PDM UNIVERSITY

Faculty of Humanities and Social Sciences

Course: M.A. Geography (Regular)

Syllabus

Semester I

S.no	Course title	Course code	Teaching Schedule per week				Credits	Evaluation scheme		
			L	T	P	Total		Internal	External	Total
Core Courses (All courses are compulsory)										
1	Geographical Thoughts	GEOG5101	6	0	0	6	6	40	60	100
2	Environment and Ecology	GEOG5102	6	0	0	6	6	40	60	100
3	Fundamentals of Remote Sensing	GEOG5103	6	0	0	6	6	40	60	100
4	Practical: Statistical Techniques in Spatial Analysis	GEOG5104	4	0	4	8	6	40	60	100
		Total	**22**	**0**	**4**	**26**	**24**	**160**	**240**	**400**

Semester II

S.no	Course title	Course code	Teaching Schedule per week				Credits	Evaluation scheme		
			L	T	P	Total		Internal	External	Total
Core Courses (All courses are compulsory)										
1	Advanced Physical Geography	GEOG5105	6	0	0	6	6	40	60	100
2	Contemporary Human Geography	GEOG5106	6	0	0	6	6	40	60	100
3	Spatial Economic Systems	GEOG5107	6	0	0	6	6	40	60	100
4	Practical Geography: Computer Aided Mapping and Thematic Atlas	GEOG5108	4	0	4	8	6	40	60	100
		Total	**22**	**0**	**4**	**26**	**24**	**160**	**240**	**400**

Semester III

S.no.	Course title	Teaching Schedule per week				Credits	Evaluation scheme		
		L	T	P	Total		Internal	External	Total
1	Elective I	6	0	0	6	6	40	60	100
2	Elective II	6	0	0	6	6	40	60	100
3	Elective III (Practical)	4	0	4	8	6	40	60	100
4	Elective IV	6	0	0	6	6	40	60	100
	Total	**16**			**26**	**24**	**160**	**240**	**400**

Electives for 3rd Semester*

1. Advanced Remote Sensing and GIS GEOG6201
2. Natural Resource Management (Interdisciplinary) GEOG6202
3. Principles of Political Geography (Interdisciplinary) GEOG6203
4. Systematic Agricultural Geography (Interdisciplinary)GEOG6204
5. Social Geography of India (Interdisciplinary) GEOG6205
6. Urban Settlement System (Interdisciplinary) GEOG6206
7. Regional Development (Interdisciplinary) GEOG6207
8. Cultural Geography (Interdisciplinary) GEOG6208
9. Practical in Physical Geography GEOG6209
10. Practical in Human Geography GEOG6210
11. Research Methodology in Geography GEOG6211
12. Town and Country Planning GEOG6212

***Choose one practical paper**

Semester IV

S.no	Course title	Course code	Teaching Schedule per week				Credits	Evaluation scheme		
			L	T	P	Total		Internal	External	Total
1	Module Elective I		6	0	0	6	6	40	60	100
2	Module Elective II		6	0	0	6	6	40	60	100
3	Module Elective III		6	0	0	6	6	40	60	100
4	Dissertation (Mandatory)	GEOG6236	2	0	8	10	6	40	60	100
		Total	**20**		**8**	**28**	**24**	**160**	**240**	**400**

List of Modules, Papers & Electives (Semester IV)

*Choose one paper each from any three modules.

Module-1: Environment and Resource

1	Hydrology and Water Resource Management	GEOG6213
2	Geography of Energy	GEOG6214
3	Environmental Impact Assessment	GEOG6215
4	Natural Hazards and Disaster Management	GEOG6216
5	Urban Impacts on Natural Resources and Environment	GEOG6217

Module-2: Political Geography and Area Studies

1	Political Geography of India	GEOG6218
2	Geography of Federalism	GEOG6219
3	Electoral Geography	GEOG6220
4	Political Geography of Central Asia	GEOG6221
5	Political Geography of Middle-East	GEOG6222

Module-3: Rural and Agricultural Studies

1	Agricultural Development and Environmental Degradation	GEOG6223
2	Land Use Planning	GEOG6224
3	Dryland Farming	GEOG6225
4	Food Security System	GEOG6226
5.	Marketing Geography	GEOG6227

Module-4: Physical Geography

1	Analytical Physical Geography	GEOG6228
2	Biogeography	GEOG6229
3	Geomorphologic Analysis	GEOG6230
4	Geography of Himalayas	GEOG6231
5	Terrain Modelling and Evaluation	GEOG6232

Module-5: Social Dimensions in Geography

1	Geography of Landscape	GEOG6233
2	Demography and Population Policy	GEOG6234
3	Health, Environment and Society	GEOG6235
4	Geography of Social Well-Being	GEOG6236
5	Gender and Space with Special Reference to India	GEOG6237

Project Report/ Dissertation (Mandatory)* **GEOG6238**

Detailed Syllabus

Semester I

GEOG5101: Geographical Thought
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Evolution of Geographic Thought: Changing paradigms – Environmentalism, Possibilism, areal differentiation, spatial organisation
2. Theory in Geography: structure, nature, type and applications in geography; human-environment interactions and social theory.
3. Philosophical debates in Contemporary Geography: Critical understanding of positivism, behaviouralism, realism, Marxism, Structuralism, post-structuralism and postmodernism.
4. Methods in Geographical Analysis: Epistemology of geography, critical assessment and debates on quantitative, qualitative, field and cartographic methods in geography
5. Future of Geography: changing nature, concepts, approaches and methodologies of geography in a Globalising World
6. Progress and Contributions in Indian Geography

Recommended Books:

1. Bhaskar, R (1978) A Realist Theory of Science, Hassocks, Sussex
2. Bhaskar, R (1989) Reclaiming Reality: A Critical Introduction to Contemporary Philosophy, London, Verso.
3. Bunge, W (1966) Theoretical Geography. 2nd Edn. Lund Studies in Geography Series C. no.1, Lund: C.W.K. Gleerlup
4. Buttimer, A and D.Seamon (eds) (1980); The Human Experience of Space and Place, London, Croonhelm
5. Castells, M (1978) City, Class and Power, New York, St. Martins Press
7. Castree, R, A. Rogers and D. Sherman (2005) Questioning Geography. Fundamental Debates. Oxford:Blackwell.
8. Clifford, N.J. (2002) The Future of Geography: when the whole is less than the sum of its parts. Geoforum, Vol 33 431-436.
9. Haggett, P and A.D Cliff and A. Frey (1977) Locational Analysis in Human Geography. London: Arnold
10. Hartshorne R (1939) The Nature of Geography. Association of American Geographers
11. Harvey, D (1969) Explanation in Geography. London: Arnold.
12. Harvey, D (1973) Social Justice and the City, Baltimore, John Hopkins University, Baltimore
13. Holt- Jensen Arild (1999), *Geography -History and Concepts,* Sage Publications, London, Thousand Oaks, Delhi

GEOG5102: Environment and Ecology
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Geography, Environment and Ecosystem: Population, Resources, Environment and Development; Concepts and Approaches; Sustainability and sustainable development; Global Environmental Problems.

2. Urban Ecosystem: Environmental Problems and their Management-Air, Water, Noise and Solid Waste.

3. Forest Ecosystem: Processes and Patterns; Problems and Management; Biodiversity.

4. Desert Ecosystem: Desertification - Process and Patterns; Management Strategies.

5. Mountain Ecosystem: Theory of Mountain Environment Degradation; Highland-Lowland Interactive Systems; Sustainable Mountain Development.

