



प्रो० राजेन्द्र सिंह (रज्जू भय्या) विश्वविद्यालय, प्रयागराज, उ०प्र०
(पूर्ववर्ती इलाहाबाद राज्य विश्वविद्यालय)
Prof. Rajendra Singh (Rajju Bhaiya) University, Prayagraj, U.P.
(Formerly Allahabad State University)

DEPARTMENT OF GEOGRAPHY
COURSE STRUCTURE M.A. (CBCS)

Course Structure with Marks Distribution

SEMESTER- I

Course Code	Core/Elective	Course Title	Credit	T/P	Evaluation (MM = 100)		
					Internal		Ext.
					CIE	P	ETE
GEO 501	CC 1	Geomorphology	5	T	25	-	75
GEO 502	CC 2	Geographical Thought	5	T	25	-	75
GEO 503	CC 3	Geography of India	5	T	25	-	75
GEO 504	CC 4	Economic Geography	5	T	25	-	75
GEO 531	CC 5	Practical	4	P	-	100	-
TOTAL			24		500		

Continuous Internal Evaluation (CIE)
(MA Semester – I)

Sessional Test/ Exam	Tentative Test Schedule	Maximum Marks (MM – 25 Marks)
Int. Test -1*	Third week of September	12.5
Int. Test - 2*	Third week of October	12.5
Int. Test - 3*	Third week of November	12.5
End Semester	First/Second Week of December	-

*Best of the two test's marks will be posted in the grade sheet.

DEPARTMENT OF GEOGRAPHY
COURSE STRUCTURE M.A. (CBCS)

SEMESTER – II

Course Code	Core / Elective	Course Title	Credit	T/P	Evaluation (MM = 100)		
					Internal		Ext.
					CIE	P	ETE
GEO 505	CC 5	Physical Landscape	5	T	25	-	75
GEO 506	CC 6	Environmental Geography	5	T	25	-	75
GEO 507	CC 7	Geography of Resources	5	T	25	-	75
GEO 508	CC 8	Basics of Remote Sensing	5	T	25	-	75
GEO 532	CC 9	Practical	4	P	-	100	-
TOTAL			24		500		

Continuous Internal Evaluation (CIE)
(MA Semester – II)

Sessional Test/ Exam	Tentative Test Schedule	Maximum Marks (MM – 25 Marks)
Int. Test - 1*	Third week of January	12.5
Int. Test - 2*	Third week of February	12.5
Int. Test - 3*	Third week of March	12.5
End Semester	First/Second Week of April	-

*Best of the two test's marks will be posted in the grade sheet.

DEPARTMENT OF GEOGRAPHY
COURSE STRUCTURE M.A. (CBCS)

SEMESTER – III

Course Code	Core/Elective	Course Title	Credit	T/P	Evaluation (MM=100)		
					Internal		Ext.
					CIE	P	ETE
GEO 601	CC 10	Climatology	5	T	25	-	75
GEO 602	CC 11	Geographic Information System (GIS) and GPS Applications	5	T	25	-	75
GEO 651	EL (Select any One)	Urban Geography	5	T	25	-	75
GEO 652		Geography of Rural Settlements					
GEO 653	EL (Select any One)	Population Geography	5	T	25	-	75
GEO 654		Political Geography					
GEO 631	CC 12	Practical	4	P	-	100	-
TOTAL			24		500		

Continuous Internal Evaluation (CIE)
(MA Semester – III)

Sessional Test/ Exam	Tentative Test Schedule	Maximum Marks (MM – 25 Marks)
Int. Test -1*	Third week of September	12.5
Int. Test - 2*	Third week of October	12.5
Int. Test - 3*	Third week of November	12.5
End Semester	First/Second Week of December	-

*Best of the two test's marks will be posted in the grade sheet.

DEPARTMENT OF GEOGRAPHY
COURSE STRUCTURE M.A. (CBCS)

SEMESTER – IV

Course Code	Core/Elective	Course Title	Credit	T/P	Evaluation (MM=100)		
					Internal		Ext.
					CIE	P	ETE
GEO 603	CC 13	Hydrology and Oceanography	5	T	25	-	75
GEO 604	CC 14	Research Methods & Techniques	5	T	25	-	75
GEO 655	EL (Select any One)	Regional Planning and Development	5	T	25	-	75
GEO 656		Industrial Geography					
GEO 657	EL (Select any One)	Agricultural Geography	5	T	25	-	75
GEO 658		Disaster Management					
GEO 632	CC 15	Project Work / Dissertation & Study Tour	4	P	-	100	-
TOTAL			24		500		

Continuous Internal Evaluation (CIE)
(MA Semester – IV)

Sessional Test/ Exam	Tentative Test Schedule	Maximum Marks (MM – 25 Marks)
Int. Test - 1*	Third week of January	12.5
Int. Test - 2*	Third week of February	12.5
Int. Test - 3*	Third week of March	12.5
End Semester	First/Second Week of April	-

*Best of the two test's marks will be posted in the grade sheet.

