भूगोल एवं भू–सूचना विभाग

DEPARTMENT OF GEOGRAPHY AND GEOINFORMATICS
Faculty of Science & Technology
Mahatma Gandhi Kashi Vidyapith

Semester Based Syllabus (w.e.f. 2013-14)

In

G E O G R A P H Y

Scheme of Examination

Semester	Paper	Marks
Ist	I- GR101: Geomorphology	100
	II- GR102: Advanced Geography of India	100
	III- GR103: Economic Geography	100
	IV- GR104: Environmental Geography	100
	V- GRP105: Practical Examination	100
	Part A : Cartographic Work	(50)
	Part B : Field Cum – Lab Work	(50)
	TOTAL	500
2nd	I- GR201: Physical Landscape	100
	II- GR202: Hydrology and Oceanography	100
	III- GR203: Geography of Resources	100
	IV- GR204: Basics of Remote Sensing	100
	V- GRP205: Practical Examination	100
	Part A : Cartographic Work	(50)
	Part B : Field Cum – Lab Work	(50)
	TOTAL	500
3rd	I- GR301: Climatology	100
	II- GR302: Geoinformatics and Geographic Information System (GIS) Applications	100
	III- GR303: **Students are required to opt any <u>One</u> of the following:**	100
	GR 303A : Urban Geography	
	GR 303B : Population Geography	
	GR 303C : Disaster Management	100
	IV- GR304: **Students are required to opt any <u>One</u> of the following:**	
	GR 304A : Geography of Rural Settlements	
	GR 304B : Geography of Tourism	100
	GR 304C : Industrial Geography	
	V- GRP305: Practical Examination	
	TOTAL	500
4th	I- GR401: Geographical Thoughts	100
	II- GR402: Research Methods &Techniques	100
	III-GR403: **Students are required to opt any <u>One</u> of the following:**	100
	GR 403A : Agricultural Geography	100
	GR 403B : Transport Geography	100
	GR 403C : Regional Planning & Development	
	IV- GR404: **Students are required to opt any <u>One</u> of the following:**	
	GR 404A : Geography of Rural Development	100
	GR 404B : Political Geography	100
	GR 404C : Population & Development	100
	V- GRP405: Project Work & Study Tour	100
	TOTAL	500

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DEPARTMENT OF GEOGRAPHY AND GEOINFORMATICS
Mahatma Gandhi Kashi Vidyapith

M.A. /M.Sc. Previous

First Semester
GR 101 : Geomorphology
Unit – I:

Meaning and scope of geomorphology, Fundamental Concepts, Modern geomorphologists – Hutton, Strahler, King.

Unit – II:

Endogenetic process – Plate tectonic, Mountain, Building, Volcancity, Seismicity, Earthquakes, Tsunami, Isostasy

Unit – III:

Geomorphometric Analysis – Drainage density, Drainage frequency, Bifurcation ratio, Drainage frequency, Bifurcation ratio, Slope types and analysis.

Unit – IV:

Development of Geomorphology in India, Recent trends in Geomorphology

Applied Geomorphology, Regional geomorphology of Indo-Gangetic plain

Rajmahal hills and Malwa Plateau.

Books Recommended

1. Ahmed, E. (1985): Geomorphology. Kalyani Publishers, New Delhi.
2. Bloom, A. L. (1998/ 2001): Geomorphology. 3rd edition. Prentice Hall of India, New Delhi.
3. Chorley, R.J., Schumm, S. A. and Sugden, D. E. (1984): Geomorphology. Methuen and Company Ltd., London.
4. Dayal, P. (1994): A Text Book of Geomorphology. Kalyani Publishers, New Delhi.
5. Fairbridge, R.W. (ed.) (1968): Encyclopaedia of Geomorphology, Reinhold Book Corporation., New York
6. Gregory, K.J. and Walling, D.E. (1973): Drainage Basin Form and Process. Edward Arnold, London.
7. Jog, S. R. (ed.) (1995): Indian Geomorphology (2 vols.). Rawat Publications, Jaipur
8. Kale, V. and Gupta, A. (2001): Introduction to Geomorphology. Orient Longman, Hyderabad.
9.King, C.A.M. (1966): Techniques in Geomorphology. Edward Arnold, London.
10. Pethick, J. (1984): An Introduction to Coastal Geomorphology. Arnold, London. Indian reprint 2000.
11. Sharma, P. R. (ed.), (1993): Applied Geomorphology in Tropics. Rishi Publications, Varanasi.
12. Singh, S. (2004): Geomorphology. Prayag Pustak Bhawan, Allahabad.
13. Sparks, B.W. (1986): Geomorphology. Longmans, London.
14. Thornbury, W.D. (2005): Principles of Geomorphology. John Wiley and Sons, New York.
15. Wooldridge, S.W. and Morgan, R.S. (1959): The Physical Basis of Geography- An Outline of Geomorphology. Longman, London.

GR 102 : Advanced Geography of India

Unit – I:

Making of India through geological times, Structure and Relief regions, Drainage, Physiographic division soil types.

Unit – II:

Climatic characteristics, Mechanism of Indian Monsoon, Climatic Regions, Natural Vegetation & wild life, vegetation regions.

Unit - III:

Agricultural Characteristics and Trends, Crop Combination regions, Green, White, Blue, and Yellow revolutions.

Unit – IV:

Industrial region

Transport – rail, road, air.

Population growth trends and patterns, distribution density & national population policy.

Books Recommended.

1. Chapman, G. and Baker, K.M. (eds.) (1992): The Changing Geography of Asia. Routledge, London.
2. Farmer, B.H. (1983): Introduction to South Asia. Methuen and Company Ltd. and Company Ltd., London.
3. Ganguly, S. and Neil, DeVotta (eds.) (2003): Understanding Contemporary India. Lynne Reinner Publishers., Boulder and London.
4. Gole, P. N. (2001): Nature Conservation and Sustainable Development in India. Rawat Publications, Jaipur and New Delhi.
5. Johnson, B. L. C. (ed.) (2001): Geographical Dictionary of India. Vision Books, New Delhi.
6. Johnson, B.L.C. (1983): Development in South Asia. Penguin Books, Harmonsworth.
7. Khullar, D. R. (2006): India. A Comprehensive Geography. Kalyani Publishers., New Delhi.
8. Krishnan, M. S. (1968): Geology of India and Burma. 4th edition. Higgin Bothams Private Ltd., Madras.
9. Nag, P. and Gupta, S. S. (1992): Geography of India. Concept Publishing. Company, New Delhi.
10. Sharma, T. C. (2003): India: Economic and Commercial Geography. Vikas Publication., New Delhi.
11. Singh, J. (2003): India: A Comprehensive and Systematic Geography. Gyanodaya Prakashan, Gorakhpur.
12. Singh, R. L. (ed.) (1971): India. A Regional Geography. National Geographical Society of India, Varanasi.
13. Spate, O.H.K., Learmonth, A.T.A. and Farmer, B. H. (1979): India and Pakistan. Methuen and Company Ltd. and Company Ltd., London.
14. Subbarao, B. (1959): The Personality of India. University of Baroda Press, Baroda.
15. Sukhwal, B.L. (1987): India. Economic Resource Base and Contemporary Political Patterns. Sterling Publication, New Delhi.
16. Tirtha, R. (2002): Geography of India. Rawat Publications., Jaipur and New Delhi.
17. Tiwari, R. C. (2007): Geography of India, Prayag Pustak Bhawan, Allahabad
18. Wadia, D. N. (1959): Geology of India. MacMillan and Company, London and Madras. Student edition.

GR 103 : Economic Geography

Unit – I:

Meaning, scope, evolution and recent trends of economic geography, Fundamental concepts.

Relation of Economic geography with economics and other branches of social sciences.

Unit – II:

Classification of industries: Iron & steel, textile, sugar & Petro-Chemical; Elements and. Theories of Industrial location -Weber, Losch, Isard & Hoover.

Unit – III:

Case studies of selected industries – Iron & steel, textile, sugar & Petro-chemicals.

Industrial regions – delimitation and structural factors; Industrial regions of world.

Unit – IV:

Theories of transport development, Economic regions and their salient features.

Impact of WTO, globalization, Liberalization, Economy of developing world.

Books Recommended :

1- Alexander, J.W., Economic Geography, Prentice- hall, New Delhi.
2- Robinson A.H., Jones, C.F. and Darkenwarld G.G., Principles of Economic Geography.
3- Boesh Hans, A Geography of World Economy, Von Nostrand, New York.
4- Bengston and Royen, Fundamentals of Economic Geography.
5- Zimmerman, E.W., Introduction to World Resources.
6- Chisholm M., Modern World Development – A Geographical Perspective.
7- Singh K.N. & Singh J., *Arthik Bhoogol Ke Mool Tatva* (Hindi), Gyanodaya Prakashan, Gorakhpur.
8- Jain, P. *Arthik Bhoogol Ki Samiksha* (Hindi).
9- Srivastava V.K. & Rao B.P., *Arthik Bhoogol*.
10- Wheeler, J.O. et al: Economic Geography, John Wiley, New York 1995.
11- Robertson, D. (ed) Globalization and Environment, E. Elgas Co. U.K., 2001.

GR 104 : Environmental Geography

Unit – I :

Meaning Scope crept approaches of environmental geography, Types of environment, environmental perception. Environment & society, environment and development.

