen, London
- 7 Harrison Selig s. and Subrahmanyam, 1987 Superpower Rivalry in the Indian Ocean - Indian and American Perspectives, Oxford University Press, New York
- 8 Kasperson R. and Minghi J.V. et al, 1970, Structure of Political Geography, Aldine Publishing Co., Chicago
- 9 Moddie, A.E, Latest edition, Geography behind Politics, Hutchinson, London
- 10 Muir R., 1973, Modern Political Geography, Second edition, McGraw Hill, New York and London
- 11 Panikkar K.M., 1959, Geographical Factors in Indian History: 2 vols, Asia Publishing House, Bombay
- 12 Pounds N.J.G., 1972, Political Geography, McGraw Hill, New York
- L3 Prescott, J.R.V., The Geography of Frontiers and Boundaries, Aldine, Chicago
- 14 Short John R., 1982, An Introduction to Political Geography, Routledge, London
- 15 Sukhwal, B.L., 1968, Modern Political Geography of India, Sterling Publishers, New Delhi.
- 16 Taylor, Peter, 1985, Political Geography, Longman, London

GC 203 – Watershed Management and Applications

Credit No.	Topics	Sub-topic	Learning Points	Periods
1	Characteristics of Watershed	Physical and Drainage aspect	a. Delineation b. Geomorphological characteristics c. Linear aspects d. Aerial aspects e. Relief aspects f. Land use g. Runoff characteristic	7
	Hydrological Processes in Watershed	Hydrological Processes	a. Hydrological cycle b. Precipitation (liquid/solid) c. Interception d. Evaporation e. Evapotranspiration f. Surface runoff g. Groundwater flow h. Surface flow i. Channel flow j. Ecological characteristics of the river	8 =15
2	Factors influencing watershed functioning	Physiography	a. Basin size b. Shape c. Land slope d. Drainage density	4
		Soils	a. Composition b. Profile c. Texture d. Structure	4
		Ground water	a. Depth of groundwater table b. Perched ground water table	2
	Land Capability Classification	Criteria and scheme	a. Criteria for classification b. Methods of classification c. Need for classification	5 =15
3	Concept of Watershed Management	Concept and need	a. Definition b. Principles c. Objectives d. Need for Management e. Identification of Problems in Watershed management	8
	Conservation Measures in Watershed Management	Water Conservation	a. Nala bund b. Water harvesting techniques c. Storage of harvested water d. traditional methods	4
		Soil Conservation	a. Contour bunding b. Gully plugging c. Trench cum Mound d. Leveling e. Check dams	3 =15

Reference Books

1. John, J. A. (1997): Global Hydrology: Processes, Resources and Environment Management, Longman Publishers
2. Law, B. C. (Ed. 1968): Mountains and Rivers of India, IGU National Committee for Geography, Calcutta.
3. Matter, J. R. (1984): Water Resources Distribution, Use and Management, John Wiley, Maryland.
4. Newson, M. (1992): Land, Water and Development, River Basin Systems and their Sustainable Management, Rowledge, London.
5. Rao, K. L. (1979): India's Water Wealth, Orient Longman, New Delhi
6. Singh, R. A. and Singh, S. R. (1979): Water Management Principles and Practices, Tara Publication, Varanasi
7. Kates, R. W. and Buston, T. (Ed. 1980): Geography, Resources and Environment, Ottawa
8. E. M. Tideman (2007): Watershed management- Guidelines for Indian Conditions, Omega Scientific Publishers, New Delhi



GC 204 – Geography of Settlements

Sr. No.	Topic	Subtopic	Exercises	Periods
CREDIT 1				
1.	Introduction	Evolution of settlement Geography	1. Evolution of settlement Geography. 2. Approaches in the study of settlement Geography.	02
2.	Man-Environment Relationship	Factors influencing site and distribution of settlements.	1. Physical 2. Economic 3. Social	03
3.	Settlement Patterns	Change in Settlement Patterns	1. In the Rural Area. 2. In the Urban Area.	03
4.	Concepts related to Settlements.	Various Concepts	1. Nodality 2. Centrality 3. Range 4. Threshold and Hierarchy. 5. Rank size distribution.	04
5.	Dispersion	Factors influencing	1. Physical	03