Department of Geography
Prof. Rajendra Singh (Rajju Bhaiya) University
M. A. / M.Sc. Ist Year

M.A. /M.Sc.	Year: First	Semester: First
Subject: Geography		
Paper Code: GEO 501	Paper Title: Geomorphology	Theory
Max. Marks: 75+25	Core Paper	Credit: 5
Unit – I: Meaning, scope and Fundamental Concepts of geomorphology, Modern geomorphologists – Hutton, Strahler, King.		
Unit – II: Endo-genetic process: Plate tectonic, Mountain, Building, Vulcanicity, Seismicity, Earthquakes, Tsunami, Isostasy.		
Unit – III: Geomorphometric Analysis – Drainage density, 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.		

Course outcomes: Students will be able to understand

1. The Earth geomorphic transition from beginning to present day.
2. Plate tectonics and related movements.
3. Morphometric techniques.
4. Indian geomorphology.

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.

M.A. / M.Sc. Semester- I

GEO 502: Geographical Thought

M.A. /M.Sc.	Year: First	Semester: First
Subject: Geography		
Paper Code: GEO 502	Paper Title: Modern Geographical Thought	Theory
Max. Marks: 75+25	Core	Credit: 5
<p>Unit – I:</p> <p>Geography its place in the classification of science; Basic concepts in philosophy of Geography- distribution, relationship, areal differentiation and spatial organisation.</p>		
<p>Unit – II:</p> <p>Concept of Paradigm: Paradigm shift, positivism and Logical positivism, Quantitative revolution, Models, system analysis in geography, Scientific exploration: Inductive and deductive approach.</p>		
<p>Unit – III:</p> <p>A general survey of development in geography upto World War-II: Contribution of Humboldt, Ritter, Ratzel, Ritchthofen, Hettner, Blache, Mackinder, Sauer.</p>		
<p>Unit – IV:</p> <p>Modern development: Applied geography and relevance Debate, Spatial inequality and regional imbalances, Geographers and policy, Regional Planning, Feminist Geography, Future of geography.</p>		

Course Learning Outcomes:

On completion of this course, students will be able to:

1. To visualize the basic theme, ideas, dichotomies and approaches of geographic knowledge with relation to historical juncture, varying schools and era of their emergence.
2. to critically evaluate the nature of geography as spatial science with changing space and time

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*. 6th 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, Berkeley.
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.S.c. Semester I

GEO 503: Geography of India

M.A. /M.Sc.	Year: First	Semester: First
Subject: Geography		
Paper Code: GEO 503	Paper Title: Geography of India	Theory
Max. Marks: 75+25	Core Paper	Credit: 5
<p>Unit – I: India through geological times, Structure and Relief regions, Physiographic division, Drainage system, soil types.</p>		
<p>Unit – II: Climatic characteristics, Mechanism of Indian Monsoon, Climatic Regions, Natural Vegetation & wild life.</p>		
<p>Unit - III: Agricultural Characteristics and Trends, Crop Combination regions, Green revolution, White revolution, Blue revolution, and Yellow revolution.</p>		
<p>Unit – IV: Industrial region Transport system – rail, road, air. Population growth, Population distribution and density, age-sex pyramid, National population policy.</p>		

Course Learning Outcomes

On completion of this course, learners will be able to:

1. The importance of “Ek Bharat Shrestha Bharat”
2. The wider aspects of Geography of India

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. Johnson, B. L. C. (ed.) (2001): Geographical Dictionary of India. Vision Books, New Delhi.
5. Johnson, B.L.C. (1983): Development in South Asia. Penguin Books, Harmonsworth.
6. Khullar, D. R. (2006): India. A Comprehensive Geography. Kalyani Publishers., New Delhi.
7. Krishnan, M. S. (1968): Geology of India and Burma. 4th edition. Higgin Bothams Private Ltd., Madras.
8. Nag, P. and Gupta, S. S. (1992): Geography of India. Concept Publishing. Company, New Delhi.
9. Sharma, T. C. (2003): India: Economic and Commercial Geography. Vikas Publication., New Delhi.
10. Singh, J. (2003): India: A Comprehensive and Systematic Geography. Gyanodaya Prakashan, Gorakhpur.
11. Singh, R. L. (ed.) (1971): India. A Regional Geography. National Geographical Society of India, Varanasi.
12. Spate, O.H.K., Learmonth, A.T.A. and Farmer, B. H. (1979): India and Pakistan. Methuen and Company Ltd. and Company Ltd., London.
13. Subbarao, B. (1959): The Personality of India. University of Baroda Press, Baroda.
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.