Unit – II :

Concept of ecology and ecosystem, Biosphere as an ecosystem, Abiotic and biotic components of biosphere and ecosystem, Ecological production and energy flow-tropic level, food chain and food web. Ecological pyramids, Bio-geochemical cycles-nitrogen, Hydrological cycle, carbon cycle.

Unit – III :

Environmental hazards, Natural Hazard – Flood, Drought, Landslide, soil erosion earthquake, desertification.

Man-made hazards – urbanization, Industrialization, technological hazard, global climatic changes, global warming, green house effect, ozone depletion.

Unit – IV :

Environmental pollution, pollutants, Sources and types of pollution-water sail, air and noise pollution, solid waste disposal, environmental pollution and health Environmental education, Environmental monitoring. Environmental impact analysis. Environmental policies and legislation, Environmental management.

Books Recommended

1. Anjuneyulu, Y. (2002): Environmental Impact Assessment Methodologies. B. S. Publications, Hyderabad.
2. Anjuneyulu, Y. (2004): Introduction to Environmental Science. B. S. Publications,Hyderabad.
3. Athavale, R. N. (2003): Water Harvesting and Sustainable Supply in India. Rawat Publications., Jaipur.
4. Bilas, R. (1988): Rural Water Resource Utilization and Planning. Concept Publishing Company, New Delhi.
5. Blaikie, P., Cannon, T. and Davis, I. (eds.) (2004): At Risk: Natural Hazards, Peoples Vulnerability and Disasters. Routledge, London.
6. Clarke, J. I., Curson, P., Kayastha, S. L. and Nag, P. (eds.) (1991): Population and Disaster.Basil Blackwell, USA.
7. Gautam, A. (2007): Environmental Geography, Sharda Pustak Bhawan, Allahabad.
8. Huggett, R. J. (1998): Fundamental of Biogeography. Routledge, London.
9. Kayastha, S.L. and Kumra, V.K. (1986): Environmental Studies. Tara Book Agency, Varanasi.
10. Khoshoo, T. N. (1981): Environmental Concerns and Strategies. Ashish Publishing House, New Delhi.
11. Kumra, V.K. (1982): Kanpur City. A Study in Environmental Pollution. Tara Book Agency,Varanasi.
12. Mathur, H. S. (2003): Essentials of Biogeography. Pointer Publication, Jaipur.
13. Nag, P., Kumra, V.K. and Singh, J. (1990): Geography and Environmental Issues at Local, Regional and National Levels. (in 3 vols.), Concept Publishing Company, New Delhi.
14. Odum, E.P. (1975): Ecology. Rowman and Littlefield, Lanham USA.
15. Rajagopalan, R. (2005): Environmental Studies: From Crisis to Cure, Oxford University Press, New Delhi.
16. Reddy, M. A. (2004): Geoinformatics for Environmental Management. B. S. Publishers.,Hyderabad.
17. Saxena, K.K. (2004): Environmental Studies. University Book House Private Ltd., Jaipur
18. Saxena, H. M. (1999): Environmental Geography. Rawat Publications., Jaipur and New Delhi.
19. Saxena, H. M. (2000): Environmental Management. Rawat Publications., Jaipur and NewDelhi.
20. Singh, A.K., Kumra, V.K. and Singh, J. (1986): Forest Resource, Economy and Environment. Concept Publishing. Company, New Delhi.
21. Singh, D.N., Singh, J. and Raju, K.N.P. (eds.) (2003): Water Crisis and Sustainable Management, Tara Book Agency, Varanasi
22. Singh, J. (2001): *Paryavaran Evam Samvikas*. Gyanodaya Prakashan, Gorakhpur.
23. Singh, O., Nag, P., Kumra, V.K. and Singh, J. (eds.) (1993): Frontier in Environmental Geography. Concept Publishing Company, New Delhi.
24. Singh, O., Kumra, V.K. and Singh, J. (1988): India's Urban Environment. Pollution, Perception and Management. Tara Book Agency, Varanasi.
25. Singh, R. B. (ed.) (1990): Environmental Geography. Heritage Publication, New Delhi.
26. Singh, R. B. (ed.) (1995): Studies in Environment and Development. Rakesh Prakashan,Varanasi.
27. Singh, Rana P.B. (ed.) (1993): Environmental Ethics: Discourses and Cultural Traditions.National Geographical Society of India, BHU, Varanasi.
28. Singh, S. (2006): Environmental Geography. Prayag Pustak Bhawan, Allahabad.
29. Singh, S. (2007): *Paryavaran Bhoogol.* Prayag Pustak Bhawan, Allahabad.

30. Singh, S. N. (1993): Elements of Environmental Geography and Ecology (in Hindi), Tara Book Agency, Varanasi
31. Wrigley, N. (1985): Categorical Data Analysis for Geographers and Environmental Scientists. Longman, London.

Practical Examination

Part A: Cartographic Work – 50

Part B: Field Cum-Lab Work – 50

Part A : Cartographic Work

Unit – I:

Measures of central tendency-Mean, median and mode, Mean deviation, Quartile deviation. -15

Unit-II:

Measures of dispersion, Standard Deviation, Co-efficient of variation, Co-efficient of Correlation, rank Correlation, Chi square test. - 15

Unit – III:
Geological maps and cross section Horizontal, Inclined, Unconformable, Folded and folded strata. 20

Part B : Field cum Lab Work

Unit – I:

Collection of data: Methods, Sources and Types, Classification and Tabulation Data processing (With special reference to village/Ward/town area). 15

Unit – II:

Local excursion and report (maximum 2 days) 15

Unit – III:

Practical record (Part A & B) 10

Viva-Voce examination 10

Books Recommended:

1- Monkhouse, F.J. Maps & Diagrams.
2- Robinson, A.H. Elements of Cartography.
3- Singh, R.L., Elements of Practical Geography.
4- Singh, L.R. & Singh, R.N. Map Work and Practical Geography (Eng./Hindi)
5- Sharma, J.P. *Prayogatmak Bhoogol Ki Rooprekha* (Hindi)
6- Hira Lal, *Prayogatmak Bhoogol Ke Adhar* (Hindi)
7- Lal, Hira, *Matratmak Bhoogol* (Hindi)
8- Tiwari, R.C. and Tiwari, Sudha, *Abhinav Prayogic Bhoogol.*

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M.A./M.Sc. Previous

Second Semester

GR 201: Physical Landscape

Unit – I:

Concept and types of physical landscape, Significance of geomorphic processes in land forms development, Geological structure, climatic and biotic factors in formation of landforms Theories of landform development.

Unit – II:

Concept of cycle of erosion: Davis and Penck, interruption in the cycle and polycyclic relief.

Unit – III:

Exogenic process : Concept of gradation, Agents and processes of gradation , Causes, Types and classification of weathering, Erosion & Depositional processes and Landform- Humid, Arid, Karst, Glacial, Periglacial and Coastal.

Unit - IV:

Morphometric analysis of relief features, Evolution of slopes and erosional surfaces, study of micro landforms of Vindhyan regions, Chhota Nagpur Plateau and Chambal basin.

Books Recommended

1. Bernhard, H. and James, M. A. (1944): Climatology. McGraw Hill Company, New York.
2. Chorley, R. J. (1995): Atmosphere, Weather and Climate. Methuen and Company Ltd. and Company Ltd., London.
3. Chow, V. T. (ed.) (1954): Handbook of Applied Hydrology: A Compendium of Water Resources Technology. McGraw Hill, New York.
4. Critchfield, H. J. (2003): General Climatology. Prentice-Hall of India, New Delhi.
5. Rai, V.K. (1993): Water Resource Planning and Development, Deep and Deep Publication, New Delhi
6. Bilas, R. (1988): Rural Water Resource Utilization and Planning. Concept Publishing Company, New Delhi.
7. Reddy, J. P. (1988): A Textbook of Hydrology. Laxmi Publication., New Delhi. 4th edition.
8. Singh, M. B. (1999): Climatology and Hydrology. Tara Book Agency, Varanasi. (In Hindi).
9. Singh, M. B. (2002): Physical Geography. Tara Book Agency, Varanasi. (In Hindi).
10. Singh, S. (1998): Geomorphology. Prayag Pustak Bhavan, Allahabad.
11. Sparks, B.W. (1986): Geomorphology. Longman, London.
12. Thornbury, W.D. (2005): Principles of Geomorphology. John Wiley and Sons, New York.
13. Trewartha, G. T. (1980): An Introduction to Climatology. McGraw Hill Student edition, New York.
14. Ward, R.C. and Robinson, M. (2000): Principles of Hydrology. McGraw Hill, New York.
15. Weisberg, J. S. (1974): Meteorology. Houghton Miffin Company, Boston.
16. Wooldridge, S.W. and Morgan, R.S. (1959): The Physical Basis of Geography- An Outline of Geomorphology. Longmans Green, London

GR 202 : Hydrology and Oceanography

Part A: Hydrology

Unit – I:

Meaning, scope and development of hydrology, Hydrological cycle, Elements of hydrological cycle, Man's influence on the hydrological cycle. Evapo- transpiration, Factors affecting evaporation from free water surface and soils.

Unit – II:

Soil moisture and its zone, infiltration, Ground water: Occurrence, storage, Recharge and discharge, Run-off: its sources and components, factors affecting run-off, Principles and determination of water balance and its application in crop production.

Part B: Oceanography

Unit III: Relevance of Oceanography in earth and atmospheric Science, Definition of oceanography, Surface configuration of Ocean floor, Distribution of temperature and salinity of oceans and seas .