6. Coastal Ecosystem: Issues and Problems- Mangroves, Coastal pollution, Cyclone, Tsunami.

7. National Environmental Policies and Programmes.

Recommended books:

1. Balakrishnan, M., 1998: *Environmental Problems and Prospects in India*, Oxford & IBH Pub., New Delhi.
2. Das, R.C., et. al., 1998: *The Environmental Divide: The Dilemma of Developing Countries*, A.P.H. Pub., New Delhi.
3. Goel R.S., 2000: *Environment Impacts Assessment of Water Resources Projects-Concerns, Policy Issues Perceptions and Scientific Analysis*, Oxford & IBH Publishing Co. Pvt. Ltd, New Delhi.
4. Gole, P., 2001: *Nature Conservation and Sustainable Development in India*, Rawat Pub., Jaipur.
5. Hussain, M., (ed.) 1996: *Environmental Management in India*, Rawat Pub., Jaipur.
6. Hooja, R., et. al., (ed.) 1999: *Desert, Drought and Development: Studies in Resource Management and Sustainability*, Rawat Pub, Jaipur.
7. Munn, T., (ed.) 2001*: Encyclopedia of Global Environmental Change*, John Wiley & Sons, West Sussex
8. Ramakrishnan, P.S., 1998: *Conservation and Management of Biological Resources in Himalaya*, Oxford & IBH Pub., New Delhi.
9. Sapru, R.K., 1987: *Environmental Management in India*, A.P.H. Pub., New Delhi.
10. Saxena, H.M., 1999: Environmental *Geography*, Rawat Pub., Jaipur.
11. Singh, R.B., (ed.) 1990: Environmental *Geography*, Heritage Pub., New Delhi.
12. Singh, R.B., (ed.) 1996: Disasters, *Environment and Development*, Oxford & IBH Pub., New Delhi.
13. Singh R.B., (ed.) 2001: Urban *Sustainability in the Context of Global Change*, Science Pub., Inc., Enfield (NH), USA
14. Singh, S., 1997: Environmental *Geography*, Prayag Pustak Bhawan, Allahabad.
15. Verma, C.V.J., 1998: *Water Quality and its Management*, Oxford & IBH Pub., New Delhi

GEOG5103: Fundamentals of Remote Sensing and GIS
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Remote Sensing: Historical development; components, types and various platforms; Global Positioning System.

2. Aerial Photography: Stereoscopy, Principles of Photo Interpretation.

3. Principles of Remote Sensing; Electromagnetic Energy; Interaction mechanism with atmosphere and earth surfaces; Photography vs. Image; Concept of resolution; Satellite and Sensors. Spectral responses of earth surface features, Visual interpretation of satellite images.

4. Applications of remote sensing for landuse/ landcover mapping and change detection, Environmental Studies, Urban, Hazard and Disaster, Water Resources, Agriculture etc.

5. GIS: Definition and Applications; Components and Elements of GIS; Development of GIS technology; Geographic objects: point, line and area; analog and digital maps; theoretical models and framework for GIS, representation of geographic data-base; coordinate systems and map projections.

6. Data Input, Storage and Editing: Nature of geographic

7. Data: Spatial and Attribute Data, Concept of vector and raster based models; data input devices: Digitization; external data bases; storage and manipulation of GIS data bases;

8. GIS and Spatial Analysis: Neighbourhood analysis; Proximity analysis and buffers; Overlays Analysis – raster and vector based overlay and their applications; Presentation of GIS output.

Recommended Books:

1. Curran, Paul J., 1985: *Principles of Remote Sensing*, Longman, London & New York.
2. Gupta, R. P., 2003: Remote *Sensing Geology*, Springer-Verlag.
3. Jensen, J.R., 2004: Remote *Sensing of the Environment: An Earth Resource Perspective*, Pearson Education.
4. Joseph, G., 2003: Fundamentals of Remote Sensing, University Press, Hyderabad.
5. Lillesand, T. and Kiefer, R., 1999: Remote *Sensing and Image Interpretation*, Wiley, London.
6. Sabins, Floyd F. Jr., 1997: *Remote Sensing: Principles and Interpretation*, W.H. Freeman, New York.
7. Singh, R.B. (ed.), 1991: *Environmental Monitoring: Application of Remote Sensing and GIS*, Geocarto Int. Centre, Hong Kong.
8. Singh, R.B. and Murai, S. (eds.), 1998: Space *Informatics for Sustainable Development*, Oxford & IBH Pub., New Delhi.
9. Burrough,P.A. and McDonnell, R.A., 1998 : *Principles of Geographic Information Systems*, Oxford University Press, Oxford.
10. Chang, K-t., 2006: Introduction *to Geographic Information Systems*, Tata McGraw-Hill.
11. De Mers, Michael N., 1999: Fundamentals *of Geographic Information Systems*, John Wiley & Sons, NewYork.
12. Environmental Systems Research Institute (ESRI), 1997: Getting *to know Arc View GIS*, Cambridge: Geoinformation International.
13. Heywood, I. et al. 2004: An *Introduction to Geographic Information Systems*, Pearson Education.

14. Longley, P.A., Goodchild, M.F., Maguire, D.J. and Rhind, D.W., 2001, *Geographic Information Systems and Science*, Wiley, Chichester.
15. Maguire, D.J., M.F. Goodchild and D.W. Rhind, 1991: Geographic *Information Systems,* Longman Scientific and Technical, Harlow.

GEOG5104 Statistical Techniques in Spatial Analysis
Internal Assessment: 40 End Semester Examination: 60

Course Outline:

1. Statistics and Statistical Data: Spatial and non-spatial; centrographic measures in geography.

2. Probability theory, probability density functions with respect to Normal, Binomial and Poisson distributions and their geographical applications.

3. Sampling: Sampling plans for spatial and non-spatial data, sampling distributions; sampling estimates for large and small samples tests involving means and proportions.

4. "F" Distribution and Analysis of Variance –"one-way" and "two-way" analysis.

5. Non-parametric Tests: Chi-Square, Kolmogorov-Smirnov, Mann-Whitney and Kruskal-Wallis.

6. Correlation and Regression Analysis: Rank order correlation and product moment correlation; linear regression, residuals from regression, and simple curvilinear regression; Introduction to multi-variate analysis.

7. Time Series Analysis: Time Series processes; Smoothing time series; Time series components.

Recommended books:

1. Bart James E and Gerld M.Barber, 1996: Elementary Statistics for Geographers, The Guieford Press, London.
2. Eldon, D., 1983: Statistics in Geography: A Practical Approach, Blackwell, London.
3. Cressie, N.A.C., 1991: Statistics for Spatial Analysis, Wiley, New York.
4. Gregory, S., 1978: Statistical Methods and the Geographer (4th Edition), Longman, London.
5. Haining, R.P., 1990: Spatial Data Analysis in the Social and Environmental Science, Cambridge University Press, Cambridge.
6. Khan Najma., 1998: Quantitative Methods in Geographical Research, Concept Publishing Company, New Delhi
7. Mc Grew, Jr. and Cahrles, B. M., 1993: An Introduction to Statistical Problem Solving in Geography, W.C. Brocan Publishers, New Jersey.
8. Mathews, J.A., 1987: Quantitative and Statistical Approaches to Geography: A Practical Manual Pergamon, Oxford.
9. Pal, S. K., 1982: Statistical Techniques: A Basic Approach to Geography, Tata Mc-Graw Hill, New Delhi.
10. Pal, S.K., 1998: Statistics for Geoscientists: Techniques and Applications, Concept Publishing Company, New Delhi.
11. Wei, W.S., 1990: Time Series Analysis: Variate and Multivariate Methods, Addison Wesley Publishing.

Semester II

GEOG5105: Advanced Physical Geography
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Earth System: Physical processes, the interaction and linkages.

2. Landscape ecology: mountains, deserts, and coastal.

3. The Climate System and Climate Change: Paleoclimate; Climate variability; EL Nino Southern Oscillation; Climate change and its impact on environment.