GEO 504: Economic Geography

M.A. /M.Sc.	Year: First	Semester: First
Subject: Geography		
Paper Code: GEO 504	Paper Title: Economic Geography	Theory
Max. Marks: 75+25	Core Paper	Credit: 5
<p>Unit – I: Meaning and scope of economic geography, Approaches to study of economic geography, Recent trends in economic geography.</p>		
<p>Unit – II: Evolution of world economic system, Concept and Models of Development, Agricultural location models- Vonthunen and Hagerstand</p>		
<p>Unit – III: Classification of industries: Iron & steel, textile, sugar & Petro-Chemical; Theories of Industrial location -Weber, Losch, Isard & Hoover.</p>		
<p>Unit – IV: Theories of transport development, Economic regions and their salient features. Impact of WTO, Globalization, Liberalization, Economy of developing world.</p>		

Course Learning Outcomes

On completion of this course, learners will be able to:

1. Define Meaning, concepts and approaches of Economic Geography
2. Understand the nature of Economic activities, Resource Distribution
3. Understand the Effect of globalization on developing countries.

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.

Practical Examination

M.A. /M.Sc.	Year: First	Semester: First
Subject: Geography		
Paper Code: GEO 505	Paper Title: Cartographic Work	Practical
Max. Marks: 75+25	Core Paper	Credit: 4
Part A: Statistical Methods and Cartographic Techniques		
Unit – I: Measures of central tendency-Mean, median and mode, Mean deviation, Quartile deviation.		
Unit-II: Measures of dispersion, Standard Deviation, Co-efficient of variation, Co-efficient of Correlation, rank Correlation, Chi square test.		
Unit – III: Geological maps and cross section Horizontal, Inclined, Unconformable, Folded strata, Dip and Strike.		
Part B: Field cum Lab Work		
Unit – I: Sources and Types of data, Methods of data Collection, Classification and Tabulation of data (With special reference to village/ Ward/ town area).		
Unit – II: Local excursion and report (maximum 2 days)		
Unit – III: Practical record (Part A & B) Viva-Voce examination		

Course Learning Outcomes

Students will be able to understand

1. Differentiate between qualitative and quantitative information.

2. The nature of various data.
3. Sampling methods for data collection.
4. Present data through graphical and diagrammatic formats.
5. Use the concept of probability mainly the normal distribution.

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.



Department of Geography
Prof. Rajendra Singh (Rajju Bhaiya) University
M. A. / M.Sc. Previous
Second Semester

GEO 506: Physical Landscape

M.A. /M.Sc.	Year: First	Semester: Second
Subject: Geography		
Paper Code: GEO 506	Paper Title: Earth Dynamic system and Physical Landscape	Theory
Max. Marks: 75+25	Core Paper	Credit: 5
<p>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.</p>		
<p>Unit – II: Concept of cycle of erosion: Davis and Penck, interruption in the cycle and polycyclic relief.</p>		
<p>Unit – III: Exogenic process: Concept of gradation, Agents and processes of gradation, Causes, Types and classification of weathering, Erosion & Depositional processes and Landform- Fluvial, Aeolian, Karst, Glacial, Periglacial and Coastal.</p>		
<p>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.</p>		

Course outcomes: Students will be able to understand

1. Landforms carved by various agents of erosion.

2. Earth's climate and factors that influence it.
3. Ocean system and biogeography of the world.

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 Mifflin Company, Boston.
16. Wooldridge, S.W. and Morgan, R.S. (1959): The Physical Basis of Geography- An Outline of Geomorphology. Longmans Green, London

GEO 507: Environmental Geography

M.A. /M.Sc.	Year: First	Semester: Second
Subject: Geography		
Paper Code: GEO 507	Paper Title: Environmental Geography	Theory
Max. Marks: 75+25	Core Paper	Credit: 5
<p>Unit – I:</p> <p>Meaning, nature and Scope of environmental geography, approaches and methods in environmental geography, Types of environments, environmental perception. Environment & society, environment and development.</p>		
<p>Unit – II:</p> <p>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.</p>		
<p>Unit – III:</p> <p>Environmental hazards: Natural Hazard – Flood, Drought, Landslide, soil erosion earthquake, desertification.</p> <p>Man-made hazards – urbanization, Industrialization, technological hazard, global climatic changes, global warming, greenhouse effect, ozone depletion.</p>		
<p>Unit – IV:</p> <p>Environmental pollution, pollutants, Sources and types of pollution-water soil, air and noise pollution, solid waste disposal, environmental pollution and health Environmental education, Environmental monitoring. Environmental impact analysis. Environmental policies and legislation, Environmental management.</p>		