Unit IV: Circulation of Oceanic waves, tides and currents, currents of the Atlantic, Pacific and Indian Oceans. Marine Deposits and coral reefs, Ocean as storehouse of resources for the future.

Books Recommended

1. Bernhard, H. and James, M. A. (1944): Climatology. McGraw Hill Company, New York.
2. Chorley, R. J. (1995): Atmosphere, Weather and Climate. Methuen and Company Ltd. and Company Ltd., London.
3. Chow, V. T. (ed.) (1954): Handbook of Applied Hydrology: A Compendium of Water Resources Technology. McGraw Hill, New York.
4. Critchfield, H. J. (2003): General Climatology. Prentice-Hall of India, New Delhi.
5. Rai, V.K. (1993): Water Resource Planning and Development, Deep and Deep Publication, New Delhi
6. Bilas, R. (1988): Rural Water Resource Utilization and Planning. Concept Publishing Company, New Delhi.
7. Reddy, J. P. (1988): A Textbook of Hydrology. Laxmi Publication., New Delhi. 4th edition.
8. Singh, M. B. (1999): Climatology and Hydrology. Tara Book Agency, Varanasi. (In Hindi).
9. Singh, M. B. (2002): Physical Geography. Tara Book Agency, Varanasi. (In Hindi).
10. Singh, S. (1998): Geomorphology. Prayag Pustak Bhavan, Allahabad.
11. Sparks, B.W. (1986): Geomorphology. Longman, London.
12. Thornbury, W.D. (2005): Principles of Geomorphology. John Wiley and Sons, New York.
13. Trewartha, G. T. (1980): An Introduction to Climatology. McGraw Hill Student edition, New York.
14. Ward, R.C. and Robinson, M. (2000): Principles of Hydrology. McGraw Hill, New York.
15. Weisberg, J. S. (1974): Meteorology. Houghton Miffin Company, Boston.
16. Wooldridge, S.W. and Morgan, R.S. (1959): The Physical Basis of Geography- An Outline of Geomorphology. Longmans Green, London
17. Upadhyaya D.P. and Singh R.A. : Climatology and Hydrology, Vasundhara Publications , Gorakhpur
18. Jones J.A.A. :Global Hydrology, Process Resources and Environmental Management,Longman,London,1997.
19. Todd D.K.: Ground Water Hydrology, John Wiley, New York , 1959.

GR 203 : Geography of Resources

Unit – I:

Concept and scope of resource geography and geography of resources, Resource concept and types, world resources distribution and pattern , Land, Water, mineral and power resources.

Unit – II:

Human resources, Resource base and its dynamism as related to stages of cultural technological and economic development, population growth and resource scarcity hypothesis, Sustainable development.

Unit – III:

Factors of Location of Economic Activities -Physical, Social, Economic and Cultural, Von-Thuenen model of agricultural location, Agriculture regions of the world.

Unit-IV:

Resource regionalization, world economic development, concept of developed and developing countries, Resource conservation and management, Resource development and international policies.

Books Recommended

1. Burton, I. and Kates, R.W. (1978): Readings in Resource Management and Conservation, McGraw Hill, New York
2. Clark, G. L., Feldman, M.P. and Gertler, M.S. (Eds.) (2000): The Oxford Handbook of Economic Geography. Oxford University Press, Oxford and New York.
3. Ehrlich, P.R., Ehrlich, R.H. and Holdren, J.P. (1998): Ecoscience: Population, Resources and Development. 2nd edition. Freeman and Company, San Francisco.
4. Sheppard, E. and Treror, I. B. (ed.) (2003): A Companion to Economic Geography, Blackwell Publication, U.K. and USA.
5. McCarty, H.M. and James, B.L. (1976): A Preface to Economic Geography, Prentice Hall, New Jersey.
6. Mitra, A. (2000): Resource Studies; Sridhar Publishers., Kolkata.
7. Ramesh, A. (ed.) (1984): Resource Geography ,Heritage Publishers, New Delhi.
8. Singh, J. (2000): *Sansadhan Bhoogol,* Gyanodaya Prakashan, Gorakhpur
9. Singh, K.N. and Singh, J. (2003): *Arthik Bhoogol Ke Mool Tatva,* Gyanodaya Prakashan, Gorakhpur.
10. Todaro, M.P. and Smith, S.C. (2004): Economic Development, Pearson Education, (Singapore) Private Ltd.

GR 204 : Basics of Remote Sensing

Unit – I:

Remote Sensing -definition and Scope, electro-magnetic radiation, characteristics: interaction with matter, type of remote sensing and remote sensing platform.

Unit – II:

Aerial photos: Types, Scale, resolution, geometric Properties of aerial photos, Stereoscopic parallax, Relief displacement.

Unit – III:

General orbital characteristics of remote sensing satellites, general characteristics of remote sensing sensors, characteristics of raw remote sensing data.

Unit – IV:

Elements of image interpretation, image processing techniques, visual and digital, Remote sensing in resource mapping and environmental monitoring. Land use and land cover mapping: a cover study.

Books Recommended

1. Campbell, J. B. (2002): Introduction to Remote Sensing. 5th edition. Taylor and Francis, London.
2. Cracknell, A. and Hayes, L. (1990): Remote Sensing Year Book, Taylor and Francis, London.
3. Curran, P.J. (1985): Principles of Remote Sensing, Longman, London.
4. Deekshatulu, B.L. and Rajan, Y.S. (ed.) (1984): Remote Sensing. Indian Academy of Science, Bangalore.
5. Floyd, F. and Sabins, Jr. (1986): Remote Sensing: Principles and Interpretation, W.H.Freeman, New York.
6. Guham, P. K. (2003): Remote Sensing for Beginners. Affiliated East-West Press Private Ltd., New Delhi.
7. Hallert, B. (1960): Photogrammetry, McGraw Hill Book Company Inc., New York.
8. Harry, C.A. (ed.) (1978): Digital Image Processing, IEEE Computer Society, California
9. Hord, R.M. (1982): Digital Image Processing of Remotely Sensed Data, Academic Press, New York.
10. Leuder, D.R. (1959): Aerial Photographic Interpretation: Principles and Application. McGraw Hill, New York.
11. Lillesand, T.M. and Kiefer, R.W. (2000): Remote Sensing and Image Interpretation. 4th edition. John Wiley and Sons, New York.
12. Nag, P. (ed.) 1992: Thematic Cartography and Remote Sensing, Concept Publishing. Company, New Delhi.
13. Reeves, R.G. (ed.) (1983): Manual of Remote Sensing, Vols. 1 and 2, American Society of Photogrammetry and Remote Sensing, Falls Church, Virginia.
14. Siegel, B.S. and Gillespie, R. (1985): Remote Sensing in Geology, John Wiley and Sons, New York.
15. Silver, M. and Balmori, D. (eds.) (2003): Mapping in an Age of Digital Media. Wiley-Academy, New York and Chichester.
16. Spurr, R. (1960): Photogrammetry and Photo Interpretation, The Roland Press Company, London.
17. Survey of India, (1973): Photogrammetry, Survey of India, Dehradun.
18. Swain, P.H. and Davis, S.M. (ed.), (1978): Remote Sensing: The Quantitative Approach. McGraw Hill, New York.

M. A. / M.Sc. Previous II[nd] Semester

GRP 205: Practical 100

Part A: Cartographic Work - 50

Unit – I: 20

Map Projection: Classification, properties, choice, merits and demerits of map projection.

Drawing of the following map projections by using mathematical methods, Bonne's , Polyconic, Gall's, Equatorial cases of Gnomonic, Stereographic and Orthographic projections, Mollweide's and Interrupted Mollweide's, Sinusoidal and Interrupted Sinusoidal and International Projections.

Unit – II:

Cartographic Representation of Statistical Data: 20

Water Surplus Graph, Rainfall Dispersion diagram, Hypsographic curve, Water Balance graph, Locational Quotient, coefficient of Localization and Localization curve.

Unit – III: Block diagrams. 10

Part B: Field -cum- Lab Work: - 50

Unit – I: 15

Aerial Photo Interpretation -

Unit – II: 15

Computer: Components and Characteristics, Application in Map Making.

Unit – III:

Practical Record 10

Viva-voce 10

DEPARTMENT OF GEOGRAPHY AND GEOINFORMATICS
Mahatma Gandhi Kashi Vidyapith

M.A./M.Sc. Third Semester: Paper I

GR 301 : Climatology

Unit – I:

Definition, scope, significance and evolution of climatology; Elements of weather and climate; Relation with meteorology.

Composition and structure of Atmosphere; Insolation, process of heating and cooling; heat balance of the earth and atmosphere, Greenhouse effect.

Unit – II:

Air Pressure and pressure belts; Atmospheric motion, Force controlling motion of air, vertical motion and vorticity, Jet stream, Permanent, Seasonal and local wind, cyclone and anticyclone.

Concepts, classification, characteristics of air mass and front, Ocean atmospheric interaction- El Nino, Southern Oscillation (ENSO) and La-Nina.

Unit – III:

Climatic Classification of Koppen, Thornthwait, and G.T. Trewartha and World climatic region, climatic changes, evidences and possible causes, Global Warming.

Unit – IV:

Applied climatology and weather forecasting, Impact of Human civilization on health, food, clothing, agriculture, Mining, industry, trade and development; Man-climate interrelationship.