4. The Ocean System: Ocean topography; The Global Carbon Cycle; Sea surface temperature and sea-level fluctuation; Land – ocean interactions in the coastal zone.

5. Soils: Nature, colour, texture; parent material and composition, soil moisture, pH factor, soil structure and mineral content

6. Soil Development: Soil Horizon, soil profile, soil forming processes, temperature, soil classification and major soil types; the global scope of soils-soil order, desert and Tundra soil.

7. The Hydrological System: Components of hydrological system-ecohydrology, mountain hydrology, arid hydrology, urban hydrology and ground water system; Biospheric aspects of the Hydrological cycle.

Recommended Books:

1. Benston, M., (ed.), 1994: *Mountain Environment in Changing Climates*, Routledge, London.
2. Bary, R.G., 1992: *Mountain Weather and Climate*, 2nd Edition, Routledge, London.
3. Brandy, N.C. (1990): *The Nature and Property of Soils*, 10th Edition, Macmillan, N.Y.
4. Christopherson, R.W., 1998: *Elemental Geosystems: A Foundation in Physical Geography*, Prentice Hall, Englewood Cliffs, N.J.
5. Garrison, T., (1995): *Essentials of Oceanography*, Wadsworth, Pub. Co., New York.
6. Hamblin, W.K., (1995): *Earth's Dynamic Systems*, Prentice Hall, N.J.
7. Miller, C.E. et al., (1990): *Fundamentals of Soil Science*, 8th edition, John Wiley and Sons, N.Y.
8. National Aeronautics and Space Administration, 1988: *Earth System Science*, Washington, DC,.
9. Schumann, A.H., (ed) 2001: *Regional Management of Water Resources*, IAHS Pub. No. 268, IAHS Press, Wallingford.
10. Singer. M.J. & Donald, N.M. (1987): *Soils: An Introduction*, 2nd edition, Macmillan, N.Y.
11. Stern, P.C. and Easterling, W. E. (ed.) (1999): *Making Climate Forecasts Matter*, National Academy of Sciences, Washington, DC.
12. Strahler, A., et al., 1996: *Elements of Physical Geography*, John Wiley & Sons, New York.
13. Yeung, Yue-Man (ed) 1996: *Global Change and The Common Wealth*, Chinese University of Hongkong, Hongkong.
14. Whittow, J., 1984: *The Penguin Dictionary of Physical Geography*, Penguin Books.

GEOG5106: Contemporary Human Geography
Internal Assessment: 40 End Semester Examination: 60

Course Outline:

1. Human Geography: changing nature or perspectives, issues and debates.

2. Human Geography and Social Sciences: Critical understanding of social theory and human Geography

3. Conceptualizing space and place: Structure and dynamics of space; relational framework of space and place; social construction of space and time; ethics of space and place

4. Geography of difference and exclusion: Geographies of identity and difference related to class, religion, caste, gender and location; social justice and political geography of difference.

5. Geographical organisation of power: Spatial meaning and definitions of power; dynamics of spatio-social interactions and power; geopolitics of power-territoriality and globalization.

6. Geography of development: meaning, definitions and approaches; construction of development indicators; linking globalisation and new forms of development; local initiatives towards development.

7. Geography of social action and movements: reasons and approaches to social movements; aspects of social security; social-environmental movements in India.

Recommended Books:

1. Agnew, J.A and Corbridge, S. 1995: *Masterering Space: Hegemony, Territory and International Political Economy*, Routledge, London.
2. Benko, G. and Strohmayer, U. 1997: Space *and Social Theory: Interpreting Modernity and Postmodernity*, London: Blackwell Publishers, Oxford, London.
3. Bhabha, H., 1994: The *Location of Culture*, Routledge, London and New York.
4. Corbridge, S., Martin, R. and Thrift, N., 1997: *Money, Power and Space*, Blackwell, Oxford.
5. Derek, G., Martin,R., and Smith, G., 1994 : *Human Geography: Society, Space and Social Science*. Macmillan publishers, Cambridge.
6. Johnston, R.J., 1991: A *Question of Place: Exploring the Practice of Human Geography*. Blackwell Publishers, Cambridge.
7. Harvey, D., 1996: Justice, *Nature and Geography of Difference*, Blackwell Publishers, Cambridge.
8. Massey, D., 1998: Space, *Place and Gender*, Polity Press, Cambridge.
9. Massey, D., Allen, J., and Sarre, P., 1999: Human *Geography today*, Blackwell Publishers, Cambridge.
10. Morley, D. and Robins, K., 1995: Spaces *of Identity: Global Media, Electronic landscapes and Cultural Boundaries*, Routledge, London.
11. Redcliff, M., and Benton, T., 1994: Social *Theory and Global Environment*, Routledge, London and New York.
12. Rogers, A. and Vertovec, S., 1995: The *Urban Context*. Berg, Oxford.
13. Sack, R.D., 1997: *Homo Geographicus: A framework for Action, Awareness, and Moral Concern*. The John Hopkins University Press, London.
14. Sibley, D., 1995: Geographies *of Exclusion: Society, and Difference in the West*, Routledge, London.
15. Werlen, B., 1993: Society, *Action and Space: An alternative Human Geography*, Routledge, London.

GEOG5107: Computer Aided Mapping and Thematic Atlas
Internal Assessment: 40; Thematic Atlas: 60

Course Outline:

Each candidate shall be required to prepare a Thematic Atlas using suitable cartographic techniques of designing and mapping (QGIS or ArcGIS/ Arcinfo/ Mapview/ Erdas etc). Thematic Atlas focusing on any specific theme of interest will cover any region or area for purpose of mapping. All plates of the Atlas will be prepared with computers. The Thematic Atlas (Project Report) complete in all respects and duly signed by the teacher-in-charge, as having been prepared by the candidate-himself/herself, shall be submitted in duplicate on or before a date to be fixed by the department each year.

Recommended Books:

1. Date, C.J., 1995: An *Introduction to Data Base System*, 6th edition, Reading Messachusetts; Adderson Werley.
2. Dickinson, G.C., 1973: Statistical *Mapping and Presentation of Statistics*, Edward Arnold, London.
3. Fraser Taylor, D.R., (ed.), 1980: Progress *in Contemporary Cartography*, John Wiley, Chichester U.K.
4. Fraser Taylor, D.R., (ed.), 1983: Graphic *Communication and Design in Contemporary Cartograph***y**, John Wiley & Sons Ltd. New York.
5. Hodykess, A.G., 1970: Maps *for Books and Theses*, David and Charles, New York.
6. Jones, C., 1997: Geographic *Information Systems and Computer Cartography*, Longman, London.
7. Keats, J.S., 1973: Cartographic *Design and Production*, Longman, London.
8. Kingsbury, R.C., 1969: Creative *Cartography: An Introduction to Effective Thematic Map Design*, Indiana University, Indiana.
9. Kraak, M-J., and Ormeling, F., 2004: Cartography: Visualization of Geospatial Data, Pearson Education.
10. Misra, R.P., 1986: *Fundamentals of Cartography*, Concept Publishers, Delhi.
11. Monkhouse, F.J., and Wilkinson, H.R., 1973: *Maps and Diagrams*, Methuen, London.
12. Rhind. D.W. and Taylor, D.R.F., (eds.) 1989: *Cartography: Past, Present and Future*, Elsevier Applied Science Publisher, London.
13. Robenhorst, T.D. and McDermatt, P.D., 1989**:** *Applied Cartography Source Materials for Mapping*, Merrill Pub. Co. London.
14. Robinson A. et.al. 1978: *Elements of Cartography*, John Wiley, New York.
15. Tombin, C.D., 1990: *Geographic Information System and Cartographic Modelling*, Englewood Cluff, New Jersey.

