Year Wise Course Structure M.A/M.Sc. Geography

PG-I year	Sem I	1. Climatology (T) 2. Oceanography (T) 3. Geography of Resource (T) 4. Settlement Geography (T) 5. Spatial Analysis: Locational and Network (P)			Understanding of Natural Hazard and Disaster (T): 4 Credit			Research Project-1 (4 credit)	52	(184) Bachelor (Research) in Faculty
	Sem II	1. Geography and Environmental Studies (T) 2. Agriculture Geography (T) 3. Regional Planning & Development (T) 4. Statistical Methods and Data Processing (P) 5. Physical Diagrams, Hydrology and Map Projections (P)						Research Project-2 (4 credit)		
PG-II Year	Sem III	1. Geography of Rural Settlements (T) 2. GIS and Its Application (T) 3. Population Geography (T) or Advanced Cartography (T) 4.Aerial Photo Interpretation (T) or Tourism Geography (T) 5.Socio-Economic Survey (P) or Advanced Cartography (P) or Population Geography (P) or Resource Planning (P) or Geography of Rural Settlements (P)						Research Project-3 (4 credit)	48	(232) Master in Faculty
	Sem IV	1. Urban Geography (T) 2. Political Geography (T) 3. Rural & Urban Planning (T) 4.Social & Cultural Geography (T) or Satellite Image Interpretation (T) 5. Satellite Image Interpretation (P) or Rural & UrbanPlanning (P) or Urban Geography (P)						Research Project-4 (4 credit)		

Programme/Class: Bachelor (Research in Faculty)/ or M.A./M.Sc. (1st Semester)	Year: IV	Semester: VII M.A./M.Sc. (1st Semester)
Subject- Geography		
Course Code: **GRB CC701T**	Course Title: **Climatology**	

Course outcomes:

- Understand the elements of weather and climate, different atmospheric phenomena and climate change.
- Learn to associate climate with other environmental and human issues. Approaches to climate classification.
- To analyze the dynamics of the Earthôs atmosphere and global climate. Assessing the role of man in global climate change.
- Prepare various climatic maps and charts and interpret them.
- Learn to use of various meteorological instruments.
- Learn the interaction between the atmosphere and the earthôs surface. Understand the importance of the atmospheric pressure and winds.
- Understand how atmospheric moisture works.

Credits: 4	Course Type-Core Course
Max. Marks: 100 (25+75)	Min. Passing Marks:40

Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w

Unit	Topics	No. of Lectures Total=60
I	Meaning and scope of climatology; Atmosphere: Composition and structure; Insolation: determinants and distribution; Temperature: Controlling factors and Distribution; Processes of heating and cooling of the atmosphere, Inversion of Temperature	**15**
II	Atmospheric Pressure and Winds- Planetary Winds, Forces affecting Winds, General Circulation , Jet Streams	**15**
III	Atmospheric Moisture- Evaporation, Humidity, Condensation Fog and Clouds, Precipitation Types, Stability and Instability: Climatic Regions (Koppen)	**15**
IV	Cyclones- Tropical Cyclones, Extra Tropical Cyclones, Monsoon- Origin and Mechanism	**15**

Suggested Readings:

1. Barry, R.G. and Carleton, M. (2001): Synoptic and Dynamic Climatology, Routledge, London.
2. Chorley, R.J. (2001): Atmosphere, Weather and Climate. Methuen, London.
3. Critchfield, H.J. (2002): General Climatology. Prentice-Hall of India, New Delhi..
4. Finch, J. C. and Trewartha, G. T.: Elements of Weather and Climate. Prentice-Hall, London.
5. Kendrew, W.C. (1998): Climatology. Edward Arnold, London. 5th edition.
6. Lal, D.S.(1986): Climatology. Chaitanya Publications, Allahabad.
7. Oliver, J.E. and Hidore, J.J. (2003): Climatology: An Atmospheric Science, Pearson Education Private Ltd, Patparganj, Delhi.
8. Robinson, P. J. and Henderson, S. (1999): Contemporary Climatology, 2nd edition, Pearson Education Ltd., Harlow, UK.

9. Singh, S. (2005): Climatology. PrayagPustakBhawan, Allahabad.

Suggested Continuous Evaluation Methods:

- Test with multiple choice questions/short and long answer questions.

Programme/Class: Bachelor (Research in Faculty)/ or M.A./M.Sc. (Ist Semester)	Year: IV	Semester: VII M.A./M.Sc. (Ist Semester)
Subject- Geography		
Course Code: **GRB CC 702T**	Course Title: **Oceanography**	

Course Outcomes:

- Understand the elements of ocean and relief and its impacts at different scales.
- Comprehend the oceanic aspects and its bearing on planet earth.
- Understand the oceanic process and availability of resources.