Suggested Readings:

1- Barry R.G. and Chorley R.J.: Atmosphere, Weather and Climate, Routledge, London and New York, 1998.
2- Critchfield, J.J.: General Climatology, Prentice Hall, New Delhi, 1993.
3- Lal, D.S.: Climatology, Chaitanya Publications, Allahabad, 1986.
4- Lydolph, P.E.: The Climate of the Earth, Rowman, 1985.
5- Robinson P.J. and Henderson S: Contemporary Climatology, Henlow, 1999.
6- Upadhyaya D.P., and Singh R.A.: Climatology and Hydrology, Vasundhara Publication, Gorakhpur, 2000 (Hindi).
7- Addison H.: Land, water and Flood, Chapman and Hall, London, 1961.
8- Chorley R.J., Water, Earth and Man, Methuen, London, 1967.
9- Jones J.A.A.: Global Hydrology: Process Resources and Environmental Management, Longman, London, 1997.
10- Todd, D.K.: Ground Water Hydrology, John Wiley, New York, 1959.

Pedagogy:

1- Weather and climatic maps and charts are to be made available to the students. Audio-Visual aids to be used for effective teaching.
2- Students to be taken on a field visit to nearby reservoir. Data pertaining to water table in the local wells in different seasons has to be collected.

M.A./M.Sc. Third Semester: Paper II

GR 302 : Geoinformatics and Geographic Information System (GIS) Applications

Unit – I:• Geoinformatics: Concept, meaning, scope, evolution and development.

Interrelation between Geoinformatics and Geodesy: surveying mapping, positioning, navigation, cartography, remote sensing, photogrammetry, GIS and GPS.

- Georeferencing, datum and applications.
- GPS-segment, types, surveying techniques, instruments, applications and benefits.
- Mobile Mapping – concept and use.

Unit II

- Geospatial technology, meaning, concept and scope.
- Data sources – Field information and discrete information.
- Data types – Spatial and non-spatial, raster and vector.
- Data acquisition, storage, modelling, analysis ,management and NSDI
- Data Base Management System (DBMS)
- New Map Policy

Unit III

- GIS: evolution, meaning, scope purpose and application.
- Basic principle of GIS.
- GIS Software and hardware.
- GIS data standards – concept and components
- Digital Elevation Model (DEM) – process, derivatives and application.

Unit IV

- Remote sensing and GIS integration.
- GIS project design and planning
- GIS packages and products
- GIS and industry, business system, human welfare
- Application trend of GIS product.
- Legal and managerial issues in handling geographic data

Books Recommended

1. Bonham, Carter, G.F. (1995): Information Systems for Geoscientists – Modelling with GIS, Pergammon, Oxford.
2. Burroughs, P.A. and McDonnell, R. (1998): Principles of Geographic Information Systems. Oxford University Press, Oxford.
3. Chang, K.T. (2003): Introduction to Geographic Information Systems. Tata McGraw Hill Publications Company, New Delhi.
4. Chauniyal, D. D. (2004): Remote Sensing and Geographic Information Systems. (in Hindi).Sharda Pustak Bhawan, Allahabad.
5. Demers, M. N. (2000): Fundamentals of Geographic Information Systems. John Wiley and Sons, Singapore.
6. ESRI (1993): Understanding GIS. Redlands, USA
7. Fraser Taylor, D.R. (1991): Geographic Information Systems. Pergammon Press, Oxford.
8. George, J. (2003): Fundamentals of Remote Sensing. Universities Press Private Ltd, Hyderabad.
9. Girard, M. C. and Girard, C. M. (2003): Processing of Remote Sensing Data. Oxford and IBH, New Delhi.
10. Glen, E. M. and Harold, C. S. (1993): GIS Data Conversion Handbook. Fort Collins, Colorado, GIS Word Inc.
11. Goodchild, M.F., Park, B. O. and Steyaert, L. T. (eds.) (1993): Environmental Modelling with GIS. Oxford University Press, Oxford.
12. Guptill, S.C., and Morrison, J.L. (1995): Elements of Spatial Data Quality. Elsevier/Pergammon, Oxford.
13. Heywood, I. (2003): An Introduction to Geographical Information Systems, 2nd edition, Pearson Publishing Company, Singapore.
14. Korte, G. M. (2002): The GIS Book. On Word Press: Thomson Learning, New York and Singapore.
15. Lo, C.P. and Yeung, A. K. W. (2002): Concepts and Techniques of Geographic Information Systems. Prentice Hall of India, New Delhi.
16. Longley, P. and Batty, M. (eds.) (1996): Spatial Analysis: Modelling in a GIS Environment. GeoInformation International, Cambridge.
17. Longley, P., Goodchild, M.F., Maguire, D. and Rhind, D. (1999): Geographic Information Systems: Principles, Techniques, Management, Applications, John Wiley and Sons, New York.
18. Maguire, D. J., Michael, F. G. and David, W. R. (1999): Geographical Information Systems: Principles and Application. Geo Information International, Vol.2, Longman Publication, New York.
19. Martin, D. (1996): Geographic Information Systems: Socioeconomic Implications. Routledge, London.
20. Michael, F. G. and Karan, K. K. (ed.) (1990): Introduction to GIS. NCGIA, Santa Barbara, California.
21. Nag P. and M. Kudarat (1998): Digital Remote Sensing, Concept Publishing Company, New Delhi.
22. Mishra H.C. (2000) GIS handbook, GIS India, Hyderabad.
23. Reddi A. and Y. Hari Shankar (2006) Text Book of Digital Remote Sensing, B.S. Publication, Hyderabad.
24. Ralston, B. A. (2002): Developing GIS Solutions with Map Objects and Visual Basic. On Word Press: Thompson Learning, New York and Singapore.
25. Reddy, M. A. (2001): Textbook of Remote Sensing and Geographic Information Systems. B.S. Publications., Hyderabad.
26. Ripple, W. J. (ed.) (1989): Fundamentals of Geographic Information Systems: A Compendium. ASPRS/ ACSM, Falls Church.
27. Siddiqui, M.A. (2005): Introduction to Geographical Information Systems, Sharda Pustak Bhawan, Allahabad.
28. Star, J. and Estes, J. (1990): Geographic Information Systems – An Introduction. Prentice-Hall, Englewood Cliffs, New Jersey.
29. Worboys, M. F. (1995): GIS: A Computing Perspective. Taylor and Francis, London.

M.A./M.Sc. Third Semester: Paper III

Optional Paper (303): Students are required to opt any One of the following: GR 303A, GR 303B, GR 303C

GR 303A : Urban Geography

Note: Candidates will have to attempt five questions, including Question 1(short answer) and four other questions, selecting one question from each unit.

Unit – I

Meaning, scope, approaches and evolution of urban geography. Attributes of urban places during ancient, Medieval and modern period. Origin and growth of urban settlements. The models of urban growth: concentrizone, sectoral and multinuclei.

Unit – II:

Bases and process of urbanization and urban development, urban growth, urban hierarchy and rank size rule, theories of urban growth: Christaller, Losch, Peroux and Boudeville. Urban economic base: Occupational structure and basis and non-basic functions, functional classification, Morphology and land use structure- built up and non-built up, C.B.D. Commercial, residential, industrial and institutional areas, city-region relations and modern urban landscape.

Unit – III:

The urban profile, demographic structure and characteristics of urban population. Movement of population with and beyond corporate limit. City as central place, umland, Rural-Urban fringe, Urban problems-urban poverty, urban renewal, urban sprawl, slums, transportation, housing, urban pollution, solid waste, urban crime and environmental health.

Unit- IV:

Urban policy and planning, development of medium size towns, planning for new wards, city planning, green belt, garden cities, urban policy, Globalization and urban planning. Special study million towns of U.P.

Practical

1- Population projection and population Growth forecasting.
2- Delimitation of Umland and urban fringe.
3- Study of master plans.
4- Study of Morphology and functional classification of towns.
5- Town Planning
6- Record and Viva-voce.

Suggested Readings:

1- Berry B.J.L. and Horton F.F.: Geographic Perspectives on Urban Systems, Prentice Hall, Englewood Cliffs, J.J. 1970.
2- Dickinson, R.E. City and Region, Routledge, London, 1964.
3- Gibbs, J.P.: Urban Research Methods, Van Nostrand Co. Princeton, N.J. 1961.
4- Hall P: Urban and Regional Planning, Routledge, London, 1992.
5- Kundu, A: Urban Development and Urban Research in India, Khanna Publication, 1992.
6- Rao, V.L. S.P.: Urbanization In India: Spatial dimensions, Concepts publishing Co. New Delhi.
7- Smailes, A.E.: The Geography of Towns, Hutchinson, London, 1953.
8- Singh O.P. Nagariya Bhoogol, Sharda Pustak Bhawan, Allahabad, 2011.

Pedagogy-

1- Awareness to data sources should be highlighted in the class. This needs to be in the form of selected case studies.
2- Study of urban morphology and urban functions with special reference to selected towns need to be encouraged.
3- Atlases and maps of NATMO and Census should be consulted and students should be given opportunity of participation in discussion groups.

M.A./M.Sc. Third Semester: Paper III

GR 303B : Population Geography

Note: Candidates will have to attempt five questions, including Question 1(short answer) and four other questions, selecting one question from each unit.

Unit – I:

Concepts, Scope, method, approaches and development of population geography, population geography and demography, sources of population data : their reliability and problems of mapping. Population dynamics: measurements of fertility and mortality, Types, causes, theories and consequences of migration, India's population dynamics.