GEOG5108: Spatial Economic Systems
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Economic geographic space: Economic grouping and typology of countries, stages of development of productive forces, the post-colonial states, international détente.

2. Socio-economic spatial relations: Territorial division of labour, location of productive forces, socio-economic complementarities, economico-geographic links, economic gravitations.

3. Geospatial paradigms: Historical materialism, dialectics of nature, instruments of productions, relations of productions, types of economic systems.

4. Geography of the world economy: World capitalist and socialist economy, scientific and technological revolution and the world economy.

5. Spatial Economic Structures: United States of America, People's Republic of China and the Republic of India.

6. Development through cooperation: Europian Union, Central American Common Market, South Asian Association of Regional Cooperation.

7. System Growth and Spatial Dynamics: Types of growth and change, patterns of growth, development of spatial organizations, limits to growth.

Recommended Books:

1. Bryson, J., et al, 1999: *The Economic Geography Reader,* John Wiley, Chichester.
2. Dodgshon, R.A., 1998: *Society in Time and Space,* Cambridge University Press, Cambridge.
3. Grossman, G., 1984: *Economic Systems,* Prentice Hall, New Jersey.
4. Hanink, D. M., 1997: *Principles and Applications of Economic Geography*, John Wiley, New York.
5. Knox, P. and Agnew, J., 1998: *The Geography of the World Economy* 3rd Edition, Arnold, London.
6. Krugman, P., 1995: *Development, Geography and Economic Theory,* MIT Press, Massachusetts.
7. Lee, R. and Wills, J., (eds.) 1997: *Geography of Economics,* Arnold, New York.
8. Sachar, A. and Oberg, S. (eds.), 1990: *The World Economy and the Spatial Organisation of Power,* E.S.F. Publication, Srasbourg.
9. Sheppard, E. and Barnes, T. J., 1984: *The Capitalist Space Economy: Geographical Analysis after Ricardo Marx and Strafa,* Unwin Hyman, London.
10. Taylor, M. and Conti, S., 1997: *Interdependent and Uneven Development,* Ashgate, Vermont.

Semester III

ELECTIVES

GEOG6201: Advanced Remote Sensing and Geographical Information System
Internal Assessment: 40; End Semester Examination: 60

Course outline:

1. Digital Image Processing: Digital image, storage and supply of digital data, radiometric and geometric correction, image registration, enhancement, filtering, transformation, color enhancement, image fusion, perspective visualization

2. Digital Image Classification: Image segmentation, Supervised and unsupervised classification; advanced classification methods, accuracy assessment; Digital change detection

3. Principles of Thermal, Hyperspectral and Microwave remote sensing

4. Terrain Modeling: Spatial interpolation techniques - types, uses and problems. Digital elevation / terrain model; Triangulated Irregular Networks (TIN); Watershed analysis.

5. Attribute Data Management: DBMS – Hierarchical, Network and Relational

6. Network Analysis; Analytical Modeling in GIS: Binary, Index, Regression and Process Based Modeling; Web-GIS; Errors in GIS

7. Integration of Remote Sensing and GIS: applications to geosciences

Recommended Books:

1. Curran, Paul J., (1985): *Principles of Remote Sensing*, Longman, London & New York.
2. Gupta, R. P., (2003): *Remote Sensing Geology*, Springer-Verlag.
3. Jensen, J.R., (2004): *Remote Sensing of the Environment: An Earth Resource Perspective*, Pearson Education.
4. Jensen, J.R., *Introductory Digital Image Processing: A Remote Sensing Perspective* (New Jersey: Prentice-Hall).
5. Lillesand, T. and Kiefer, R., (1999): *Remote Sensing and Image Interpretation*, Wiley, London.
6. Mather, P M. (1999). *Computer processing of remotely sensed images: an introduction*, Wiley, Chichester.
7. Sabins, Floyd F. Jr., (1997): *Remote Sensing: Principles and Interpretation*, W.H. Freeman, New York.
8. Burrough,P.A. and McDonnell, R.A., (1998) : *Principles of Geographic Information Systems*, Oxford University Press, Oxford.
9. De Mers, Michael N., (1999): *Fundamentals of Geographic Information Systems*, John Wiley & Sons, NewYork.
10. Heywood, I. et al. (2004): *An Introduction to Geographic Information Systems*, Pearson Education.
11. Longley, P.A., Goodchild, M.F., Maguire, D.J. and Rhind, D.W., (2001), *Geographic Information Systems and Science*, Wiley, Chichester.
12. Reeves, Robert, G., (ed.), (1975): *Manual of Remote Sensing* (2 Volumes), The American Society of Photogrammetry, Falls Church, Viginia.

GEOG6202: Natural Resource Management
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Concept, models and approaches to natural resource management.

2. Utilization, Conservation and Management of Resources

3. Problems of Resource Utilization

4. Resource Appraisal: Ground, remote sensing and G.I.S.

5. Sustainable Resource Development: Concept, method and dimensions, creating sustainable systems.

6. Integrated Resource Development: Ecological, economic and social aspects; problems of river basin development.

7. Institutions and Policy Making: Institutional arrangements; policy models; policy making and resource management.

8. Utilization, management problems and policies of natural resources in India.

Recommended Books:

1. Adams, W.M., 1990: Green Development: Environment and Sustainability in the Third World, Routledge and Chapman Hall, New York.
2. Berkes, F., (ed.), 1989: Common Property Resources: Ecology and Community Based Sustainable Development, Belhaven Press London.
3. Mather, A.S. and Chapman, K., 1995: Environmental Resources, Longman, Harlow, England.
4. McClay, K.R., 1995: Resource Management Information System: Process & Practice, Taylor Francis, London.
5. Mitchell B., 1988: Geography and Resources Analysis, 2nd edition, Longman, London.
6. Mitchell,B., 1997 : Resource and Environmental Management, Longman, Harlow, England.
7. Newson, M.D., 1991: Land, Water and Development: River Basin Systems and Management, Routledge,London.
8. Owen, S. and Owens, P.L., 1991: Environment, Resources and Conservation, Cambridge University Press, New York.
9. Redclift, M., 1987: Sustainable Development: Exploring the Contradictions, Methuen, London.
10. Rees, J., 1990: Natural Resources: Allocation, Economics and Policy, Routledge, London.
11. Saha, S.K., and Barrow, C.J., (ed.), 1981: River Basin Planning: Theory and Practice, John Wiley and Sons, New York.

GEOG6203: Principles of Political Geography
Internal Assessment: 40 End Semester Examination: 60

Course Outline:

1. Ideas in Political Geography, Geography and its relationship with political economy and political sociology.
2. Theoretical contributions to political geography: Ratzel, Hartshorne, Taylor and Harvey.
3. Political Geography of Ocean: Maritime Boundaries, delimitations: principles and problems, international law of the sea.
4. Electoral Geography: electoral systems, methods of studying electoral geography, geographical influence in voting.
5. Geo-strategic views: Mahan, Mackinder, Spikeman, conflict between states and conflict resolutions, supra-national organizations and their geographical significance.
6. Political Geography of the world order: Theories of international systems, evolution of contemporary world order, alternate models of development for the future.
7. Administrative organization of space: Methods of administrative organization, territory, public administrations and landscape formation, polity as an agent of landscape change.