Credits: 4	Course Type-Core Course
Max. Marks: 100 (25+75)	Min. Passing Marks:40

Total No. of Lectures-Tutorials-Practical (in hours per week): L- 04/w

Unit	Topics	No. of Lectures Total=60
I	Basic Oceanography; Surface Bottom Relief: Pacific Ocean, Atlantic Ocean & Indian Ocean.	**15**
II	Physical & Chemic al Properties of Sea Water; Interlink Between Atmospheric Circulation & Circulation Pattern in the Oceans; Thermohaline, Waves & Tides	**15**
III	Ocean Current: Cause, Types, Currents of Pacific, Atlantic & Indian Ocean; Effects of Ocean Currents; EI Nino La Nina &Southern Oscillation.	**15**
IV	Ocean Deposits: Types & Distribution; Coral Reefs & Atolls; Theories of their Formation & Coral Bleaching; Tsunami; SeaLevel Changes: Causes, Evidence & Impact	**15**

Suggested Readings:

1. Davis Richard J.A.: "Oceanography - An Introduction to the Marine Environment" Wm. C. Brow n Low a. 1986.
2. Duxbury"C.A. and Duxbury B.: An Introduction to the World's Oceans. C. Brow n Low a 2nd ed. 1996.
3. Garrison, T.: "Oceanography ï An Introduction to Marine Science. Books/ Cole, Pacific Grove, USA, 2001.
4. Gross, M. Grant: Oceanography, A View of the Earth, Prentice Hall Inc. New Jersey,1987.
5. King, C.A.M. Oceanography for Geographers, 1962.
6. Sharma, R.C. "The Oceans" Rajesh N. Delhi, 1985.

7. Singh, R.B. Natural Hazards and Disaster Management, Raw at Publication, Jaipur,2006
8. Ummerkutty, A.N.P. Science of the Oceans and Human Life, NBT, New Delhi, 1985.

Programme/Class: Bachelor (Research in Faculty)/ or M.A./M.Sc. (^{Ist} Semester)	Year: IV	Semester: VII
Subject- Geography		
Course Code: **GRM CC 703T**	Course Title: **Geography of Resources**	

Course Outcomes:

- Develop an idea about resource.
- Understand the concept of different types of resources.
- Acquire knowledge about different types of theories and models
- Acquire knowledge about different types of power resources.
- Students will demonstrate their knowledge of resource and environmental issues. Students will also be able to demonstrate their knowledge of the role that geography can play in analyzing resource / environmental degradation and improving resource / environmental management.

Credits: 4	Course Type-Core Course
Max. Marks: 100 (25+75)	Total No. of Lectures-60

Unit	Topics	No. of Lectures =60
I	**Introduction and Bases:** Concept and scope of Resource Geography; World resources: distribution and pattern (Coal, Petroleum, Iron, Forest, Water); Non-conventional sources of energy; Human resources; Resource base and its dynamism as related to stages of cultural, technological and economic development.	**15**
II	**Resource Use**: The limits to growth and critique; Resource scarcity hypothesis; World energy crisis; Resource conservation and management; Watershed management; Sustainable development; Resources, development and international politics.	**15**
III	**Theories and models**: Theories of agricultural location Von Thunenôs rent theory and Recardian rent theory; Theories of Industrial location: Weber, and Losch and Christallerôs Central Place theory and modification by Losch.	**15**
IV	**Regional Perspectives and Trade & Exchange**. Resource regionalisation; World economic development; Concept of developed and developing nations; Concepts of North-South and First, Second, Third and Fourth Worlds, **Core-periphery concept in trade**, Trade Blocs; the Information Economy-Spatial and transportation implications of e-commerce.	**15**

Suggested Readings:

1. Burton, I. and Kates, R.W. (1978): Readings in Resource Management and Conservation. McGraw Hills, 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; Shridhar Publishers., Kolkata.
7. Ramesh, A. (ed.) (1984): Resource Geography. Heritage Publishers, New Delhi.
8. Todaro M.P. and Smith S.C. (2004): Economic Development, Pearson Education, (Singapore) Private Ltd. Singapore

Suggested Continuous Evaluation Methods:

- Test with multiple choice questions/short and long answer questions

Programme/Class: Bachelor (Research in Faculty)/ or M.A./M.Sc. (Ist Semester)	Year: IV	Semester: VII M.A./M.Sc. (Ist Semester)
Subject- Geography		
Course Code: **GRM CC 704 T**	Course Title: Settlement Geography	

Course outcomes:

- Gain knowledge about definition of region, evolution and types of settlement.
- Develop an idea about choice of a settlement for planning.
- Build an idea about theories and models for settlement pattern.
- Know about measuring development indicators.