Unit – II:

Population distribution, density and growth: Theories of population growth-classical and modern. Factors affecting population distribution, density types, world pattern of population distribution and density. Population distribution, density and growth profile of India.

Unit – III:

Concepts of under population, overpopulation, optimum population and population explosion, Demographic transition theory. Population composition: Rural and urban population, urbanization, Age and sex structure, literacy and education, occupational structure, gender issues , population composition of India.

Unit – IV:

Population resource regions of the world and India. Human development index and its components, population policy and population planning with special reference to India. Success and failure of family planning and family welfare programmes. Population growth and environmental consequences.

Practicals :

1- Preparation of density maps by choropleth and isopleth.
2- Construction of simple, compound and pyramids.
3- Construction of population graph and diagrams, scatter diagram. Log linear diagram, cumulative graph.
4- Population projection by graphic mathematical and logarithmic methods.
5- Preparation of population potential maps and centers of gravity of population distribution.
6- Practical record and Viva-voce.

Suggested Readings:

1- Bogue D.J.: Principles of Demography, John Wiley, N.Y., 1969.
2- Chandana, R.C.: Geography of Population: Concept, Determinants and Patterns, Kalyani Publishers, 2000.
3- Clarke, John, I: Population Geography, Pergammon Press, Oxford, 1973.
4- Crook Nigel: Principles of population and Development Pergammon Press, N.Y., 1997.
5- Daugherty Helen, gin, Kenneth C.W. Kemmerer: An Introduction to Population, The Guilford Press, N.Y., London, 1998.
6- Garnier, J.B.: Geography of Population, Longman, London, 1970.
7- Mamoria, C.B. India's Population Problem, Kitab Mahal, New Delhi, 1981.
8- Premi M.K.: India's population Heading Toward Billion B.R. Publishing Corporation, 1991.
9- Srinivasan K. and M. Blassof: Population Development Nexus in India: Challenges for the New Millennium. Tata McGraw Hill, New Delhi, 2001.
10- Woods, R: Population Analysis in Geography, Longman, London 1979.

M.A./M.Sc. Third Semester: Paper III

GR 303C : Disaster Management

Note: Candidates will have to attempt five questions, including Question 1(short answer) and four other questions, selecting one question from each unit.

Unit – I:

Definition, meaning and concept of disaster and hazard.
Types of Hazards – Natural and man-made.
Concept of Disaster Management
Concept of Disaster Relief, Resume, Trigger mechanism, Response, Mitigation Risk and Vulnerability,

Unit – II:

Natural Disaster – Geological, Water and climate, Environmental
Man-Made disaster – Chemical, Industrial, Nuclear, Accident

Unit – III: Biological disaster – Epidemics, Pest – Attack,, Cattle epidemic, Food poisoning.
Social Response to Lazard-reduction
Identification of multiple disaster prone areas.

Unit – IV:

Natural Disaster reduction Management , Decision making policy.
Determination of acceptable level of Risk
Measures to control and mitigate disaster.
Role of NDMA and SDMAs.

Books Recommended:

1. Alexander David (1993): Natural Disaster, London UCL Press.
2. Benarde Melvin (1972): Race Against Famine: Mumbai, Orient Longmans.
3. Bhargwa, Gopal (1992) Environmental Challenges and Ecological Disaster: Global perspective, Mittal, New Delhi.
4. Sharma, Vinod K. (1995): Disaster Management, National Centre for Disaster Management. Indian Institute of Public Administration, New Delhi.
5. Parasuraman, S. and P.V. Unnikrishnan (2000):India Disaster Report : Towards Policy Initiatives Oxford University Press, New Delhi
6. World Disaster Report 1997
7. Hewitt, Kenneth, (1997) Regions at Risk – A Geographical Introduction to Disaster, Longman.
8. Lodha, R.M. (1997) Environmental Ruins: The Crisis of Survival, Indus Publishing Company, New Delhi.

Pedagogy:

Students may be encouraged to collect clippings from Newspapers on various topics included in the syllabus. They may be involved in Discussions on the emerging political issues and attempt to provide geographical Interpretation.

M.A./M.Sc. Third Semester: Paper IV

Optional Paper (304): Students are required to opt any One of the following: GR 304A, GR 304B, GR 304C

GR 304A : Geography of Rural Settlements

Note: Candidates will have to attempt five questions, including Question 1(short answer) and four other questions, selecting one question from each unit.

Unit – I:

Nature, Scope, significance, development and approaches of rural settlement geography, Definition and characteristic of rural settlements, human settlement as a system. Rural-urban continuum. Histogenesis of rural settlements; Spatio-temporal dimensions and sequent occupancy. Distribution, size and spacing of rural settlements.

Unit II:

Types, forms and patterns of rural settlements: cause and effect, functional classification of rural settlements of rural settlements, morphogenesis of rural settlements, morphology of rural settlements, Central places and rural service centres: their nature, hierarchy and functions. Service centres as growth points, Rural-urban fringe-structure, characteristics and functions.

Unit – III:

Cultural landscape elements in rural settlements in different geographic environments with special reference to India, house types and their spatial patterns. Origin, evolution, size, socio-spatial structure of Indian villages.

Unit – IV:

Social issues in rural settlements-poverty, housing. deprivation and inequality, Environmental issues in rural settlements water supply, sanitation, drainage and health hazards. Planning of rural settlements with special reference to India.

Practicals

1- Size classification of rural settlements by scatter diagram.
2- Analysis of rural settlement type, patterns and distribution in India with special reference to Christaller's theory.
3- Mapping of morphology of rural settlements.
4- Mapping of morphology of rural settlements.
5- Typological classification of rural settlements from maps.
6- Practical record and Viva-voce.

Suggested Readings:

1- Alam, S.M. et al: Settlement System in India, Oxford and IBP publication Co. New Delhi, 1982.
2- Chisholm M. rural settlements and Land use. John Wiley N.Y. 1967.
3- Grover N. Rural settlements; A Cultural Geographical Analysis; Inter India Publication, Delhi; 1986.
4- Daniel P. and Hopkinson M: the Geography of Settlements, Oliver and Boyd; Edinburg, 1986.
5- Hudson, F.S.: Geography of Settlements, Macdonald and Evans, N.Y. 1976.
6- Vanmali, S: Service Centers in Rural India, B.R. Publication Corporation, New Delhi, 1983.

Pedagogy:

The teacher should motivate students with illustrations of diverse patterns of settlements in different natural settings of this country and abroad. Models, maps, Illustrations and audio-visual devices should form teaching aids to impress the students. The students are advised to consult Census of India Table H-Series.

M.A./M.Sc. Third Semester: Paper IV

GR 304B : Geography of Tourism

Note: Candidates will have to attempt five questions, including Question 1(short answer) and four other questions, selecting one question from each unit.

Unit – I:

Definition of tourism, factors influencing tourism-historical, natural, Socio-cultural and economic; motivating factors for pilgrimages, leisure and recreation, elements of tourism, tourism as an industry.

Unit II:

Geography of tourism: its spatial affinity, areal and locational dimensions comprising physical, cultural, historical and economic Tourism types-Cultural, eco-ethno-coastal and adventure tourism, national and international tourism. Globalization and tourism.

Unit III:

Indian tourism: Regional dimensions of tourist attraction, evolution of tourism, promotion of Tourism. Infrastructure and support system-accommodation and supplementary accommodation, other facilities and amenities. Tourism circuits-short and longer destination agencies and intermediates. Indian hotel industry.

Unit – IV:

Impacts of tourism-physical, economic, social and perceptional positive and negative impacts, environmental laws and tourism, Current Trends, spatial patterns and recent changes, role of foreign capital and impact of globalization on tourism.

Practicals

1- Tourist centres of India.
2- Tourist circuits and tourist paths of India.
3- Morphology of tourist centre.
4- Infrastructural elements of a tourist centre.
5- Pilgrimage tourism and religious tourism in India.
6- Planning and developing a tourist centre.
7- Project report on a tourist centre of India.
8- Record and Viva-voce.

Suggested Readings:

1- Bhatia, A.K. Tourism: Development principles and Practices, Sterling Pub. New Delhi, 1996.
2- Chandra, R.H. Hill Tourism: Planning and Development, Kanishka Pub., New Delhi, 1998.
3- Hunter C and Green H: Tourism and the Environment: A sustainable Relationship, Routledge, London, 1995.
4- Kaur J: Himalayan pilgrimages and New Tourism, Himalayan Books, New Delhi, 1993.
5- Milton, D: Geography of World Tourism, Prentice Hall, N.Y. 1993.
6- Voase, R: Tourism: the Human Perspective, Hodder and Stoughton, London, 1995.
7- Williams Stephen: Tourism: Geography, Routledge, London, 1998.

Pedagogy:

Students may be encouraged to gain firsthand knowledge from field excursions. A Project report may be prepared by the students. Visit a tourist place and list and map the problems and suggest the remedial measures.

M.A./M.Sc. Third Semester: Paper IV

GR 304C : Industrial Geography

Note: Candidates will have to attempt five questions, including Question 1(short answer) and four other questions, selecting one question from each unit.

Unit – I :

Nature, Scope and recent developments. Elements and factors of location of industries, centralization and decentralization of industrial enterprises, horizontal, vertical and diagonal linkages of modern industries .

Unit – II:

Theories of Industrial location: Webber, Losch, Isard and Hoover, Modern refinements in the theories of industrial location. Critical review and application of industrial location theories.