Course outcomes: Students will be able to understand

1. The course aim is to give basic understanding of concept Environment, Climate Change and Disaster Management.
2. Understanding of the concept of appraisal and conservation of Environment and Natural Resources.
3. It will help in developing understanding about various Impacts of Climate Change.
4. This course shall introduce the basic concepts related to disaster Management.
5. This paper shall help in understanding Global effort in field of disaster 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. Bilas, R. (1988): Rural Water Resource Utilization and Planning. Concept Publishing Company, New Delhi.
4. Blaikie, P., Cannon, T. and Davis, I. (eds.) (2004): At Risk: Natural Hazards, Peoples Vulnerability and Disasters. Routledge, London.
5. Clarke, J. I., Curson, P., Kayastha, S. L. and Nag, P. (eds.) (1991): Population and Disaster, Basil Blackwell, USA.
6. Gautam, A. (2007): Environmental Geography, Sharda Pustak Bhawan, Allahabad.
7. Huggett, R. J. (1998): Fundamental of Biogeography. Routledge, London.
8. Kayastha, S.L. and Kumra, V.K. (1986): Environmental Studies. Tara Book Agency, Varanasi.
9. Khoshoo, T. N. (1981): Environmental Concerns and Strategies. Ashish Publishing House, New Delhi.
10. Kumra, V.K. (1982): Kanpur City. A Study in Environmental Pollution. Tara Book Agency, Varanasi.
11. Mathur, H. S. (2003): Essentials of Biogeography. Pointer Publication, Jaipur.
12. 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.
13. Odum, E.P. (1975): Ecology. Rowman and Littlefield, Lanham USA.

14. Rajagopalan, R. (2005): Environmental Studies: From Crisis to Cure, Oxford University Press, New Delhi.
 15. Reddy, M. A. (2004): Geoinformatics for Environmental Management. B. S. Publishers., Hyderabad.
 16. Saxena, K.K. (2004): Environmental Studies. University Book House Private Ltd., Jaipur
 17. Saxena, H. M. (1999): Environmental Geography. Rawat Publications., Jaipur and New Delhi.
 18. Saxena, H. M. (2000): Environmental Management. Rawat Publications., Jaipur and New Delhi.
 19. Singh, A.K., Kumra, V.K. and Singh, J. (1986): Forest Resource, Economy and Environment. Concept Publishing. Company, New Delhi.
 20. Singh, D.N., Singh, J. and Raju, K.N.P. (eds.) (2003): Water Crisis and Sustainable Management, Tara Book Agency, Varanasi
 21. Singh, J. (2001): Paryavaran Evam Samvikas. Gyanodaya Prakashan, Gorakhpur.
 22. Singh, O., Nag, P., Kumra, V.K. and Singh, J. (eds.) (1993): Frontier in Environmental Geography. Concept Publishing Company, New Delhi.
 23. Singh, O., Kumra, V.K. and Singh, J. (1988): India's Urban Environment. Pollution, Perception and Management. Tara Book Agency, Varanasi.
 24. Singh, R. B. (ed.) (1990): Environmental Geography. Heritage Publication, New Delhi.
 25. Singh, R. B. (ed.) (1995): Studies in Environment and Development. Rakesh Prakashan, Varanasi.
 26. Singh, Rana P.B. (ed.) (1993): Environmental Ethics: Discourses and Cultural Traditions. National Geographical Society of India, BHU, Varanasi.
 27. Singh, S. (2006): Environmental Geography. Prayag Pustak Bhawan, Allahabad.
 28. Singh, S. (2007): Paryavaran Bhoogol. Prayag Pustak Bhawan, Allahabad.
 29. Singh, S. N. (1993): Elements of Environmental Geography and Ecology (in Hindi), Tara Book Agency, Varanasi
- Wrigley, N. (1985): Categorical Data Analysis for Geographers and Environmental Scientists. Longman, London.

GEO 508: Geography of Resources

M.A. /M.Sc.	Year: First	Semester: Second
Subject: Geography		
Paper Code: GEO 508	Paper Title: Geography of Resources	Theory
Max. Marks: 75+25	Core Paper	Credit: 5
<p>Unit – I: Nature, scope and significance of geography of resources. Definition and concept of natural resources. Classification of resources.</p>		
<p>Unit – II: Characteristics of natural resources: Resource conservation and management with reference to land and forest resource.</p>		
<p>Unit – III: Water resources-Hydrologic Cycle, fresh water resources, surface and underground water supplies, problems of water supplies. Marine resources, major fishing grounds of the world, fish distribution and exploitation. India's natural resource: water resource, conservation and management and its utilization</p>		
<p>Unit-IV: Energy resources-Conventional energy resources - coal, petroleum, non – conventional - solar and geothermal energy.</p>		

Course outcomes: Student will be able to learn about the importance of natural resources. Student will also be able to understand the conservation and awareness about resource conservation and management.

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 Trebor, 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.