Credit:4	Course Type - Core Course
Max. Marks: 100 (25+75)	Total No. of Lectures-60

Unit	Topics	No. of Lectures Total=60
I	Nature, scope and contents settlement geography Site , situation and evolution of settlement	**15**
II	**Classification of Settlements** Dichotomy of settlement: rural and urban Rural: classification, function of village and environment relationship Urban: definition, classes of town, classification on culture and functional classification; Salient features of Indian urbanization Rural-urban linkages in a metropolitan system in India	**15**
III	**Settlement System** Models and Theories : the rank size rule, the primate city, the central place theory and urban morphology (concentric zone theory, sector theory and	**15**

	multiple nuclei theories)	
IV	**Fieldwork** Case study of a settlement, observations of its various characteristics- structure, form, house types, building material, functions, population characteristics, transport, market etc. The student is expected to write a report and present it for the viva-voce examination.	**15**

Reading List

1. Bose, A., India's Urbanization 1947-2000, Tata McGraw Hill, New Delhi
2. Carter H., The Study of Urban Geography, Edward Arnold, London, 1972
3. Chisholm, M., Rural Settlement and Land Use, Hutchinson, London,1970
4. Clout, R.D., Rural Geography, Pergamon Press, London,1970
5. Dickinson, R.E., City, Region and Regionalism, Kegan Paul, Trench, Trubner& Co., London,1947
6. Ghosh, Sumita, Introduction to Settlement Geography, Orient Longman, Calcutta, 1998
7. Johnson, J.H., Urban Geography: An Introductory Analysis, Pergamon Press, London,1967
8. Krishan, G., Nagar Bhoogol, Punjab State University Text Book Board, Chandigarh (Punjab)
9. Mayer, H.M. & Kohn, C.F.(eds.), Readings in Urban Geography, Chicago Printing Press, Chicago, 1967
10. Michael, Hill, Urban Settlement and Land Use, Hodder Murray, 2005

Suggested Continuous Evaluation Methods:

- Test with multiple choice questions/short and long answer questions.

Programme/Class: Bachelor (Research in Faculty)/ or M.A./M.Sc. (^{Ist} Semester)	Year: IV	Semester: VII M.A./M.Sc. (^{Ist} Semester)
Subject- Geography		
Course Code: **GRB CC 705P**	Course Title: **Practical: Spatial Analysis: Locational and Network**	

Course outcomes:

- Learn the significance of statistics in geography.
- Understand the importance of use of data in geography
- Gain knowledge about association and correlation.
- They can know about transport network analysis.
- Gain knowledge about representation of state wise variation in occupational structure and work participation rate using proportional circles and proportional divided circles and also composite index.
- This course must train the student about the need, purpose, and advantage of regression models over other crude methods.
- Students should be well conversant with different families of regression models, its underlying assumptions, data requirements, interpretation of regression results, and able to apply the diagnostic test to check the model fit.

Credit:4	Course Type - Core Course
Max. Marks: 100 (25+75)	Total No. of Lectures-60

Unit	Topics	No. of Lectures (Hours) =60
I	**Measurement of Geographical Patterns:** Near Neighbour Analysis, Giniôs Co-efficient, Lorenz curves, Location quotient, Rank size rule	**15**
II	**Network Analysis**. Topologic structures: branching, circuit and barrier networks; Geometric structures: Networks shape and density, pattern and order; Flow and network efficiency; Location of network routes and boundaries; Pattern of spatial evolution and network transformation	**15**
III	**Locational Analysis**. Absolute and relative location: spacing, indices of randomness, deviation and nature of dispersion; Nodes-population clusters: the size continuum, size and shape;	**15**
IV	**Measurement of Disparities:** Kendallôs Ranking Method, Combination analysis of Weaverôs. S.M. Rafiullah method. **Hierarchies:** functional hierarchy of settlements and ordering; Interaction: movement and distance models; Service area and territory; Case of agricultural and industrial location	**15**

Suggested Readings:

1. Bhagwathi, V. and Pillai, R.S.N. (2003): Practical Statistics, Sultan Chand and Company, New Delhi
2. Ebdon, D. (1977): Statistics in Geography: A Practical Approach, Blackwell Publishers Inc., Massachusetts
3. Gregory, S. (1973): Statistical Methods and the Geographer, Longman, London.
4. Gupta, S.P. (1998): Advanced Practical Statistics, Sultan Chand and Company, New Delhi
5. Mahmood, A. (1986): Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi
6. Zamir, A. (2002): Statistical Geography: Methods and Applications, Rawat Publications, Jaipur.

Suggested Continuous Evaluation Methods:

- Test with multiple choice questions/short and long answer questions

Programme/Class: Bachelor (Research in Faculty)/ or M.A./M.Sc. (^{Ist} Semester)	Year: IV	Semester: VII M.A./M.Sc. (^{Ist} Semester)
Subject- Geography		
Course Code: **GRB GE 706**	Course Title: **Understanding of Natural Hazard and Disaster**	

Course outcomes:

- The course begins with a discussion on alternative concepts of disasters, calamity, risk and hazard.
- The course then proceeds to aggregate the models used to benchmark disasters
- In the final it de-myths that disasters are natural and lays bare the role of vulnerability in creating disasters and what needs to be managed.