Distribution and spatial pattern of industries; petro-chemical hardware and software industries. Methods of delineating industrial regions; major industrial regions of the world. Industrial system and industrial regions of India.

Unit III:

Methods of measuring the spatial distribution of industries: location quotient, co-efficient of geographic association, index of concentration, coefficient of localization, case studies of application of these methods.

Unit – IV:

Environmental problems caused by industries; industrial hazards and occupation health, Role of globalization on industrial sector. Changing industrial policy and industrial policy of India. Industrial planning as an integral part of regional planning.

Practicals:

1- Comparative cost analysis for a given industry in a given region
2- Analysis of the spatial pattern of Industries.
   a) location quotient
   b) Isodapanes
   c) Practical exercises of different industrial location models.
3- Study of an industrial complex of India and determination of different kind of linkages.
4- Industrial planning in a given region based on given assumptions regarding resource distribution and infrastructure.
5- Practical record and Viva-voce

Suggested Readings:

1- Alexander, J.W.; Economic Geography, Prentice Hall, Englewood Cliffs, 1998.
2- Alexanderson, C: Geography of Manufacturing, Prentice Hall, Bombay, 1967.
3- Hoover, E.M.: The Location and Space Economy, McGraw Hill, N.Y., 1948.
4- Isard, W; Methods of Regional Analysis, The Technology Press of M.I.T. & John Wiley & Sons, N.Y., 1956.
5- Miller, E: Geography of Manufacturing, Prentice Hall, Englewood Cliffs, N.J., 1962.
6- Weber, Alfred: Theory of Location of Industries, Chicago University Press, Chicago.

Pedagogy

The teacher should take the students to a neighbouring industrial area and apprise them of the functioning of the various industries, difficulties faced and environmental problems created by them.

M.A. / M.Sc. III[rd] Semester

			Marks
Paper V	**GRP 305: Practical Examination**		**100**
(A)	Surveying :		80
	Prismatic Compass	20	
	Dumpy level	20	
	Theodolite	20	
	Sextant	10	
	Abney level	10	
(B)	Practical Record		10
	Viva – Voce		10

M.A. / M.Sc. Semester- IV

GR 401: Geographical Thought

Unit – I: Basic Frame and Concepts: Man-environment interaction: New environmentalism, Concepts: space, place, environment, time and spatial organization, Region and regional typology; culture and cultural landscape.

Unit – II:

Modern Approaches: Quantitative revolution and challenges, Philosophy and geography: Contributions of Vidal de la Blache, and Carl Sauer; Humanistic and phenomenological geography: contributions of Yi-Fu Tuan; Literary geography: landscape as text.

Unit III:

Contemporary Trends: Qualitative paradigm, Behavioural revolution: perception and cognition, mental maps; Marxism, Postmodernism; Poststructuralism and Postcolonialism.

Unit – IV:

Indian Geography-Base and Trends: Postcolonialism and Indian geography: Gandhi's contribution and Indian Geography, Gaia Theory and links to Indian Literature, Ancient Indian Geography and scientific outlook (e.g. cultural astronomy); Future of Indian geography: problems, perspectives and prospects.

Books Recommended :

1- Adams, P., Steven, H. and Karel, T. (eds.) (2001): Texture of Place, Exploring Humanistic Geographies University of Minnesota Press, Minneapolis.

2- Anderson, K. Domosh, M., Pile, s. and Thrift, N. (eds.) (2003): Handbook of Cultural Geography sage Publication London.

3- Barnes, T. and Gregory, D. (eds.) (1997): Readings in Human Geography: The Poetics and Politics of Inquiry. Arnold, London.

4- Bunkse, E.V. (2004): Geography and the Art of Life. John Hopkins University Press, Baltimore.

5- Buttimer, A. (1971): Society and Milieu in the French Geographic Tradition. Rand Mc Nelly, Chicago.

6- Daniels, P., Bradshaw, M., Shaw. D. and Sidway, J. (2000): An Introduction to Human Geography. Issues for the 21st Century. Prentice Hall, London.

7- Dear, M.J. and Fusty, S. (2002): The Spaces of Post modernity: Readings in Human Geography. Blackwell Publishers, Oxford.

8- Dikshit, R.D. (2004): Geographical Thought. A Critical History of ideas. Prentice- Hall of India, New Delhi, (in English and Hindi).

9- Doel, M. (1999): Poststructuralist Geographies. The Diabolical Art of Spatial Science. Edinburgh University Press, Edinburgh.

10- Gayle, G. and Wilmot, c. (eds.) (2003): Geography in America at the Dawn of the 21st Century. Oxford University Press, Oxford and New York.

11- Harvey, D. (1969): Explanation in Geography, Arnold, London.

12- Harvey, M.E. and Holly, P.B. (2002): Themes in Geographic Thought, Rawat Publications., Jaipur and New Delhi.'

13- Hubbard, P., Kitchin, R. Bartley, B. and Fuller, D. (2002): Thinking Geographically: Space, Theory and Contemporary Human Geography. Continuum, London.

14- Johnston, R, Gregory D, Pratt G, Watts M. and Whatmore S. (2003): The Dictionary of Human Geography. Blackwell Publishers, Oxford. 5th edition.

15- Johnston, R.J. (1985): The Future of Geography, Methuen and Company Ltd., New York. (2003 edition published).

16- Johnston, R.J. and Sidaway, J.D. (2004): Geography and Geographers. 6the edition, Edward Arnold, London.

17- Kapur, A. (ed.) (2001) Indian Geography – Voice of Concern. Concept Publishing Company, New Delhi.

18- Martin, G. (2005): All Possible Worlds. A History of Geographical ideas. 4th edition, Oxford University Press, new York.

19- Mathews, J.A. and Herbert, D.T. (eds.) (2004): Unifying Geography Common Heritage, Shared Future Routledge, London.

20- Peet, R. (1998): Modern Geographical Thought. Blackwell Publishers Inc, Massachusetts.

21- Sack, R.D. (ed.) (2002): Progress Geographical Essays. John Hopkins University Press, Baltimore.

22- Sauer, C.O. (1963): Land and Life, university of California Press, Berkley.

23- Singh, R.L. and Singh, Rana P.B. (eds.) (1990) Literature and Humanistic Geography, National Geographical Society of India, BHU, Varanasi, Publication number 37.

24- Singh, R.L. and Singh, Rana P.B. (eds.) (1992): The Roots of Indian Geography Search and Research. National Geographical Society of India, B.H.U., Varanasi Publication number 39.

25- Singh, Rana P.B. (ed.) (1993): Environmental Ethics. National Geographical Society of India, BHU, Varanasi, Publication number 40.

26- Singh, Rana P.B. (ed.) (1994): The Spirit and Power of Place. National Geographical Society of India, BHU, Varanasi Publication number 41.

27- Singh, Rana P.B. (2004): Cultural Landscapes and the Lifework. Indica Books, Varanasi.

28- Soja, E. (1989): Post-modern Geographies, Verso Press, London. Reprinted 1997: Rawat Publications, Jaipur and New Delhi.

29- Taylor, G. (Ed) (1953): Geography in the Twentieth Century. Methuen and Company Ltd. And Company, London.

30- Tuan, Yi-Fu (1977): Space and Place. The Perspective of Experience. Edward Arnold, London.

M.A. / M.Sc. Semester- IV
GR 402: Research Methods and Techniques.

Unit – I:

Framework of Research: Concept and significance of research in geography, Philosophy and methods: empiricism, positivism, behaviorism.

Unit – II:

Planning Research and Data Generation: Primary and secondary data: Data collection and arrangement; Research design; Participatory research; Framing pilot and research project; Making survey-questionnaire.

Unit – III:

Theories and Techniques: Model making, Application of system theory; Application and relevance of statistical and cartographic techniques; Application of computer and GIS.

UNIT - IV:

Analysis, writing and Dissemination: Production and arrangement of data; Analysis of data and maps; Quantitative and qualitative interpretations; writing manuals (arranging themes, maintaining coherence, cross-comparison, concluding, referencing, noting); Proof marks and marked proof; writing a research paper/report.