GEO 509: Basics of Remote Sensing

M.A. /M.Sc.	Year: First	Semester: Second
Subject: Geography		
Paper Code: GEO 509	Paper Title: Basics of Remote Sensing	Theory
Max. Marks: 75+25	Core Paper	Credit: 5
<p>Unit – I: Remote Sensing: Meaning, Definition and Scope; Historical Development; Component of Remote sensing; EMR: Characteristics, Spectral regions and bands;</p>		
<p>Unit – II: Remote sensing Platform and sensors: Types of Platforms; Types of Satellites; Orbits of Satellite; Remote Sensing Sensor; Resolution: Spatial, Spectral, Temporal, Radiometric.</p>		
<p>Unit – III: Aerial Photography, its geometry, Relief Displacement and Image Formations. Classification of Aerial Photographs and their Utility. Elements of Image Recognition and Aerial Photo interpretation.</p>		
<p>Unit – IV: Remote Sensing data processing and applications: Visual and digital image processing techniques, Image Classification-supervised and unsupervised; Application of Remote sensing in Geographical Studies.</p>		

Course Learning Outcomes

On completion of this course, learners will be able to:

1. Understand the Basic idea and application of Remote sensing Techniques
2. Students will be able to observe the component and application of satellite based remote sensing data.

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 IInd Semester

M.A. /M.Sc.	Year : First	Semester: Second
Subject : Geography		
Paper Code: GEO 510	Paper Title: Map Projection and Cartography	Practical
Max. Marks: 75+25	Core Paper	Credit: 4
Part A: Map Projections and Cartographic Work		
Unit – I		
Map Projection: Classification, properties, choice, merits and demerits of map projection. Drawing of the following map projections by using mathematical methods: Mercator’s, Bonne’s, Polyconic, Gall’s, Mollweide’s, Sinusoidal, Polar Zenithal Gnomonic, Polar Zenithal Stereographic and Polar Zenithal Orthomorphic Projections.		
Unit – II:		
<p style="color: red;">Cartographic Representation of Statistical Data:</p> <p style="color: red;">Water Surplus and Water Balance Graph, Rainfall Dispersion diagram, Hypsographic curve, Locational Quotient, coefficient of Localization.</p>		
Unit – III: Block diagrams.		
Part B: Field -cum- Lab Work		
Unit – I: Aerial Photo Interpretation		
Unit – II: Computer: Components and Characteristics, Application in Map Making.		
Practical Record:		
Viva-voce		
Course Learning Outcomes:		

M.A. /M.Sc. Third Semester

M.A. /M.Sc.	Year : Second	Semester: Third
Subject : Geography		
Paper Code: GEO 601	Paper Title: Climatology	Theory
Max. Marks: 75+25	Core Paper	Credit: 5
<p>Unit – I: Nature and scope of climatology and its relationship with meteorology; The atmosphere: Structure and composition; insolation, heat-balance of the earth; Distribution of temperature: Temporal, vertical and horizontal, Green House effect.</p>		
<p>Unit – II: Atmospheric Equilibrium: Stability and instability, potential temperature and evapo-transpiration. Distribution of atmospheric pressure and winds: Jet streams, monsoon winds.</p>		
<p>Unit – III: Climatic Phenomena: Air masses and fronts, origin, growth, classification. Frontogenesis, types and weather associated with fronts. Cyclones, and anticyclones, Global warming.</p>		
<p>Unit – IV: Climatic Classifications: Koppen's and Thornthwaites - A critical appraisal of each classification, World Climatic regions, Interpretation and generation of climatic information, soils, agricultural activities.</p>		

Course Learning Outcomes: The student will be able

1. To conceptualize the concept of weather and climate and correlate it with daily weather phenomena.

2. To develop the casual relationship of climate and other socio-economic and cultural activities.

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

M.A. /M.Sc.	Year : Second	Semester: Third
Subject : Geography		
Paper Code: GEO 602	Paper Title: Geographic Information System (GIS) and GPS Applications	Theory
Max. Marks: 75+25	Core Paper	Credit: 5
Unit – I: Introduction of GIS: Definition, and development of GIS, Elements of GIS, Geoinformatics and GIS, Georeferencing		
Unit-II: Geo-information and Spatial Data: Types of information in a digital map: scale, projection, Coordinate system; Elements & Types of Spatial Data; Raster and vector data structure; attribute data; Database management systems.		
Unit III GPS-segment, types, surveying techniques, instruments, applications and benefits, Integration of GIS with Remote Sensing & Global positioning System (GPS), Application of GPS.		
Unit IV Application of GIS in Geographical Studies; Issues and Prospects of GIS; Web-GIS; GIS Packages- Arc GIS, Q-GIS		