Credit: 4	Course Type- Generic Elective (Minor)
Max. Marks: 100(25+75)	Total No. of Lectures-60

Unit	Topics	No. of Lectures =60
I	Concepts and definitions of hazard, disaster, vulnerability and risk, disaster risk reduction, Various disaster in India, Natural & human induced hazards & disasters.	15
II	Geological hazard: Earthquakes, landslides & tsunami; Hydro metrological: Floods, cyclone, drought, avalanches extreme event of rains & heat, Forest fire.	15
III	Geo-informatics in Disaster Management (RS & GIS, GPS), Emergency communication system (early warning and its communication)	15
IV	Land use planning and development for mitigating disaster.Biological hazards, Technological hazard.	15

Suggested Readings:

1. An overview on natural & man-made disasters and their reduction, R K Bhandani, CSIR, New Delhi
2. Coppola D P, 2007. Introduction to International Disaster Management, Elsevier Science (B/H), London.
3. Disasters in India Studies of grim reality, Anu Kapur& others, 2005, 283 pages, Rawat Publishers, Jaipur
4. Disaster Mitigation in Asia & Pacific, Asian Development Bank
5. Disaster Management and education in India (http://www.chillibreeze.com/articles various/disaster management .asp)
6. Encyclopedia of disaster management, Vol I, II and IIIL Disaster management policy and administration, S L Goyal, Deep & Deep, New Delhi, 2006
7. Encyclopedia of Disasters ï Environmental Catastrophes and Human Tragedies, Vol. 1 & 2, Angus M. Gunn, Greenwood Press, 2008
8. Manual on natural disaster management in India, M C Gupta, NIDM, New Delhi
9. Management of Natural Disasters in developing countries, H.N. Srivastava & G.D. Gupta, Daya Publishers, Delhi, 2006, 201 pages
10. National Disaster Management Plan (NDMP), and National Disaster Management Authority (NDMA) Govt. of India , NDMA Bhawan, New Delhi

Suggested Continuous Evaluation Methods:

- Test with multiple choice questions/short and long answer questions

Program/Class: Bachelor (Research in Faculty)/ or M.A./M.Sc. (Ist Semester)	Year: IV	Semester: VII M.A./M.Sc. (^{Ist} Semester)
Subject: Geography		
Course Code: **GRB 707 RP-1**	Course Title**: Research Project-1**	

Course Outcomes: Students will be able to understand

- In-depth knowledge and application of application of geography in research.
- ǒ Learn to prepare Research Project.

Credits: 4	Course Type-Core Course
Max. Marks: 100 (25+75)	Min. Passing Marks:40

Total No. of Lectures-Tutorials-Practical (in hours per week): L- 1 P-4/w

Unit	Topics	No. of Lectures=60
I	Application and relevance of statistical and cartographic techniques; ii. Application of computer, remote sensing, GIS and GPS; and iii. Framing Pilot/ research project; use of writing manuals Research Project shall be on any topic of interest of students from the. It must include research orientation in Geography. Like project can be based on investigation of any issue using concepts and geographical techniques and application must be used in data analysis or representation. Note: 1. Each faculty member shall teach and guide to his/her Group of studentsindependently. 2. Student shall choose supervisor according his/her research interest and specialisation of Faculty member.	**60**

Suggested Readings

1. Ahuja, Ram 2001. Research Methods. Rawat Publications, Jaipur and New Delhi.
2. Bolton, T. and Newbury, P.A. 1968. Geography through Fieldwork. Blandford Press, London.
3. Denzin, N. K. and Lincoln, Y.S. (eds.) 2000. Handbook of Qualitative Research. Sage Publ., Thousand Oaks CA.
4. Flowerdew, R. and Martin, D. (eds.) 1997. Methods in Human Geography. A Guide for Students Doing a Research Project. Longman, Harlow.
5. Hay, Iain (ed.) 2004. Communicating in Geography and the Environmental Sciences. Oxford University Press, Melbourne. 2nd Ed.
6. Hay, Iain (ed.) 2005. Qualitative Research Methods in Human Geography. Oxford University Press, Melbourne. 2nd Ed.
7. Kitchen, Rob and Fuller, Duncan 2005. The Academicôs Guide to Publishing. Vistaar Publs. (Sage), New Delhi.
8. Kitchen, Rob and Tate, Nicholas J. 2009. Conducting Research into Human Geography: Theory, Methodology & Practice. Prentice Hall-Pearson, Harlow U.K. 2nd Ed.
9. Knight, Peter G. and Parsons, Tony 2003. How to do your Essays Exams & Coursework in Geography and Related Disciplines. Nelson Thornes, Cheltenham U.K.
10. Lee, Roger Smith, David M. (eds.) 2004. Geographies and Moralities: International Perspectives on Development, Justice and Place. Wiley-Blackwell, Oxford.
11. Limb, Mclanie 2001. Qualitative Methodologies for Geographers. Issue and Debates. Arnold, London.
12. Lofland, J. and Lofland, L.H. 1995. Analysing Social Setting. A Guide to Qualitative Observation and Analysis. Wadsworth, Belmont, CA.