	and Nucleation of settlements	Nucleation and Dispersion	2. Economic 3. Social	
CREDIT 2				
6.	Morphology of Settlements	Rural and Urban Settlement Morphology	1. Morphology and Structure. 2. Dispersed and nucleated Settlements, types of rural Settlements, pattern or shape isolated, loose knit, linear or ribbon, round, Square and planned villages. Compact, semicompact, Sprinkled and dispersed. 3. Models in urban structure. i. Park and Burgess ii. Homan Hoyet Model iii. Harries and ullman model iv. Characteristics and demarcation of C.B.D.	07
CREDIT 3				
7.	Classification of Settlements	Functional Classification	1. Rural Settlement Classification. i. Market and agriculture villages and towns. ii. Route centre / transport villages and towns. iii. Small service village and towns. iv. Defensive villages. v. Dormitory or commuter villages and towns. vi. Suburbanized and satellite villages 2. Urban Settlement Classification i. Various approaches to classification. ii. Urban function. iii. Functional classification of towns and cities by C.D. Harris and H.J. Nelson.	05
8.	Growth Processes in Urbanization	Trends in Urbanization	1. Rural urban fringe. 2. Concepts of conurbation megalopolis and Satellite towns.	05

Reference Books

- Clout H.D. : Rural Geography, Pergamon, Oxford, 1977
- Doniel P and Hopkinson M.: The Geography of Settlement, Oliver & Byod, Edinburgh, 1986
- Gallion Arthur and Eisner SIMM – The Urban Pattern City Planning and Design. CBS Publishers, New Delhi.

- Grover N.: Rural Settlement – A Cultural Geographical Analysis, Inter India Publication, New Delhi, 1985.
- hudson F.S.: A Geography of Settlements. macDonald and Evans, New York, 1976
- Mandal R.B.: Introduction to Rural Settlement, 2001, Concept Publishing Company, New Delhi.
- Rapoport A.: House Form and Culture, Prentice Hall, New Jersey, 1969

GC 205 - Techniques in Cartography

Credits No.	Topic	Subtopic	Exercises	No. of Practicals
1.	Scales	Scale - Definition, meaning, Types - Verbal, Numerical (RF) Graphical.	1) Conversion of scales - RF to VS & VS to RF 2) Construction & graphical scale 3) Theme related maps scale 4) Enlargement & reduction.	05
2.	Construction of Maps	Theme related Construction	1) Geomorphic maps (land units) 2) Geological maps (Bedding plane / outcrops / strike lines. 3) Isochrones maps. 4) Dot map 5) Flow map 6) Weather map 7) Drainage basin map with sub basins 8) Imagery map 9) Soil map 10) Slope map	10
3.	Computer Cartography	Graph & Charts with Computer	1) Line and bar graphs 2) Pie diagram with the help of Excel.	05

Reference Books

- Elfic. M.H. Fryer. J.G. Brinkners. R.C. and Wolf. P.R. 1994, *Elementary Surveying* 8th edition. Harper Collins Publishers, London.
- Hussain. S.K. AND Nagaraj. M.S. 1992, *Text Book of Surveying*. S. Chand & Co. Ltd. New Delhi.
- Kanetkar. R.P. and Kulkarni. S.V. 1988, *Surveying and Levelling, Part-I* Pune Vaidyarthi Griha Prakashani, Pune.
- Kellaway. G.P. 1979, *Map Projections*. 1st Indian edition. B.I. Publication. Delhi.
- Kochher. C.I. 1993. *A Text Book of Surveying*. S.K. Katariya & Sons. Delhi

- Mishra R.P. Ramesh. A 2000. *Fundamentals of Cartography*. Concept Publishing Company, New Delhi. 23
- Monk house, F.J. and Wilkinson. H.R. 1971, *Maps and Diagrams: Their Compilation and Construction*. B.I. Publications Private Limited, New Delhi.
- Roy P. 1988, *An Analytical Study of Map Projections*. Volume I, Kolkata.
- Sarkar, A. 1997, *Practical Geography: A Systematic Approach*, Orient Blackswan Ltd. Hyderabad.
- Singh. R.I. and Singh. R.P.B. 1991. *Elements of Practical Geography*. Kalyani Pub. New Delhi.
- Steers. J.A. 1965. *An Introduction to Map Projections*. 14th edition. University of London Press. London.
- Venkatramaiah C. 1996, A Textbook of Surveying, Universities Press/Orient Longman Ltd., Hyderabad.