Course Learning Outcomes

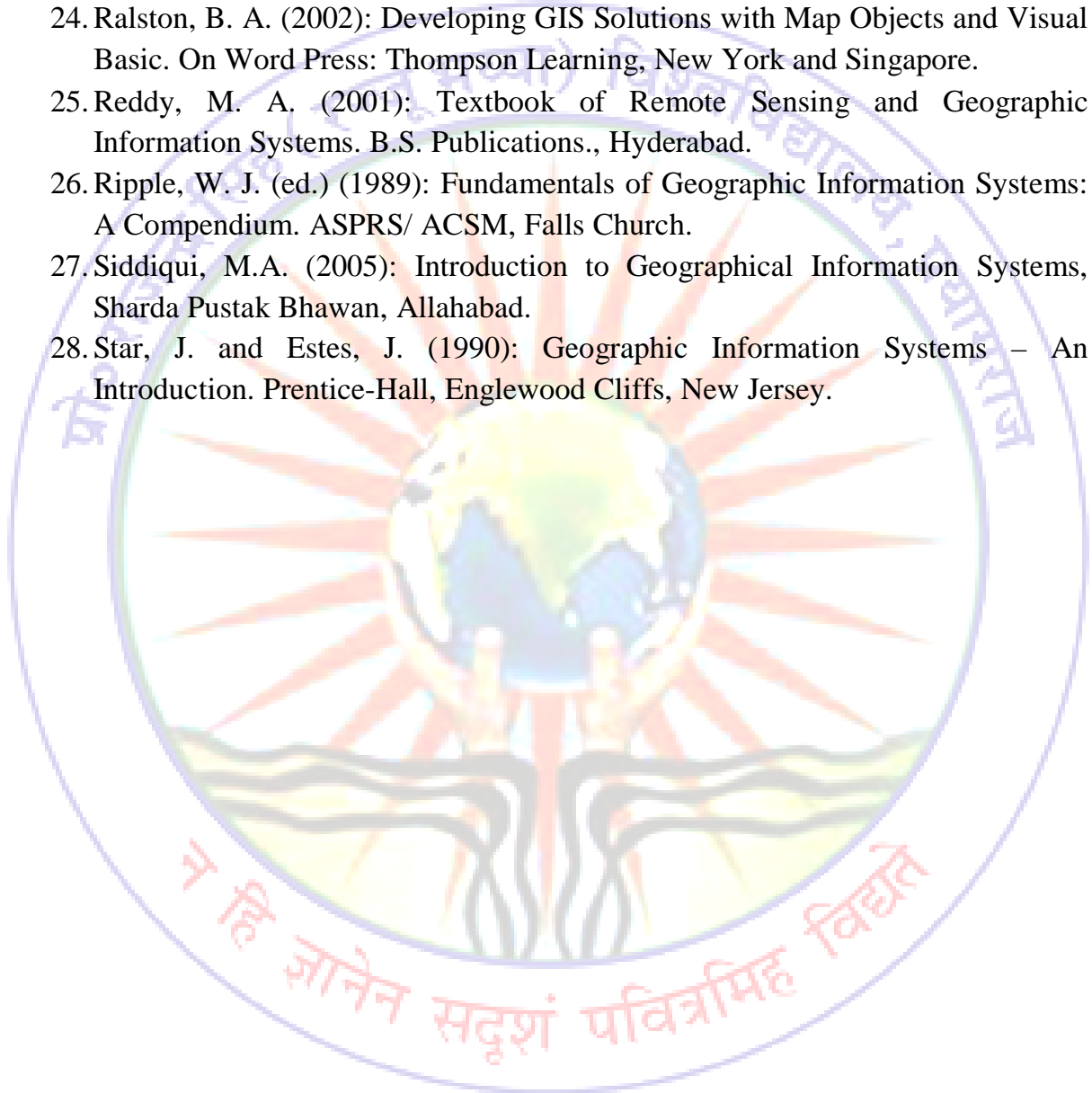
On completion of this course, learners will be able to:

1. Understanding the basic concept of GIS and GPS Technology,
2. Students will be able to apply the knowledge of GIS technique and its application in geographic studies.

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. Geo-Information 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.



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

Optional Paper (603): Students are required to opt any One of the following: GEO603A, GEO 603B

M.A. /M.Sc.	Year : Second	Semester: Third
Subject : Geography		
Paper Code: GEO 603A	Paper Title: Urban Geography	Theory
Max. Marks: 75+25	Elective	Credit: 5
GR 603A: Urban Geography		
<p>Note: Candidates will have to attempt five questions, including Question 1(short answer) and four other questions, selecting one question from each unit.</p>		
Unit – I		
<p>Meaning, scope and significance of Urban Geography; approaches and recent trends in urban geography; Origin and evolution of urban places in ancient, Medieval and modern period; urban morphology and land use patterns; classical models of urban growth and evolution of functional zones: concentric zone, sectoral and multiple nuclei models.</p>		
Unit – II:		
<p>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, city-region relations and modern urban landscape.</p>		
Unit – III:		
<p>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 sprawl, slums, transportation, housing, urban pollution, solid waste, urban crime and environmental health.</p>		

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.

Course outcomes: Student will be able:

1. To understand basic urban concept
2. To analyse contemporary urban issues from geographical perspective.

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.