Books Recommended:

1- Ahuja, R. (2001): Research Methods, Rawat Publications Jaipur and New Delhi.
2- Bhattacharyya, D.K. (2005): Research Methodology, Excel Books, New Delhi.
3- Blackburn, J. and Holland, J. (cds.) (1998): Who changes? Institutionalising Participation in Development, IT Publications, London.
4- Blaxter, L., IIughes, C. and Tight, M. (1996): How to Research. Open University Press, Buckingham.
5- Crang, Mike 1999. Cultural Geography. Routledge, London.
6- Daniels, P., Bradshaw, M., et al. (2000): Human Geography: Issues for the 21st Century, Prentice Hall, London, and Pearson Publishers., Singapore, Indian reprint, 2003.
7- Denzin, N.K. and Lincoln, Y.S., (eds.) Handbook of Qualitative, Research. Thousand Oaks CA, Sage Publications.
8- Dikshit, R.D. (2003): The Art and Science of Geography: Integrated Readings, Prentice&Hall of India, New Delhi.
9- Dorling, D. and Simpson, L. (eds.) (1999): Statistics in Society. Edward Arnold, London.
10- Fisher, P. and Unwin, D., (eds.) (2002) virtual Reality in Geography. Taylor and Francis, London.
11- Flowerdew, R. and Martin, D. (eds.) (1997): Methods in Human Geography. A Guide for Students Doing a Research Project, Longman, Harlow.
12- Hay, I. (ed) (2000): Qualitative Research Methods in Human Geography. Oxford University Press, New York.
13- Henn, M., Mark W., and Nice F. (2006): A Short Introduction to Social Research, vistaar Publications, New Delhi.
14- Eyles J. and Smith D.M. (1988): Qualitative Methods in Human Geography, Polity Press Dales Brewering Campbridge.
15- Kitchin R. and Tate, N., (2001): Conducting Research into Human Geography, Theory, Methodology and Practice, Prentice-Hall London.
16- Kitchin, R. and Fuller, D., (2003): The Academic's guide to Publishing, Vistaar Publications, New Delhi
17- Limb, M. (2001) Qualitative Methodologies for Geographers. Issue and Debates, Edward Arnold, London.
18- Lofland, J. and Lofland, L.H. (1995): Analysing Social Setting, A Guide to Qualitatove Observation and Analysis, Wadsworth, Belmont, CA.
19- Longley, P., Goodchild, M.F., Maguire, D. and Rhind, D. (1999): Geographic Information Systems. Principles, Techniques, Management, Applications. John Wiley and Sons, New York.
20- Maso, I., Atkinson, P.A. Delamont, S. and Verhoeven, J.C. (eds.) (1995): Openness in Research. The Tension Between Self and Other. Van Corcum, Assen, Netherlands.
21- Mikkelsen, B.(2005) Methods for Development Work and Research: A New Guide for Practitioners, Sage Publications, London.
22- Mukherjee, N. (1993): Participatory Rural Appraisal: Methodology and Application. Concept Publishing Company, New Delhi.
23- Mukherjee, N. (2002): Participatory Learning and Action: with 100 Field Methods. Concept Publishing Company, New Delhi.
24- O' Leary, Z. (2005): The Essential Guide in Doing Research, vistarr Publications, New Delhi.
25- Pacione, M., (ed) (1999): Applied Geography: Principle and Practice. Routledge, London.
26- Parsons, T. and Knight, P.G., (1995): How to Do Your Dissertation in Geography and Related Disciplines, Chapman and Hall, London.
27- Patrick M. and Chapman S. (1990): Research Methods (Third Edition), Routledge, London
28- Peet, R. and Thrift N. (ed.) (1989/2002): New Models in Geography (2vols.) Rawat Publishers, Jaipur and New Delhi.
29- Rachel, P. et al(2001) Introducing Social Geographics, Arnold Hodder Group, London, and Oxford University Press, Oxford.
30- Robson, C. (1993): Real World Research. A Resource for Social Scientists and Practitioners-Researchers, Blackwell Publishers, Oxford.
31- Rogers, A. and Viles, H.A. (2003): The Student's Companion to Geography, Blackwell Publishers, Oxford. Indian reprint available.
32- Sheskin, Ira, M. (1987): Survey Research for Geographers, Scientific Publishers, Jodhpur.
33- Silverman, D. (1993): Interpreting Qualitative Data. Methods for Analyzing Talk, Text and Interaction. Sage Publications, London.
34- Singh, R.L. and Singh, Rana P.B. (1993): Elements of Practical Geography. Kalyani Publishers, Ludhiana and New Delhi. (English and Hindi editions).

M.A. / M.Sc. Semester- IV

GR 403A: Agricultural Geography.

Unit – I :

Nature, Scope, significance, development and approaches of agriculture geography .Development of agricultural technology in plant production, animal production and other agricultural fields. Origin and dispersal of agriculture, Determinants of agricultural land use.

Unit – II :

Land Reforms and land use policy, cropping pattern. Crop concentration, intensity of cropping, degree of commercialization, diversification and specialization efficiency and productivity, carrying capability of land. The concept of agricultural landscape.

Unit – III :

Determination of crop combination regions, Theories of agricultural location based on several multidimensional factors: Von Thuenen theory and its recent modification. Methods of delineation of agricultural regions. Whittlessey's classification of agricultural regions. Agricultural regions of the world, their location and characteristics.

Unit – IV :

Agricultural land use and cropping pattern in India. Regional pattern of productivity in India. Green, white and Blue revolutions and their impacts. Food deficit and food surplus regions of India. Specific problems in Indian agriculture and their management and planning. Agricultural policy of India. Contemporary Issues-food, nutrition and hunger, food aid programmes. Role of irrigation, fertilizers, insecticides, pesticides and technological knowhow in environmental degradation, employment in agricultural sector.

Practicals

1- Techniques of land use survey
2- Land use Planning Agricultural efficiency
3- Agricultural efficiency
4- Carrying capacity
5- Measurement of agricultural intensity
6- Practical record and Viva-voce

Suggested Readings

1- Baylist Smith T.P.: The Ecology of Agricultural System, Cambridge University Press, London, 1987.
2- Gregor, H.P.: Geography of Agriculture, Prentice Hall, B.Y., 1970.
3- Mannion, A.M. : Agriculture and Environmental Change, John Wiley, London, 1971.
4- Morgan, W.B. and Norton, R.J.C.: Agricultural Geography, Methuen, London, 1971.
5- Morgan, W.B. Agricultural in the Third World, A spatial Analysis, West View Press, Boulder, 1978.
6- Sauer, C.O.: Agricultural Origins and Dispersals, M.I.T. Press West View Press Mass, USA, 1969.
7- Singh J. and Dhillon S.S.: Agricultural Geography, Tata McGraw Hill Pub., New Delhi, 1988.
8- Tarrant, J.R.: Agricultural Geography, Wiley, N.Y., 1974.

Pedagogy:

The teacher should impress the students the overall importance of agriculture in the global perspective. The world is fast changing and its impact is felt on agriculture. Population is increasing and demand of agricultural products is also on the increase. Contrary to it, the farm lands are decreasing the necessary infusion of technology in agricultural sector. It is causing environmental pollution. The teacher should interact with students on above mentioned issues. Examples: Iron neighbouring areas may be given to the students for better perception.

M.A. / M.Sc. Semester- IV

Optional Paper 403B

GR 403B: Transport Geography

Note: Candidates will have to attempt five questions, including Question 1(short answer) and four other questions, selecting one question from each unit.

Unit – I:

Nature, Scope, significance and development of transport geography, evolution of transportation-preindustrial era. 19^{th} and 20^{th} centuries, Factors associated with the development of transport system. Physical, Economic, social, cultural and institutional. Evolution of transport network. Characteristics and relative significance of different modes of transport, Railways, Roads, Airways and waterways.

Unit – II:

Accessibility and flow models, network structure, graph theoretic measures, measurement of accessibility, models of network change, Linear programming and gravity models. Theories related to freight rate structure, bases of spatial interaction: complementarity, intervening opportunity, transferability, gravity, potential models of spatial interaction.

Unit – III:

Transport system in India, Railways, Roads, airways and waterways, patterns of movement, simple model of interaction, movement geometry. Transport policy and planning, transport development in developing countries.

Unit-IV:

Urban transportation-growth and problems. Transport and regional planning, transport and regional planning, transport and environmental degradation, vehicular pollution and congestion, alternative to transport system in Megacities of India, National Highway Development and planning in India.

Practicals:

1- Analysis of the structure and spatial variation of transport network by traditional graph and theoretic
2- Application of Gravity potential Models Showing Transport interaction.
3- Traffic flow analysis on the basis of flow data.
4- Connectivity and detour indices, degree of circuitry.
5- Transportation planning for a given region under specified assumptions.
6- Practical record and Viva-Voce.

Suggested Readings:

1- Chorley, R.J. and Hagget P: Model in Geography, Methuen & Co London, 1967.
2- Hurst, M.E. (Ed): Transportation Geography, McGraw Hill, 1974.
3- Hagget P. and Chorley R.J.: Network Analysis, Edward Arnold, London, 1968.
4- Hay A.: Transport Economy, Macmillan, London, 1973.
5- Hoyle, B.S. (ed) Transport and Development Macmillan, London, 1973
6- Raza M. Agrawal Y.P.: Transport Geography of India, Concept, New Delhi, 1985.
7- Robinson H. and Bamford G.G.: Geography of Transport, Macdonald & Evans, London, 1978.
8- Traffe, E.J. and Gauthier (Jr.) H.L.: Geography of Transportation Prentice Hall, Englewood Cliffs, J.J., 1973.
9- White H.P. and Senior M.L.: Transport Geography, Longman, London, 1953.

Pedagogy:

The students should familiarize themselves with date sources including maps of transport network and mapping flow data of goods and people (Roads and railways) and demarcating tributary areas and major bodes, They should also undertake practical exercise in working out accessibility index, network density and hierarchy. Study of transport should be related to regional and locational interaction using maps of market and urban centre and industrial location.

M.A. / M.Sc. Semester- IV

Optional Paper 403C

GR 403C: Regional Planning and Development

Note: Candidates will have to attempt five questions, including Question 1(short answer) and four other questions, selecting one question from each unit.

Unit – I:

Philosophy and purpose of planning. The development of planning thought, theories of regional development, economic base theory, international trade multipliers, aggregate growth model. The concept of growth centres, growth centre strategy of regional planning, rural economy, core-periphery relationship.

Unit – II:

Concept and types of regions-functional and formal, Uniform and nodal, single purpose and composite regions in the context of planning Regional hierarchy. Approaches for the definition of different types of regions and their utility in planning-resource base approach, growth centre approach, basic needs approach and habitat transformation approach.