Recommended Books:

1. Agnew, J. (ed.), 1997: *Political Geography*, Arnold, London
2. Bryant, R. L. and Bailey, S., 1997: *Third World Political Ecology*, Routledge, London.
3. Blake, G. (ed.), 1987: *Maritime Boundaries and Ocean Resources*, Croom Helm, London.
4. Dikshit, R. D., 1997: *Developments in Political Geography: A Century of Progress*, Sage Publications, New Delhi.
5. Dodds, K., 2000: *Geopolitics in a Changing World*, Prentice Hall, Essex.
6. Elliott, L., 1998: *Global Politics of the Environment*, Macmillan Press Ltd., London.
7. Gottman, J., (ed.), 1980: *Centre and Periphery: Spatial Variations in Politics*, Sage, London.
8. O'Tuathail, G. and Simon, D., 1998: *Rethinking Geopolitics*, Routledge, London.
9. Parker, G., 1998: *Geopolitics: Past Present and Future*, Printer, London.
10. Taylor, P.J., 2000: *Political Geography: World Economy, Nation-State and Locality*, Longman, London.
11. Taylor, P.J. and Johnston, R.J., 1979: *Geography of Elections*, Croom Helm, London.

GEOG6204: Systematic Agricultural Geography
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Agricultural Geography: Origin and dispersal of agriculture - major theories of origin of agriculture; genecentres of agriculture - New World and Old World.
2. Agricultural Regionalization: Concept and criteria, Whittlesey's agricultural regions; agricultural typology-concept and criteria, hierarchy of world type of agriculture; agricultural regions of India.
3. Models in Agricultural Geography: Bases of classification; normative models - locational model, diffusion model, and decision making models; combinational models.
4. Agricultural Productivity: Concept, determinants and methods of its measurement; regional imbalances in agricultural productivity in India.
5. Agricultural problems and strategies for agricultural developments; agricultural planning regions.
6. New Perspectives in Agriculture: Urban agriculture; agri-business; food security, Sustainable Agricultural Development.

Recommended Books:

1. Atkin's, P., and Bowler, L., 2001: *Food in Society - Economy, Culture and Geography*, Oxford University Press, Oxford.
2. Basu, D.N., and Guha, G.S., 1996: *Agro-Climatic Regional Planning in India*, Vol. I & II, Concept Publication, New Delhi.
3. Buller, N. and Hoggart, K., (eds.) 2001: *Agricultural Transformation, Food and Environment*, Vol. I, Ashgate Publishing Company, Burlington.
4. Burch, D., Gross, J. and Lawrence, G. (eds.), 1999: *Restructuring Global and Regional Agriculture*, Ashgate Publishing Company, Burlington.
5. Burger, A., 1994: *Agriculture of the World*, Aldershot, Avebury.
6. Bryant, C.R., Johnston, T.R, 1992: *Agriculture in the City Countryside*, Belhaven Press, London.
7. Grigg, D.B., 1984: *Introduction to Agricultural Geography*, Hutchinson, London.
8. Grossmn, D., VanDen Berg, L.M., and Ajaegbu, H., 1999: *Urban and Peri-Urban Agriculture in Africa*, Ashgate, Publishing Company, Brookfield.
9. Ilbery, B.W., (ed.) 1998: *Geography of Rural Change*, Addison Wesley Longman, London.
10. Mohammad, N., 1992: *New Dimension in Agriculture Geography*, Vol. I to VIII, Concept Pub., New Delhi.
11. Obosu-Mensah, K., 1999: Food *Production in Urban Areas: A Study of Urban Agriculture in Accra, Ghana,* Ashgate publishing Co., Brookfield.
12. Roling, N.G., and Wageruters, M.A.E., (ed.) 1998: *Facilitating Sustainable Agriculture*, Cambridge University Press, Cambridge.
13. Singh, J., and Dhillon, S.S., 1994: *Agricultural Geography*, Tata McGraw Hill, New Delhi.
14. Srivastava, H.C.(ed.) 1993 ***:*** *Biotechnological Applications for Food Security in Developing Countries*, Oxford & IBH Publishing Company, New Delhi.

GEOG6205: Social Geography of India (Interdisciplinary)
Internal assessment: 40; End Semester Examination: 60

Course Outline:

1. Social Geography of India: Nature and Scope, Indian society - a study in unity and diversity: Centripetal and centrifugal forces, regional identities, modernization and role of media and new communication technology in shaping identities.
2. Historical Bases of Socio cultural regionalization of India: Elements in the development of socio cultural regions; continuity and change in the historically evolved regional structure; implications of emerging regional structure since independence.
3. Religion and Region in India: Religion and regional culture; Religious diversity and regional identity, Geographical factors explaining the distribution of the tribal religions, Hindus, Muslims, Christian, Buddhist, Jain and Sikh communities.
4. Geographic analysis of Caste and Tribe*: varna* and *jati*-pan Indian structure and regional specificity, Caste Regions, caste and settlement morphology, distribution of SC population, Tribes in India, dominance and dispersion of Tribal population, penetration of tribal regions.
5. Spatial Patterning of Language in India: linguistic diversity, Geographic patterning of languages, stability and fluidity of language returns; language loss, language retention and language shift.

Reading List

1. Ahmed A (1999) Social Geography, Rawat publications, Jaipur.
2. Ahmad A (1993) (ed) Social Structure and regional Development: A Social Geography Perspective, Rawat Publications, Jaipur.
3. Crane Robert I (1973), Regions and Regionalism in South Asian Studies: An Exploratory Study, Duke University Durham.
4. Dutt NK.,(1986), *Origin and Growth of Caste in India*, Firma Kin, Calcutta
5. Khubchandani ML, (1988) *Language in a Plural Society*, Indian Institute of Advanced Study, Shimla.
6. Pain R, M. Barke, D Fuller, J Gough, R MacFarlane, G Mowl, (2001), *Introducing Social Geographies*, Arnold Publishers, London.
7. Pannikar K.M. (1959) '*Geographical Factors in Indian History'*, Bharatiya Vidya Bhavan, Bombay.
8. Singh K.S. (1993) People of India Vol I to XI, Oxford University Press, New Delhi.
9. Raza M and Ahmad A (1990), An Atlas of Tribal India, Concept Publishing Co, Delhi.
10. Registrar General of India, (1972), *Economic and Socio cultural Dimensions of Regionalization of India*, Census Centenary Monograph No 7, New Delhi
11. Schwartzberg J. (1978), *A Historical Atlas of South Asia*, University of Chicago Press, Chicago.
12. Sopher D. (1980) (ed) 'An Exploration of India: Geographical Perspectives on Society and Culture', Cornell Press, New York.
13. Subba Rao B. (1958), '*Personality of India'*, MS University Press, Baroda.

GEOG6206: Urban Settlement Systems (Interdisciplinary)
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Growth of Towns and Cities – First Urban Revolution: Earliest Towns, Greek and Roman Towns, Urbanism during Dark Ages, Medieval Period and Renaissance; Second Urban Revolution: Industrial and Modern Towns; Urbanization
2. The process and the patterns of the urbanisation in the developed and the developing countries; the process in India: colonial legacy, the post-independence characteristics.
3. Influence of Sites and Functions; Distribution and Spacing of Towns, Actual vs. Optimum Size, and Concept of Hierarchy, The concept of urban primacy and over urbanization, rank-size rule, urban-rural continuum.
4. The analysis of urban systems: structuralist perspectives, the systems approach
5. Classification of Towns – Criteria, Age and Function; Political and Regional Capitals; Inland Trading Centers; Ports; Mining and Industrial Towns; Towns with Miscellaneous Functions; Million Cities, Conurbations and Megalopolises.
6. Urban Systems and the Regional Economy: Illustrations from India

Recommended Books:

1. Beaujeu-Garnier J. and Chabot G. (1967): *Urban Geography*, Longman.
2. Christaller W. (1933): *Central Places in Southern Germany*, Prentice-Hall International. (*in German*)
3. Dickinson R. E. (1964): *City and Region*, Routledge and Kegan Paul.
4. Geddes P. (1949): *Cities in Evolution*, Benn.
5. Gottman J. (1961): *Megalopolis*, Twentieth Century Fund, New York.
6. Hudson F. S. (1970): *A Geography of Settlements*, Macdonald & Evans, London.
7. Johnson J. H. (1967): *Urban Geography*, Pergamon.
8. Mayer H. M. and Kohn C. F. (1959): *Books in Urban Geography*, University of Chicago.
9. Smailes A. E. (1953): *The Geography of Towns*, Hutchinson.
10. Taylor Griffith (1949): *Urban Geography*, Methuen.