Geography of Rural Settlement

M.A. /M.Sc.	Year : Second	Semester: Third
Subject : Geography		
Paper Code: GEO 603 B	Paper Title: Geography of Rural Settlements	Theory
Max. Marks: 75+25	Elective	Credit: 5
GEO 604A: Geography of Rural Settlements		
<p>Note: Candidates will have to attempt five questions, including Question 1(short answer) and four other questions, selecting one question from each unit.</p>		
<p>Unit – I:</p> <p>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.</p>		
<p>Unit II:</p> <p>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.</p>		
<p>Unit – III:</p> <p>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.</p>		

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.

Course outcomes:

1. To analyse the issues and challenges of rural settlement
2. Critically evaluate the various plans adopted for rural development.

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 Centres 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

Optional Paper (604 A, 604 B): Students are required to opt any One of the followings papers

GEO 604 A: Population Geography

M.A. /M.Sc.	Year : Second	Semester: Third
Subject : Geography		
Paper Code: GEO 604A	Paper Title: Population Geography	Theory
Max. Marks: 75+25	Elective	Credit: 5
<p>Note: Candidates will have to attempt five questions, including Question 1(short answer) and four other questions, selecting one question from each unit.</p>		
<p>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.</p>		
<p>Unit – II: Population distribution, density and growth: Theories of population growth-classical and modern. Factors affecting population distribution, world pattern of population distribution and density. Population distribution, density and growth profile of India.</p>		
<p>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.</p>		
<p>Unit – IV: Population resource regions of the world and India. Human development index and</p>		

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.

Course Outcomes:

The student will be able to describe and evaluate dimension of population dynamics in space and time.

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. Semester- IV
Elective Paper GEO 509 B
GEO 604 B: Political Geography

M.A. /M.Sc.	Year : Second	Semester: Fourth
Subject : Geography		
Paper Code: GEO 604 B	Paper Title: Political Geography	Theory
Max. Marks: 75+25	Elective	Credit: 5
<p>Note: Candidates will have to attempt five questions, including Question 1(short answer) and four other questions, selecting one question from each unit.</p>		
<p>Unit – I:</p> <p>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.</p>		
<p>Unit – II:</p> <p>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.</p>		
<p>Unit – III:</p> <p>Colonialism, Decolonialisation, Neo-colonialism, federalism and other forms of governance. Global strategic view with particular reference to the ideas of Mackinder, and Spykeman. The changing pattern of super powers and super nationalism. Impress of politics upon the environment framework. Elements of electoral geography.</p>		
<p>Unit – IV:</p> <p>Political geography of contemporary India, India: a global strategic view, India's border with neighbouring countries especially with Pakistan, China and Bangladesh. Geopolitical significance of Indian Ocean. SAARC region and India. The changing political map of India.</p>		

Course Outcome:

1. Student will be able to critically examine various political issues in geographical context.
2. They will be able to evaluate and correlate theories with reference to geopolitics and geo-strategic issues.

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. Sukhwai, 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. IIIrd Semester

M.A. /M.Sc.	Year : Second	Semester: Third
Subject : Geography		
Paper Code: GEO 605	Paper Title: Survey	Practical
Max. Marks: 75+25	Core	Credit: 4
<p>Unit 1: Surveying:</p> <p>Plain Table</p> <p>Prismatic Compass</p> <p>Dumpy level</p> <p>Theodolite</p> <p>Sextant</p> <p>Abney level</p>		
<p>Unit 2</p> <p>Study Tour & Tour Report (Minimum 07 Days)</p> <p>Viva-voce</p>		

Course outcomes: Students will be able-

1. to understand the practical utility of instruments in geographical studies.
2. Study physical and human geography of area being visited.
3. Learn to prepare tour report.

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

GEO 606: Hydrology and Oceanography

M.A. /M.Sc.	Year : Second	Semester: Fourth
Subject : Geography		
Paper Code: GEO 606	Paper Title: Hydrology and Oceanography	Theory
Max. Marks: 75+25	Core Paper	Credit: 5
Part A: Hydrology		
Unit – I:		
<p>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.</p>		
Unit – II:		
<p>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.</p>		
Part B: Oceanography		
Unit III:		
<p>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.</p>		
Unit IV:		
<p>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.</p>		

Course outcomes: Student will be able to understand:

1. The application of water balance equation to various hydrological problems in time and space.
2. To understand the basic concept of oceanography and its relationship with marine resources.

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 Mifflin 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.

GEO 607: Research Methods and Techniques.

M.A. /M.Sc.	Year : Second	Semester: Fourth
Subject: Geography		
Paper Code: GEO 607	Paper Title: Research Methods and Techniques.	Theory
Max. Marks: 75+25	Core	Credit: 5
<p>Unit – I: Meaning and objectives of Research: Concept and significance of research in geography, Philosophy and methods: empiricism, positivism, behaviourism.</p>		
<p>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.</p>		
<p>Unit – III: Theories and Techniques: Model making, Application of system theory; Application and relevance of statistical and cartographic techniques; Application of computer and GIS.</p>		
<p>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.</p>		

Course outcomes: The student will be able to understand

1. Basic concept of field research method in geography
2. To do field work through practical exercise and skill of data collection methods and processing and analysis of collected data.