Unit – II:

Delineation of planning regions. Planning regions of India. Planning process sectoral, temporal and spatial dimensions. Planning for a regions development and multiregional planning in a national context. Indicators of development and measuring levels of regional developments with special reference to India.

Unit – IV:

Regional planning for rural development with special reference to U.P. role of innovation diffusion, infra-structural elements (Irrigation, power, transpiration and communication and marketing) and Industrial in regional planning. Population-resource equilibrium and spatial organization in regional planning. Metropolitan regions in regional planning. Regional planning as development strategy since independence, regional development strategies concentration vs dispersal. Regional plans of India Concepts of multilevel planning decentralized planning. People's participation with the planning process.

Suggested Readings:

1- Singh, O.P. and Pandey, D.C.: Development Planning: Theory and Practice, Gyanodya Prakashan Nainital, 1986.
2- Bhatt, L.S.: Regional Planning in India, Statistical Publishing Society, Calcutta, 1973.
3- Freidman, J. and Alonso W. Regional Development Policy: A case Study of Venezuela, MIT Press, Cambridge Mass-1966.
4- Ghosal G.S. and Krishnan G: Regional Disparities in Levels of Socio Economic Development in Punjab, Vishal Publications, Kurukshetra, 1984.
5- Kuklinski A.R. (Ed) : Growth Poles and growth Centres in Regional Planning, Moutonj, The Hague, 1972.
6- Kundu A and Raza M: Indian Economy: The Regional dimension, Spectrum Publishers, New Delhi, 1982.
7- Losch, A: The Economics of Location, University Press, New Haven, 1954.
8- Mishra, R.P.: Regional Planning: Concepts, Techniques and Policies, University of Mysore, Mysore, 1969.
9-Mishra R.P. and Other (Ed): Regional Development-Planning in India: A strategy, Institute of Development Studies, Mysore, 1974

M.A. / M.Sc. Semester- IV

Optional Paper 404A

GR 404A: Geography of Rural Development

Note: Candidates will have to attempt five questions, including Question 1(short answer) and four other questions, selecting one question from each unit.

Unit – I:

Rural development: A geographical perspective. Theoretical Framework of rural development. Structure and spatial organization of rural settlements. Rural markets and market Centers, Growth point and growth centers. Theories of central places.

Unit – II:

Rural-Urban Relationship and their integration. Rural Land use and its problems. Dimensions of rural economy, physical and human resources-their spatial patterns and interrelationships, socio-economic dimensions, infrastructural facilities, socio-cultural organization.

Unit – III: Migrations and their causes Characteristic of rural population, agricultural and its characteristics. Social issues of rural areas- poverty, housing and shelter, deprivation and inequality. Empowerment of women, health care, social tension and underdevelopment.

Unit – IV:

Environmental issues-access to environmental infrastructure-water supply, sanitation, drainage, occupational health hazards. Balanced development strategies of India- Failure and success of various schemes sponsored by government for rural development. Government agencies and NGOS, Integrated rural development strategy.

Suggested Readings :

1- Kuklinski, A.R. (ed.) Grown poles and growth Centers in Regional planning, Moutan, The Hague, 1972.
2- Kundu A and Raza M; Indian Economy: The regional Dimension, Spectrum Publishers, New Delhi, 1982.
3- Richardson, H.W.: Regional Economics, Weidenfeld and Nicholson, London, 1969.
4- Clout, H.D.: Rural Geography, Pergammon, Oxford, 1977.
5- Ram Chandran, H: Village Clusters and Rural Development, Concept publication, New Delhi, 1985.
6- Rao, E.N.: Strategy for Integrated Rural Development, B.R. Publication Cor. Delhi, 1986.
7- Sriniwas M.N: Village India, Asia publication House, Bombay, 1968.
8- Wanmali, S: Service Centers in Rural India, B.R. Publication Cor. Delhi, 1983.

M.A. / M.Sc. Semester- IV

Optional Paper 404B

GR 404B: Political Geography

GR404B : Political Geography

Note: Candidates will have to attempt five questions, including Question 1(short answer) and four other questions, selecting one question from each unit.

Unit – I:

Nature, Scope, development, recent trends and approaches of political geography. Major schools of thought in political geography. Political geography vs. geopolitics, geographic element of the state-physical, human & economic.

Unit – II:

The methodology of political geography: A critical analysis of the functional unified theory. Genetic, functional and systems approaches, function and classification. Themes in political geography, state, nation. Nation-state and Nation building, frontiers and boundaries.

Unit – III: Colonialism, Decolonialisation, Neocolonialism, federalism and other forms of governance. Global strategic view with particular reference to the ideas of Mahan, Mackinder, Spykeman and De Seversky. The changing pattern of super powers and super nationalism. Impress of politics upon the environment framework. Elements of electoral geography. .

Unit – IV:

Political geography of contemporary India, India: a global strategic view, India's border with neighboring countries especially with Pakistan, China and Bangladesh. Geopolitical significance of Indian Ocean. SAARC region and India. The changing political map of India.

Suggested Readings:

1- Alexander, L.M. World Political Patterns, Ran McNally, Chicago, 1963.
2- De Blij H.J. and Glassner, Martin: Systematic Political Geography, John Wiley, N.Y. 1968.
3- Dikshit, R.D.: Political Geography: A Contemporary Perspective, Tata McGraw Hill, New Delhi, 1996.
4- Taylor, P: Political Geography, Longman, London, 1985.
5- Sukhwal, B.L., Modern Political Geography of India, Sterling Publisher, New Delhi, 1968.
6- Taylor, P: Political Geography, Longman, London, 1985.
7- Fisher, Charles: Essays in Political Geography, Methuen, London, 1968.
8- Pounds, N.J.G.: Political Geography, McGraw Hill, N.Y., 1972.
9- John R. Short, An Introduction to Political Geography, Routledge, London, 1982.
10- Moddle A.E.: Geography Behind Politics, Hutchinson, London, 2000.
11- Prescott, J.R.V.: The Geographical Factors and Boundaries, Aldine, Chicago.
12- Deshpande, C.D.: India: A regional Interpretation, Northern Book Centre, New Delhi 1992.
13- Panikkar, K.M.: Geographical Factors in Indian History, 2 Vols. Asia Publishing House, Bombay, 1959

M.A. / M.Sc. Semester- IV

Optional Paper 404C

GR 404C : Population & Development

Note: Candidates will have to attempt five questions, including Question 1(short answer) and four other questions, selecting one question from each unit.

UNIT I

Conceptual Frame : Population as resource; Population and development; Population and ecosystem; Demographic transition.

UNIT II

Historical Background and Characteristics: History of human population; Relationship between population, food and energy; Population characteristics: developed and developing countries (case study of India).

UNIT III

Problems and Policies: Optimum population ;Over Population & Under Population, Family welfare and planning; Population policies in India.

UNIT IV

Population and Development Conflict: Neo-Malthusian theory; Future perspectives: Growth scenario and relationship with Development . Population problems versus Development.

Books Recommended

1. Champion, T. (ed.) (1993): Population Matters. Paul Chapman, London.
2. Ehrlich, P.R. and Ehrlich, A.H. (1996): Ecoscience: Population, Resources, Environment. 6th edition, W.H. Freeman and Company, San Francisco.
3. Firor, J. and Jacobsen, J. E. (2003): The Crowded Greenhouse: Population, Climatic Change and Creating a Sustainable World. Universities Press (India) Private. Ltd., Hyderabad.
4. Haggett, P. (2001): Geography, A Modern Synthesis. 5th edition, Harper and Row, New York.
5. Hammett, C. (eds.) (1996): Social Geography: A Reader. Arnold, London.
6. Meadow, D.H., Meadows, D.L., Randers, J. and Behrens, W.W. III (1973): The Limits to Growth. I Report of the Club of Rome. The New American Library, New York.
7. Meadows, D.H., Meadows, D.L. and Randers, J. (1992): Beyond the Limits. Confronting Global Collapse, Envisioning a Sustainable Future. (A sequel to The Limits to Growth). Chelsa Green Publishers, Post Mills VT, USA.
8. Mesarovic, M. and Pester, E. (1974): Mankind at the Turning Point. II Report of the Club of Rome. The New American Library, New York.
9. Middleton, N. and O'Keefe, P. (2001): Redefining Sustainable Development. Pluto Press, London.
10. Ross, J. A. (ed.) (1982): International Encyclopaedia of Population. Free Press, New York.
11. Sharma, P. R. (ed.) (1991): Perspectives on the Third World Development. Rishi Publications., Varanasi.
12. Sharma, P. R. (ed.) (1994): Regional Policies and Development in the Third World. Rishi Publications, Varanasi.
13. Simon, J. L. (1977): The Economics of Population Growth. Princeton University. Press, Princeton.
14. Thakur, B. (ed.) (2004): Population, Resources and Development. Vol. II, Perspectives in Resource Management in Developing Countries. Concept Publishing. Company, New Delhi.
15. Tinbergen, J. (1976): RIO. Reshaping the International Order. III Report of the Club of Rome. The New American Library, New York.
16. U.N.C.E.D. (1987): Our Common Future. UNCED The Centre for Our Common Future, Geneva.

M.A. / M.Sc. IVTH Semester

	Marks
Paper V **GRP 405:Project Work & Study Tour**	**100**
1) Project Work (Related to Optional Paper):	50
Viva – Voce	10
2) Study Tour & Tour Report(Minimum 07 Days)	40