GEOG 6307: Regional Development (Interdisciplinary)
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Regional Imbalance as a Policy Problem – General Spatial Equilibrium by *Ohlin* and *Losch*; Cumulative Causation by *Myrdal*; Spatial Equilibrium and Spatial Integration by *Friedmann (1966)*
2. Growth, Income Distribution and Spatial Inequality – Aggregate Efficiency vs. Interregional Equity; Large City Problem and Urban Bias; Spatial Reorganization

3. Urban-Industrial Growth Pole Strategies and the Diffusion of Modernization - Original Growth Pole Concept by *Perroux*; Transformation into Regional Theory; Two False Starts by *Boudeville* and *Hirschman*; USA as an Ideal Case Type: *Williamson, North, Perloff, Schultz, Friedmann,* and *Berry*; Dualistic Perspective and Geography of Modernization

4. Polarization and the Development of Underdevelopment: An Anti-Thesis – Failure of Growth Pole Strategies; Polarized Development by *Friedmann (1973)*, World Capitalist System by *Frank,* Colonialism and Spatial Structure of underdevelopment by *Slater*; Shared Space by *Santos*

5. Neo-Populist Regional Development Strategies – National Development Strategy; Urbanization Policies for Rural Development by *Johnson*, and *Rondinelli & Ruddle*; Selective Spatial Closure by *Stohr & Todtling*; Territorial Regional Planning and Development from Below by *Friedmann (1979)*; Agropolitan Development by *Friedmann (1978)*

6. Space and Explanation in Regional Development Theory – Conceptions of Space by *Perroux,* and *Friedmann & Alonso (1964)*; Spatial Analysis of Polarized Development: Spatial Centre-Periphery Model, Spatial Diffusion Analysis, Spatial Dependency Analysis; Functional Analysis by *Hempel*; Analysis of Locational Behaviour by *Massey*

7. Limits of Spatial Policy & Territorial Regional Planning and State, Development and Regional Planning Practice – Territorial Regional Planning as an Alternative; Territorial Interests; Organic Conception of Region; Development and Regional Planning; Policy Formation & Objectives and Planning Strategies & Practices in Developmentalist States

Recommended Books:

1. Boudeville J. R. (1966): *Problems of Regional Economic Planning*, Edinburgh Univ. Press, Edinburgh.
2. Friedmann J. (1966): *Regional Development Policy: A Case Study of Venezuela*, MIT Press, Massachusetts.
3. Friedmann J. (1973): *Urbanization, Planning and National Development*, Sage Pub., London.
4. Friedmann J. and Alonso W. (1966): *Regional Development and Planning: A Reader*, MIT Press, Massachusetts.
5. Friedmann J. and Alonso W. (1975): *Regional Policy: Books in Theory and Applications*, MIT Press, Massachusetts.
6. Friedmann J. and Weaver C. (1979): *Territory and Function: The Evolution of Regional Planning*, Edward Arnold, London.
7. Hirschman A. O. (1958): *The Strategy of Economic Development*, Yale Univ. Press, New Haven.
8. Johnson E. A. J. (1970): *The Organization of Space in Developing Countries*, MIT Press, Massachusetts.
9. Kuklinski A. (ed) (1970): *Regional Development and Planning: International Perspectives*, Sifthoff, Leiden.
10. Lo Fu-chen and Salih K. (1978): *Growth Pole Strategy and Regional Development Policy: Asian Experiences and Alternative Approaches*, Pergamon, Oxford.
11. Myrdal G. (1957): *Economic Theory and Underdeveloped Regions*, Duckworth, London.

12. Ohlin B. (1933): *Interregional and International Trade*, Harvard Univ. Press, Massachusetts.
13. Richardson H. W. (1978): *Regional and Urban Economics*, Penguin, Harmondsworth.
14. Rondinelli D. A. and Ruddle K. (1978): *Urbanization and Rural Development: A Spatial Policy for Equitable Growth*, Praeger
15. Rostow W. (1960): *The Stages of Economic Growth: A Non-Communist Manifesto*, Cambridge Univ. Press, Cambridge.
16. Stohr W. B. and Taylor D. R. F. (1981): *Development from Above or Below? The Dialectics of Regional Planning in Developing Countries*, John Wiley, Chichester.

GEOG6208: Cultural Geography (Interdisciplinary)
Internal Assessment: 40; End-Semester Examination: 60

Course outline:

1. Nature of Cultural Geography: Environmental Determinism; Carl Sauer and the Cultural Theory; the Morphology of Landscape; Superorganicism, its critique and the birth of New Cultural Geography; Post Modernism and the Cultural Turn.

2. Reading Culture: Meaning, Sign, Reading, Textuality, Aesthetics, Ideology and Representation and the Production of Cultural Spaces.

3. Cultural Politics of Spatial Dominance: Creating Hegemonic Cultures and Stereotypes- Mediums, Tactics and Strategies.

4. Cultural Politics of Spatial Resistance: Reassertion of Marginal Groups in everyday life Worlds, the emergence of Alternative and Resistant Cultures.

5. Globalization of Cultures: Deterritorialisation of Spaces and Cultures, Role of Global Capital and Media in Hybridization of the World.

Recommended Books:

1. Baker Alan and C, Biger (1992) Eds. *Ideology and Landscape in Historical Perspective*, Cambridge University Press, Cambridge.
2. Blunt, Alison and C. McEwan (2002) *Post-Colonial Geographies*, Continuum, London.
3. Castells, Manuel (1996), *The Network Society*, Blackwell, Oxford
4. Cavallaro Davi (2001) *Critical and Cultural Theory: Thematic Variations*, Athlone Press, London and New Brunswick, NJ.
5. Cosgrove Denis (1984) *Social Transformation and Symbolic Landscape*, Croom Helen, London.
6. Crang, Mike (1998) *Cultural Geography*, Routledge, London.
7. Cresswell, Tim (1996) *In Place / Out of Place: Geography, Ideology and Transgression*, University of Minnesota press, Minneapolis.
8. Donald, James (1999) *Imagining the Modern City*, Athlone Press, London.
9. Duncan, James and Duncan, N (1988) "(Re) Reading the landscape", *Environment and Planning D: society and Space*, 6, 117-26.
10. Glenn, Jordon (1995) *Cultural Politics*, Blackwell Oxford (UK) and Cambridge (USA).
11. Highmore Ben (2002) *Everyday Life and Cultural Theory*, Routledge, London and New York.

12. _____ (2005) *Cityscapes*, Palgrave Macmillan, New York.
13. Hubbard, Phil et.al (2005) *Key Thinkers on Space and Place*, Sage Publications, London, Thousand Oaks, New Delhi.
14. Leighly, John. (1963) Eds. *Land and Life: a Selection of writings of Carl Ortwin Sauer*, University of California, Berkeley.
15. Massey, Doreen (1994) *Space, Place and Gender*, University of Minnesota Press, Minneapolis.
16. Miller, Daniel et.al. (1998) *Shopping, Place and Identity*, Routledge, London and New York.
17. Nelson and Seager. (2005) *A Companion to Feminist Geography*, Blackwell Publishing Ltd, Oxford.
18. Robertson Iaian and Penny Richards, (2003) *Studying Cultural Landscapes*, Oxford University Press, London and New York.
19. Said, E. (1993) *Culture and Imperialism*, Alfred Knopf, New York.
20. Zukin Shawn (1995), *The Cultures of Cities*, Blackwell, Oxford.