This course can be opted as an elective by the students of following subjects: Open for all
Suggested Continuous Evaluation Methods: Seminar, Presentations, VIVA
Suggested equivalent online courses

Programme/Class: Bachelor (Research in Faculty)/ or M.A./M.Sc. (II Semester)	Year: IV	Semester: VIII M.A./M.Sc. (II Semester)
Subject- Geography		
Course Code: **GRB CC801**	Course Title: **Geography and Environmental Studies**	

Course outcomes:

- Understand structure composition of Environment.
- Study about nutrient cycling.
- Understand the value of resources.
- Make awareness about conservation of resources.
- Understand environmental problem their cause, effects and remedies.
- Get the knowledge about environmental hazardous and management.
- Understand the various environmental protection acts.
- The students will learn various issues related to environmental impact assessment and its importance.

Credit:4	Course Type - Core Course
Max. Marks: 100(30+70)	Total No. of Lectures-60

Unit	Topics	No. of Lectures =60
I	**Bases.** Meaning and scope of environmental geography; Approaches to study of environment; Types of environments, Environment and society, Environment and development, Environmental perception and cognitive maps.	**15**
II	**Ecology and Ecosystem.** Definition, scope and significance of ecology; Basic ecological principles; Geo-biochemical cycles: carbon, nitrogen, oxygen and phosphorus cycles; Ecosystems, Biomes and biomass; Biodiversity: depletion and conservation.	**15**
III	**Hazards and Changes.** Environmental hazards; Natural hazards: landslides, soil erosion, droughts and floods, earthquakes; Man-made hazards: technological hazards, global climatic changes, global warming, green house effects, ozone depletion, sedimentation in rivers and reservoirs.	**15**
IV	**Pollution and Management.** Environmental pollution: pollutants, sources and types of pollution; Water, soil, air, and noise pollution; Solid waste disposal; Environmental pollution and health.**Environmental education**; Environmental impact analysis; Environmental monitoring and standards; Environmental policy and legislation; Environmental management.	**15**

Suggested Readings:

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 New Delhi.
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, O., Nag P., Kumra V.K. and Singh J. (eds.) (1993): Frontier in Environmental Geography. Concept Publishing Company, New Delhi.
23. Singh, R. B. (ed.) (1990): Environmental Geography. Heritage Publication, New Delhi.
24. Singh, R. B. (ed.) (1995): Studies in Environment and Development. Rakesh Prakashan, Varanasi.
25. Singh, Rana P.B. (ed.) (1993): Environmental Ethics: Discourses and Cultural Traditions. National Geographical Society of India, BHU, Varanasi.
26. Singh, S. (2006): Environmental Geography. PrayagPustak Bhawan, Allahabad.
27. Singh, S. N. (1993): Elements of Environmental Geography and Ecology in Hindi), Tara Book Agency, Varanasi
28. Wrigley, N. (1985): Categorical Data Analysis for Geographers and Environmental Scientists. Longman, London.

Suggested Continuous Evaluation Methods:

- Test with multiple choice questions/short and long answer questions

Programme/Class: Bachelor (Research in Faculty)/ or M.A./M.Sc. (II Semester)	Year: IV	Semester: VIII M.A./M.Sc. (II Semester)
Subject- Geography		
Course Code: **GRB CC 802**	Course Title: **Agriculture Geography**	

Course outcomes:

- The students will be able to understand and analyse the historical perspective of agriculture.
- The students will be able to analyse the agriculture development and productivity and its impacts on various sectors
- The students will be able to get updated knowledge of contemporary issues and strategies.

Credit:4	Course Type - Core Course
Max. Marks: 100(25+75)	Total No. of Lectures-60

Unit	Topics	No. of Lectures Total=60
I	**Approaches Parametres and Agricutural Systems:** Nature, scope and significance; Evolution in Historical perspectives; Approaches; commodity, systematic, regional and ecological; Determinants of agricultural development: Physical, technological, institutional; World Agricultural Systems	15
II	**Models and Agricultural Regionalization:** Cropping Pattern and their Measurements-crop concentration, crop diversifications measurement of agricultural efficiency, agricultural productivity; agricultural location models	**15**
III	**Agricultural Development and Planning in India:** Agriculture during plan periods; Diffusion of agricultural innovations; Green revolution and its effect on economy, society and environment, agro-climatic regions and their planning; Measurement and levels of Development; problems and prospects of Indian Agriculture.	**15**
IV	**Contemporary Issues in Indian Agriculture:** Nutrition, Malnutrition and Hunger, Rural poverty and Unemployment, Poverty alleviation strategies; Food aid and Nutrition programmes; Food Security and its components; Sustainable Agriculture	**15**

Suggested Readings:

1. Basu, D.N., and Guha, G.S. 1996: Agro-Climatic Regions in India, Vil. I & II, Concept Publication, New Delhi
2. D. Chauhan. 2010. Agricultural Geography, Ritu Publication
3. Dumont, R.(1970): Types of Rural Economy: Studies in World Agriculture, Douglas Manin, London Methuen
4. Gregor, H. P. (1970): Geography of Agriculture. Prentice-Hall, New York.
5. Husain, M. (1996): Systematic Agricultural Geography, Rawat Publications, Jaipur.
6. Misra, R. P. (1967): Diffusion of Agricultural Innovations, University of Mysore, Mysore.
7. Mohammad, A.(1978): Studies in Agricultural Geography, Rajesh Publications, New Delhi
8. Mohammad, N., 1992: New Dimension in Agricultural Geography, Vol. I to VIII, Concept Publication, New Delhi
9. Morgan, W. B. and Norton, R.J.C. (1971): Agricultural Geography. Methuen, London.
10. Sauer, O. C. (1969): Agricultural Origins and Dispersals. MIT Press, Cambridge.
11. Shafi, M. (2006): Agricultural Geography, Pearson Education, New Delhi.
12. Shafi, M.(2000): Agricultural Geography of South Asia, McMillan, Delhi

13. Singh, J. and Dhillon, S.S. (2000): Agricultural Geography. Tata McGraw Hill, New Delhi.
14. Singh, S. (1994): Agricultural Development in India: A Regional Analysis, Kaushal Publications, Shillong.
15. Tarrant J.R., 1973: Agricultural Geography, David and Charles, Dev

Suggested Continuous Evaluation Methods:

- Test with multiple choice questions/short and long answer questions.

Programme/Class: Bachelor (Research in Faculty)/ or M.A./M.Sc. (II Semester)	Year: IV	Semester: VIII M.A./M.Sc. (II Semester)
Subject- Geography		
Course Code: **GRB CC 803**	Course Title: **Regional Planning and Development**	

Course Outcomes:

- Gain knowledge about definition of region, evolution and types of regional planning.
- Develop an idea about choice of a region for planning.
- Build an idea about theories and models for regional planning.
- Know about measuring development indicators.

Credit:4	Course Type - Core Course
Max. Marks: 100(25+75)	Total No. of Lectures-60

Unit	Topics	No. of Lectures =60
I	**Fundamental concept:** Concept, nature and scope of Regional Planning; Different approaches to regional planning; Planning regions: concept and types; Planning regions of India; Regional policies in India, Regional disparities in India.	**15**
II	**Approaches**. Regional planning and national development, Approaches to integrated regional planning at different levels: local, regional and national; Multi-level planning in India: State, District and Block level planning; Planning for tribal, agricultural, industrial and urban (metropolitan) regions.	**15**
III	**Theories and Models:** Theories and Models of Regional Development: Hirschmanôs model, Perrouxôs Growth Pole, Rostowôs Model, Gunnar Myrdal Model.	**15**
IV	**Planning and Region:** Five Years Plan: Command area development, planning for backward area, desert drought prone, hill and tribal area development.**Decentralized Planning**, Watershed management, regional economic complexes, regional economic imbalances and inequalities in India, SEZs in Regional Development.	**15**

Suggested Readings:

1. Chandna, R. C. (2000): Regional Planning: A Comprehensive Text. Kalyani Publishers., New Delhi.
2. Chaudhuri, J. R. (2001): An Introduction to Development and Regional Planning with special reference to India. Orient Longman, Hyderabad.
3. Cowen, M.P. and Shenton, R.W. (1996): Doctrines of Development. Routledge, London.
4. Doyle, T. and McEachern, D. (1998): Environment and Politics. Routledge, London.
5. Friedmann, J. (1992): Empowerment: The Politics of Alternative Development. Blackwell, Cambridge MA and Oxford.