GC 206 - Practical in Surveying

Sr. No.	Topic	Subtopic	Exercises	No. of Practicals
CREDIT 1				
1.	Introduction to surveying and surveying Equipments	Definition and types of survey	1. Definition and objectives of survey 2. Primary divisions of surveying, geodetic and plane surveys, 3. Classification of surveys and introduction to surveying equipments 4. Uses of surveys	02
2.	Dumpy Level	The instrument and its use	1. Various components. (Drawing & Labeling) 2. Leveling - definition, description of dumpy level and leveling staff. Terminology connected with leveling - datum, elevation, station, back sight, fore sight, intermediate sight, height of instrument, bench mark and its types, change point. 3. Methods of leveling. 4. Field surveying 5. Determination of reduced levels 6. Rise and fall method and 7. Collimation method.(Field based-4 examples each and plotting)	05
CREDIT 2				
3.	Transit theodolite	The instrument and its use	Transit theodolite (Drawing & Labeling) 1. Various components and least count of	02
				02

			<p>the instruments.</p> <p>i) Temporary & permanent adjustments</p> <p>ii) Measurement of horizontal angles</p> <p>Measurement of Vertical angles</p> <p>iii) Tachometric surveying-Stadia system</p> <p>2. Methods of surveying</p> <p>i) Intersection and tachometry</p> <p>Preparation of contour maps. (Field based-4 examples each and plotting)</p>	04
CREDIT 3				
4.	Total Station		<p>1. TOTAL STATION - (Drawing & Labeling)</p> <p>2. Introduction to various components</p> <p>3. Uses of Total station for precision survey</p>	01
5.	Global Positioning System GPS)		<p>1. Introduction to the working of GPS</p> <p>2. Setting of GPS</p> <p>3. Landing latitude (X). longitude(Y), and Altitude (Z) values with the help of GPS (Field based)</p>	01
			<p>4. Plotting of surveyed points with the help of any GTS based Software (2 examples)</p>	
CREDIT 4				
6.	Village Survey	<p>1. Primary data</p> <p>2. Secondary data</p> <p>3. Preparation of Village survey report</p>	<p>1. Designing of Questionnaire for Village survey and conducting</p> <p>a) House hold survey and</p> <p>b) Village survey</p> <p>2. Photo plates</p> <p>1) Collection of information from other sources</p> <p>2) Village map- Cadastral & top sheet and Google earth To understand morphology of the village</p> <p>3) Census information</p> <p>4) Data sources from government & non government agencies</p> <p>I. Integration of primary and secondary data, analysis of data and writing of village survey report.</p>	<p>03</p> <p>03</p>

- Note:**
1. the selection of village must be based on availability of SOI top sheet and /or Cadastral map.
 2. as far as possible the village should be selected from the nearby area so that students can undertake at least two field visits.
 3. Collection of data/information should be undertaken by the student by visiting the various GOVT offices.
 4. Village survey report should include the following -
 - a) Location aspect of the village
 - b) Physical landscape
 - c) Cultural landscape
 - d) Socio cultural landscape

e) Observations

5. Appropriate maps, diagrams, graphs, sketches should be included.
6. The report should not preferably exceed 15 pages,
7. Village Survey is equivalent to 6 practicals

Physical survey:

1. Location: Location of top sheet (Lat long), extension, grid reference, site and situation.
2. Map showing physical surroundings of the village
3. Position of the village on the cross section line
4. Location of village in the catchment area

Geology and climate: Information regarding geology, climate, soils, and vegetation of the village

Socio economic survey: Population characteristics:

1. Population structure, facilities available.
2. Information regarding households based on 30 % sample survey

Village morphology: Plan prepared by pace survey -Description of the plan



Reference Books

- Alvi. Z. 1995, *Statistical Geography: Methods and Applications*, Rawan Pub. New Delhi.
- Mishra R.P. Ramesh A. 2000. *Fundamentals of Cartography*. Concept Publishing Company. New Delhi.
- Monkhouse F. J. and Wilkinson. H. R. 1971, *Maps and Diagrams. Their Compilation and Construction*, B.I. Publications Private Limited. New Delhi.
- Pal S. K. 1999, *Statistics for Geoscientists*, Concept publishing Company, New Delhi.
- Robinson, A.H. Sale, R.D. Morrison, J. 1984, *Elements of Cartography*, Wiley, New Delhi.
- Sarkar A. 1997, *Practical Geography: A Systematic Approach*, Orient Blackswan Ltd., Hyderabad.
- Sen. P.K. 1989. *Geomorphological Analysis of Drainage Basin: An Introduction to Morphometric and Hydrological Parameter*, University of Burdwan. Bardhaman
- Silk. J. 1979, *Statistical Techniques in Geography*, George Allen and Unwin. London.
- Singh, S.L and Singh, R.P.B. 1994, *Elements of Practical Geography*: Kalyani Pub. New Delhi.
- Steers. J.A. 1965, *an Introduction to Map Projections*. 14th edition, University of London Press, London.
- Walford. P. 1995, *Geographical Data Analysis*, John Wiley and Sons Inc. New York.