GEOG6209: Practical in Physical Geography
Internal Assessment: 40; End Semester Examination: 60

Course Outline: Morphometric Analysis & Climatology

a. Geomorphology

1. Drainage Network

1. Stream Ordering- 1. Horton and Strahler methods of stream ordering (for a 3 to 5 order drainage basin)
2. Relationship between stream order and number; Bifurcation ratio

b. Drainage basin

2. Basin relief analysis- Relief analysis (for a 3 to 5 order drainage basin; based on grid method)

1. Absolute relief map
2. Relative relief map
3. Slope, Aspect map (degrees)
4. Dissection index map
5. Hypsometric integral
6. Basin cross profiles
7. Block Diagram (multiple section)

c. Climatology

3. Climatic elements- Preparation of climatic diagrams
    1. Climatograph
    2. Climograph
    3. Simple wind rose and its types
    4. Hythergraph

4. Classification of Climate
    1. Climatic classification of Koppen and Thornthwaite- Determination of climatic type by using Koppen's and Thornthwaite's scheme of classification.
    2. Water budget- Construction of water budget diagram using Precipitation & potential evapotranspiration data

Recommended Books

1. Allison, Robert (ed.) (2002): *Applied Geomorphology: Theory and Practice*, John Wiley and Sons.
2. Bridges, E.M. (1990): *World Geomorphology*, Cambridge University Press.
3. Goudie, A., (1995): *The Changing Earth: Rates of Geomorphogical Processes*, Blackwell, Oxford.
4. Johathan, P., (1999): *Earth Surface Systems: Complexity Order and Scale*, New York.
5. Luna Bergere Leopold (1995): *Fluvial Process in Geomorphology*, Courier Dover Publications.
6. Ashis Sarkar (2015): A Practical Geography, Orient Blackswan Private Limited - New Delhi
7. Pijushkanti Saha and Partha Basu (2013): Advanced Practical Geography, Books & Allied Ltd; 3rd revised edition edition

GEOG6210: Practical in Human Geography
Internal Assessment: 40 End Semester Examination: 60

Course Outline:

1. Crop Combination Methods
    1. Weaver's method
    2. Thomas' method
2. Agricultural Efficiency Methods
    1. Kendall's method
    2. Bhatia's method
3. Measures of Network Structure

Network indices

    1. Ratio measure
    2. Alpha, beta, gamma, etc.
    3. Associated number, cyclomatric number

4. Lorenz Curve

Location quotient

    Calculation and plotting 02

b. Settlement and Population Geography

6. Population Geography

Indices and Projection

    1. Age-sex pyramid
    2. Child-women ratio
    3. Dependency ratio
    4. Infant mortality rate
    5. Age specific mortality
    6. Population growth rate
    7. Population projection

c. Computer Application

Data Analysis and presentation using Computers

7. Settlement Geography

Methods for calculation of Urban data and Dispersion

    1. Rank size rule & primate index
    2. Calculation of centrality
    5. Nearest Neighbour analysis

6. Gravity model

Reference books:

1. Carter Harold (1977): The study of Urban Geography
2. Hans Raj (1978): Fundamentals of Demography
3. Hudson F.S. (1976): Geography of Settlements
4. Michael E. and E. Hurse: Transportation Geography
5. Pollard A. H. and Farhat Yusu: Demographic Techniques
6. Singh, R. L. Reading in Rural Settlement Geography
7. Yeats, M. H. (1974). An introduction to Quantitative Analysis in Human Geography
8. Singh, J. and Dhillon (1984): Agricultural Geography.
9. Liendsor, J. M. (1997): Techniques in Human Geography, Routledge.
10. Lloyd, P. and B. Dicken (1972): Location in Space - A theoretical approach to economic geography. Harper and Row, New York

GEOG6211: Research Methodology in Geography
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Introduction to Research Methodology
Defining research- Methods of research types, significance of geographical research, research ethics
Scientific method in geographical studies, inductive and deductive, basic elements and attributes,
Scale of research: Macro, Meso, Micro Problem formulation and identification.
Review of Literature: Significance and sources of literature review
Research Design: meaning, stages, characteristics and significance of research design

2. Research Hypothesis and Sampling
Meaning of Hypothesis, relevance and types of hypothesis
Identification of problem and hypothesis: Problem identification, statement of hypothesis, testing of hypothesis, generalization
Sampling: Meaning and importance, types of sampling
Selection of sample and size of sample

3. Nature and Analysis of Geographical Data
Nature and type of Geographical data, significance of spatial and temporal data in geographical studies
Levels of measurements: Nominal, Ordinal, Ratio and Interval
Methods and sources ofgeographical data collection: conventional and modern; limitations of secondary data and need for data generation, collection of primary data: questionnaires and schedules, field work, sample surveys and their significance
Geographic Data analysis: Qualitative, Quantitative and Advanced techniques of geographic data processing and analysis, geographical matrix and its significance in analysis of Geography data

4. Scientific Report Writing
Introduction- aim and objectives, data and methodology
Data analysis, result, conclusion
Referencing system, weblography and bibliography.

Plagiarism, design, concept of impact factor, citation, DOI

Recommended books:

1). Karlekar Shrikant and Kale Mohan (2005): Statistical analysis of Geographical data, Dimond publication
2) Burt, J.E. and Barber, G.M. (1996): Elementary statistics for Geographers, The Guilford press, New York.
3) Clark, W.A.V. and Hosking, P.C (1986): Statistical Methods for Geographers, John Wiley & Sons, New York.
4) Dickinson, G.C. (1977): Statistical Mapping and presentation of statistics, Edward Arnold Limited London.
5) Gregory, S. (1963): Statistical Methods and Geographer Longman Group Ltd; London
6) Keates, J.S. (1996): Understanding Maps, 2ndEdn; Longman group limited, London.
7) Norcliff, G.B. (1982) Inferential Statistics for Geographers Hutchinson, London.
8) Norcliffe G. B. (1977): Inferential statistics for Geographers (Hutchinson, London)
9) Robinson, A.H.et al. (1985): Elements of Cartography, Vol.VI, John Wiley and Sons, New York.
10) Rogerson P. A. (2001): Statistics for Geography (SAGE pub., London, New Delhi}
11) Shaw G and Wheller D. (1985): Statistical techniques in geographical analysis. John Wiley and sons,
12) Sumner G J (1978): Mathematics for physical geographers. Edward Arnols
13) Taylor, P.J. (1977): Quantitative Methods in Geography. Houghton Mifflim Company, Boston University Press.
14) V. Natarajan P., Adler Ron K: Advanced Surveying, B. 1 Publ. Bombay
15) Watson, G. and McGraw, D. (1980): Statistical Inquiry, John Wiley and sons, New York.
16) Yeates, M. (1974). An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.
17) Hammerton, M. (1975) Statistics for Human Sciences, Longman Group Ltd, Barlow.
18) Wicox, R.R. (2003): Applying Contemporary Statistical Techniques Academic press, Amsterdam.
19) Wilsons, A.G. &Bennet, R.J. (1985): Mathematical Methods in Human Geography and Planning, John Wiley & Sons, New York.

GEOG6212: Town and Country Planning
Internal Assessment: 40 End Semester Examination: 60

Course outline:

Human Settlement: A brief history with its relevance in modern context.

Settlement System: Types and Functions.

Town and Country Planning Practice in India.

Town Planning - Definition, nature, importance and scope.

Preparation of town plan - Statement of objectives, surveys and data collection for town planning with special reference to urban land surveys, formulation of policies, zoning, locational and space requirements for residential, work, and play areas.