6. Friedmann, J. and Alonso, W. (ed.) (1973): Regional Development and Planning. The MIT Press, Mass.
7. Hettne, B.; Inotai, A. and Sunkel, O. (eds.) (1999 ï 2000): Studies in the New Regionalism. Vol. I-V. Macmillan Press, London.
8. Isard, W. (1960): Methods of Regional Analysis. MIT Press, Cambridge, MA.
9. Kuklinski, A. R. (1972): Growth Poles and Growth Centres in Regional Planning. Mouton and Co., Paris.
10. Kuklinski, A.R. (ed.) (1975): Regional Development and Planning: International Perspective, Sijthoff-Leydor.
11. Leys, C. (1996): The Rise and Fall of Development Theory. Indian University Press, Bloomington, and James Curry, Oxford.
12. Mahapatra, A.C. and Pathak, C. R. (eds.) (2003): Economic liberalisation and Regional Disparities in India. Special Focus on the North Eastern Region. Star Publishing House, Shillong.
13. Kane, M. and William M.K.T.(2007): Concept Mapping for Planning and Evaluation, Sage Publications, London.
14. Misra, R. P. (ed.) (1992): Regional Planning: Concepts, Techniques, Policies and Case Studies. 2nd edition. Concept Publishing Company., New Delhi.
15. Misra, R.P. and Natraj, V.K. (1978): Regional Planning and National Development. Vikas, New Delhi.
16. Misra, R.P., Sundaram, K. V. Pradasa Rao, V. L. S. (1976): Regional Development Planning in India. Vikas Publishers, New Delhi.
17. Moseley, M.J., (1974): Growth Centres in Spatial Planning. Pergamon Press, Oxford.
18. Närman, A. and Karunanayake, K. (eds.) (2002): Towards a New Regional and Local Development Research Agenda. Dept. of Geography, Göteborg University (Sweden), series B, No100 and Centre for Development Studies, University of Kelaniya (Sri Lanka), No. 1.
19. Norgaard, R. B. (1994): Development Betrayed. The End of Progress and a Coevolutionary Revisioning of the Future. Routledge, London.
20. Pathak, C. R. (2003): Spatial Structure and Processes of Development in India. Regional Science Association., Kolkata.
21. Sanyal, B. M. (2001): Decentralised Planning: Themes and Issues. Concept Publishing. Company, New Delhi.
22. Sharma, P. V., Rao, V. L., and Pathak, C. R. (eds.) (2000): Sustainable Regional Development (with special reference to Andhra Pradesh). Regional Science. Assocation, Kolkata and School of Economics, Andhra University, Vishakapatnam.
23. Sen, A. (1999): Development as Freedom. Oxford University Press, Oxford.
24. Sen, A. and Dreze, J. (eds.) (1996): Indian Development: Selected Regional Perspectives. Oxford University Press, Oxford.
25. Smith, D. and Närman, A. (eds.) (1999): Development Theory and Practice: Current Perspectives on Development and Development Co-operation. Longman, London.
26. Stöhr, W. B. and Taylor, D.F.R. (eds.) (1981): Development from Above and Below? The Dialectics of Regional Planning in Developing Countries. John Wiley and Sons, Chichester.
27. Sundaram, K. V. (1997): Decentralized Multilevel Planning: Principles and Practice (Asian and African Experiences). Concept Publishing Company, New Delhi.
28. Sundaram, K. V. (2004): The Trodden Path: Essays on Regional and Micro Level Planning. Anaunya Publications., New Delhi.
29. Toye, J. (1987): Dilemmas of Development. Reflections on the Counterrevolution in Development Theory and Policy. Basil Blackwell, Oxford.
30. Verhelst, T. (1990): No Life Without Roots ï Culture and Development. Zed Books, London.
31. World Bank (2000): Attacking Poverty. World Development Report 2000-01. The World Bank and Oxford University Press, New York; see website: www.worldbank.org/poverty/wdrpoverty/

Suggested Continuous Evaluation Methods:

- Test with multiple choice questions/short and long answer questions.

Programme/Class: Bachelor (Research in Faculty)/ or M.A./M.Sc. (IInd Semester)	Year: IV	Semester: VIII M.A./M.Sc. (IInd Semester)
Subject- Geography		
Course Code: **GRB CC 804 P**	Course Title: **Practical: Statistical Methods and Data Processing**	

Course outcomes:

- The students will learn various statistical skills.
- The students will know how the statistical theories and functions will be applied in geography.
- The students will learn about the significance test to strengthen their argument with facts and represent data.

Credit:2	Course Type - Core Course
Max. Marks: 100(25+75)	Total No. of Lectures30

Unit	Topics	No. of Lectures (Hours) per week=30
I	**Statistical Methods**. The normal frequency distribution curve and its characteristics; Curve fitting; Sampling procedures: random, stratified random, systematic and cluster; Test of significance: Chi-square test, Studentôs t-test, F-test, Analysis of variance; Analysis of time series.	**15**
II	**Data Processing**. Collection of data: methods, sources and types; Classification and tabulation of data; Computer languages; Excel and SPSS	**15**

Suggested Readings:

1. Bhagwathi, V. and Pillai, R.S.N. (2003): Practical Statistics, Sultan Chand and Company, New Delhi
2. Ebdon, D. (1977): Statistics in Geography: A Practical Approach, Blackwell Publishers Inc., Massachusetts
3. Gregory, S. (1973): Statistical Methods and the Geographer, Longman, London.
4. Gupta, S.P. (1998): Advanced Practical Statistics, Sultan Chand and Company, New Delhi
5. Mahmood, A. (1986): Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi
6. Zamir, A. (2002): Statistical Geography: Methods and Applications, Rawat Publications, Jaipur.

Suggested Continuous Evaluation Methods:

- Test with multiple choice questions/short and long answer questions.