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. (eds.) (1998): Who changes? Institutionalising Participation in Development, IT Publications, London.
4. Blaxter, L., Hughes, 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 Qualitative 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
Optional Paper (608 A, 608 B): Students are required to opt any One of them

Optional Paper 608 A
GEO 608 A: Regional Planning and Development

M.A. /M.Sc.	Year : Second	Semester: Fourth
Subject : Geography		
Paper Code: GEO 608 A	Paper Title: Regional Planning and Development	Theory
Max. Marks: 75+25	Elective	Credit: 5
<p>Note: Candidates will have to attempt five questions, including Question 1(short answer) and four other questions, selecting one question from each unit.</p>		
<p>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.</p>		
<p>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.</p>		
<p>Unit – III: 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.</p>		
<p>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</p>		

multilevel planning decentralized planning. People's participation with the planning process.

Course outcomes:

Students will be able to understand

1. The concept of Region and Regional Planning.
2. The applicability of Theories and Models for Regional Planning.
3. To develop understanding about concept of Development, Sustainable Development and Multi level planning.

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. Third Semester: Paper IV

GR 608 B: Industrial Geography

M.A. /M.Sc.	Year : Second	Semester: Third
Subject : Geography		
Paper Code: GEO 608 B	Paper Title: Industrial Geography	Theory
Max. Marks: 75+25	Elective	Credit: 5
<p>Note: Candidates will have to attempt five questions, including Question 1(short answer) and four other questions, selecting one question from each unit.</p>		
<p>Unit – I: Nature, Scope and recent developments of Industrial Geography, factors of localisation of industries, Theories and models of industrial location: Weber and Hoover, Critical review and application of industrial location theories</p>		
<p>Unit – II: Distributional patterns of important industries: - Iron and steel, Cotton Textiles, Chemicals and Petro-chemicals, Method of delineating industrial regions, Major industrial regions of the World.</p>		
<p>Unit III: Environmental degradation caused by industries, Industrial hazards and occupational health, Impact of industries on economic development, Role of globalization on industrial sector.</p>		
<p>Unit – IV: Major Industrial Regions of India: Location, characteristics, chief industries and associated problems of each region, Changing industrial policy and industrial policy of India. Industrial planning as an integral part of regional planning.</p>		

Course outcome: Student will be able

1. To assess the role of location & place in development and distribution of industries.
2. To apply different methods of location of industrial region.
- 3.

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. Semester- IV

GEO 609 A: Agricultural Geography

M.A. /M.Sc.	Year: Second	Semester: Fourth
Subject: Geography		
Paper Code: GEO 609 A	Paper Title: Agricultural Geography	Theory
Max. Marks: 75+25	Elective	Credit: 5
<p>Unit – I:</p> <p>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.</p>		
<p>Unit – II:</p> <p>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.</p>		
<p>Unit – III:</p> <p>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.</p>		
<p>Unit – IV:</p> <p>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.</p>		

Course outcomes: The student will be able to evaluate the agricultural dynamics include land use, agriculture system and major drawbacks in agricultural development.

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. Fourth Semester: Paper IV

GEO 609 B: Disaster Management

M.A. /M.Sc.	Year : Second	Semester: Fourth
Subject : Geography		
Paper Code: GEO 609 B	Paper Title: Disaster Management	Theory
Max. Marks: 75+25	Elective	Credit: 5
<p>Note: Candidates will have to attempt five questions, including Question 1(short answer) and four other questions, selecting one question from each unit.</p>		
<p>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.</p>		
<p>Unit – II: Natural Disaster – Geological, Water and climate, Environmental Man-Made disaster – Chemical, Industrial, Nuclear, Accident</p>		
<p>Unit – III: Biological disaster – Epidemics, Pest – Attack,, Cattle epidemic, Food poisoning. Social Response to Lazard-reduction, Identification of multiple disaster prone areas.</p>		
<p>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 SDMA.</p>		

Course outcome: Student will be able -

1. To gain a perspective of disaster and hazards
2. Student keep to pursue a profession in disaster can do so by addressing real life issues of vulnerability of people.

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. IVth Semester
Paper V
GEO 610: Project Work & Study Tour

M.A. /M.Sc.	Year : Second	Semester: Fourth
Subject : Geography		
Paper Code: GEO 610	Paper Title: Project Work & Study Tour	Practical
Max. Marks: 75+25	Core	Credit: 4
Project Work (Related to Optional Paper)		
Viva – Voce		

Course outcomes:

Students will be able to understand

4. The variation among geographical locations.
5. Interaction with people with different natural and cultural settings.
6. Study physical and human geography of area being visited.
7. Learn to prepare tour report.
8. In-depth knowledge of research methodology.