Programme/Class: Bachelor (Research in Faculty)/ or M.A./M.Sc. (IInd Semester)	Year: IV	Semester: VIII M.A./M.Sc. (IInd Semester)
Subject- Geography		
Course Code: **GRB CC 805 P**	Course Title: **Practical: Physical Diagrams and Hydrology**	

Course outcomes:

- Getting familiar with underlying structures with the help of geological maps.
- Apply the water balance equation to various hydrological problems in time and space.
- Learn the techniques of geographical analysis.
- Analyse hydro-meteorological data for better water resource management in an area.
- To develop an understanding of how this knowledge may be applied in practice in an economic and environmentally sustainable manner.

Credit:2	Course Type- Core Course (Practical)
Max. Marks: 100(25+75)	Total No. of Lectures-60

Unit	Topics	No. of Lectures (Hours) per week=04
I	**1. Physical Diagrams:** Advanced exercises on geological maps: folded and faulted structures, unconformable rock series; Hypsographic and clinographic curves	**15**
II	**2. Hydrology**: Drainage basin analysis; Drawing of climatological water balance graph and determination of the components; Calculation of climatic indices: rainfall-runoff relationship; Hydro-graphs: components and separation; Unit hydrograph.	**15**

Suggested Readings:

1. Chow, V. T., (ed.) (1954): Handbook of Applied Hydrology: A Compendium of Water Resources Technology. McGraw Hill, New York.
2. Reddy, J. P. (1988): A Textbook of Hydrology. Laxmi Publication., New Delhi. 4th edition.
3. Singh, S., (1998): Geomorphology. Prayag Pustak Bhavan, Allahabad.
4. Sparks, B.W., (1986): Geomorphology. Longman, London.
5. Thornbury, W.D., (2005): Principles of Geomorphology. John Wiley and Sons, New York.
6. Ward, R.C. and Robinson, M. (2000): Principles of Hydrology. McGraw Hill, New York.

Suggested Continuous Evaluation Methods:

- Test with multiple choice questions/short and long answer questions

Program/Class: Bachelor (Research in Faculty)/ or M.A./M.Sc. (IInd Semester)	Year: IV	Semester: VIII M.A./M.Sc. (IInd Semester)
Subject: Geography		
Course Code: **GRB RP 806 P**	Course Title**: Research Project-2**	

Course outcomes: Students will be able to understand

- In-depth knowledge and application of application of geography in research.
- ǒ Learn to prepare Research Project.

Credits: 4	Course Type-Core Course
Max. Marks: 100 (25+75)	Min. Passing Marks:40

Total No. of Lectures-Tutorials-Practical (in hours per week): L- 1 P-4/w

Unit	Topics	No. of Lectures=45
I	Application and relevance of statistical and cartographic techniques; ii. Application of computer, remote sensing, GIS and GPS; and iii. Framing Pilot/ research project; use of writing manuals Research Project shall be on any topic of interest of students from the. It must include research orientation in Geography. Like project can be based on investigation of any issue using concepts and geographical techniques and application must be used in data analysis or representation. Note: 1. Each faculty member shall teach and guide to his/her Group of students independently. 2. Student shall choose supervisor according his/her research interest and specialisation of Faculty member.	**45**

Suggested Readings

1. Ahuja, Ram 2001. Research Methods. Rawat Publications, Jaipur and New Delhi.
2. Bolton, T. and Newbury, P.A. 1968. Geography through Fieldwork. Blandford Press, London.
3. Denzin, N. K. and Lincoln, Y.S. (eds.) 2000. Handbook of Qualitative Research. Sage Publ., Thousand Oaks CA.
4. Flowerdew, R. and Martin, D. (eds.) 1997. Methods in Human Geography. A Guide for Students Doing a Research Project. Longman, Harlow.
5. Hay, Iain (ed.) 2004. Communicating in Geography and the Environmental Sciences. Oxford University Press, Melbourne. 2nd Ed.
6. Hay, Iain (ed.) 2005. Qualitative Research Methods in Human Geography. Oxford University Press, Melbourne. 2nd Ed.
7. Kitchen, Rob and Fuller, Duncan 2005. The Academicôs Guide to Publishing. Vistaar Publs. (Sage), New Delhi.
8. Kitchen, Rob and Tate, Nicholas J. 2009. Conducting Research into Human Geography: Theory, Methodology & Practice. Prentice Hall-Pearson, Harlow U.K. 2nd Ed.
9. Knight, Peter G. and Parsons, Tony 2003. How to do your Essays Exams & Coursework in Geography and Related Disciplines. Nelson Thornes, Cheltenham U.K.
10. Lee, Roger Smith, David M. (eds.) 2004. Geographies and Moralities: International Perspectives on Development, Justice and Place. Wiley-Blackwell, Oxford.
11. Limb, Mclanie 2001. Qualitative Methodologies for Geographers. Issue and Debates. Arnold, London.
12. Lofland, J. and Lofland, L.H. 1995. Analysing Social Setting. A Guide to Qualitative Observation and Analysis. Wadsworth, Belmont, CA.

This course can be opted as an elective by the students of following subjects: Open for all

Suggested Continuous Evaluation Methods: Seminar, Presentations, VIVA