Planning of transport and public utilities.

Problems of town planning in India.

Urban planning policies in Indian Five Year Plans.

Indian town planning experiences - Master Plan of Delhi and Chandigarh.

Country Planning:

Country Planning: Definition, nature, importance and scope.

Rural landuse and its determinants.

Rural landuse, land suitability, and soil surveys.

Rural development in India during Five Year Plans.

Planning for the following problems of rural India:

(a) Drinking water, (b) Floods and Soils, (c) Public utility services, and (d) Poverty and employment.

Recommended books:

1. Bhardwaj, R.K., Urban Development in India, National Book Trust, New Delhi, 1974.
2. Chapin, F.S. & Kaiser Edward J., Urban Landuse Planning, Harper Bros., New York, 3rd Ed., 1985.
3. Jackson, J., Surveys for Town and Country Planning, Hutchinson University Library, London, 1966.
4. Modak, V.N. and V.N. Ambedkar, Town and Country Planning and Housing, Oriental Longman, New Delhi, 1971.
5. TCPO, Regional Planning Efforts in India, Government of India, New Delhi, 1985.
6. Government of India, Report of the National Commission on Urbanisation, Vols. I & II, Ministry of
Urban Development, New Delhi, 1988.
7. Government of India, Plan Drafts of Different Five-Year Plans, Planning Commission, New Delhi.

Semester IV

Mandatory Paper

GEOG6238: Dissertation
Internal Assessment: 40 End Semester Examination: 60

Note: The students under the supervision of a faculty member shall be selecting a topic from his field of specialization for the dissertation work. The dissertation shall be field work based applying the techniques learned by the student in practicals. It will contain at least 70 pages and 10 to 15 maps and diagrams / charts prepared by the student. The dissertation report duly signed by the teacher supervisor concerned be submitted in the college before the theory examination of the university or as per instructions given by the university. There shall be internal viva voce on dissertation. The viva-voce examination will be purely internal and shall be conducted before sending the dissertation to the university. The student will present his/ her findings before the audience of department teachers and P.G. students. The questions will be asked by the faculty members and students. The supervisor will act as an internal examiner, and the internal marks will be awarded by him/ her.

ELECTIVES

ENVIRONMENT AND RESOURCE

GEOG6213: Hydrology and Water Resource Management
Internal Assessment: 40 End Semester Examination: 60

Course Outline:

1. Hydrological Cycle: Systems approach in hydrology, human impact on the hydrological cycle; Precipitation, interception, evaporation, evapo-transpiration, infiltration, ground-water, run off and over land flow; Hydrological input and output.
2. River Basin and Problems of Regional Hydrology: Characteristics of river basins, basin surface run-off, measurement of river discharge; floods and droughts.
3. Water Balance Pattern: Measurement of water balance; time-space characteristics of water balance, assessment of water requirement.
4. Groundwater: Assessment and development, depletion and water quality parameters.
5. Water Resource Problems: water demand and supply, water quality, interstate water dispute, water Rights, institutional and financial constraints, eco-hydrological consequences of environmental degradation.
6. Water Management: Water Management in disaster areas, water quality management and Pollution control, water management in urban areas, watershed management, integrated use of surface and ground water, Water Policy.

Recommended Books:

1. Abbas, B.M., 1982: The Ganges Water Dispute, Vikas Publishing House Pvt. Ltd., New Delhi.
2. Aggarwal, A., 1991: Floods, Floodplains and Environmental Myths, Centre for Science and Environment, New Delhi.
3. Andrew. D. ward and Stanley, Trimble (2004): Environmental Hydrology, 2nd edition, Lewis Publishers, CRC Press.
4. Bhattacharya, S.K., 1988: Urban Domestic Water Supply in Developing Countries, CBS Publishers and Distributors, Delhi.
5. Karanth, K.R., 1988: Ground Water: Exploration, Assessment and Development, Tata-McGraw Hill, New Delhi.
6. Mahajan, G., 1989: Evaluation and Development of Groundwater, Ashish Publishing House, New Delhi.
7. Palanisami, K, 1984: Integrated Water Management: The Determinants of Canal Water Distribution in India: A Micro Analysis, Aricole, New Delhi.
8. Ramaswamy, C. (1985): Review of floods in India during the past 75 years: A Perspective. Indian National Science Academy, New Delhi.
9. Rao, K.L., 1982: India's Water Wealth 2nd edition, Orient Longman, Delhi,.
10. Singh, Vijay P. (1995): Environmental Hydrology. Kluwar Academic Publications, The Netherlands.

GEOG6214: Geography of Energy
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Importance of Energy: Energy and Economic Development; Energy and Environment; Historical Development of Energy: the Global pattern.
2. Energy resources of the World: Conventional and Non-Conventional Sources, New Discoveries and Inventions; Production and Consumption, the World Patterns; Oil Prices and the International Economy, the Nuclear Debate.
3. Energy in Developing and Developed Countries: Characteristics and Consumption Patterns.
4. Energy Resources of India: Conventional and Non-Conventional Sources: Potential, Production and Consumption: Sectoral and Regional patterns of Energy Use, New alternatives and Inventions, Rural Energy in India, Energy policies.
5. Contemporary Issues: Energy Security, Energy Efficiency, Energy Auditing, Conservation of Energy and Sustainable Development, the Geo-Politics of Energy; Emerging Issues in Energy sector.

Recommended Books:

1. Chaturvedi, Pradeep (1998) *Rural Energy for Sustainable Development- Technology and Environmental Issues*, Bio Energy Society of India.
2. _____ (2003) *Energy, Environment and Sustainable Development*, Publishing Co, New Delhi.
3. Hannesson, R. (1998) *Petroleum Economics: Issues and Strategies of Oil and Natural gas Production*, Quorum Books, West Port, USA.
4. Heal, Geoffery and G. Chichilnisky (1991) *Oil and the International Economy*, Clarendon Press, Oxford.
5. Meier, Peter and M, Munasinghe (2005) *Sustainable Energy in Developing Countries- Policy Analysis and Case Studies*, Edward Elgan Publishing Ltd, UK.
6. Nakicenovic, N. et al (1998) *Global Energy perspectives*, Cambridge University Press, Cambridge, New York, Melbourne.
7. Nooij, Michael and others, International Comparisons of Domestic energy Consumption, *Energy Economics*, 25 94) 2003 (July) 359-73.
8. Ramesh Babu, M. et.al. (1997) *Energy for Better Tomorrow: Renewable and Non Renewable Energy Sources*, Allied Publishers Ltd.
9. Reliance Industries ltd. (2003) Reliance Review of Energy Markets, Corporate Communications, Mumbai.
10. Suludhi, R.N. (1993) *Energy Options for the 21st Century*, Ashish Publishing House.
11. World Energy Council, (1993) *Energy for Tomorrow's World*, Kogan Page.
12. World Energy Council, (1994) *New Renewable Energy Resources- a Guide to Future*, Kogan page.

GEOG6215: Environmental Impact Assessment
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Environmental Impact Assessment: Principles of EIA, Concepts and approaches, historical development of impact assessment process, methods and procedure and currents issues in EIA.
2. Environmental Impact Assessment: Stages, Screening and scoping, baseline data, Impact identification, Impact prediction, evaluation and mitigation, criteria and standards for assessing significant impact, cost-benefit analysis and valuation of environmental impacts, public participation, presentation and review and preparation of environmental Impact action plan.
3. Selected National Procedures of EIA: The USA model of EIA; EIA in Canada and other countries model.
4. Case Studies of Environmental Impact Assessment: Water Impact Assessment; Hydro-electric power Impact Assessment; Ecological Impact Assessment; Social Impact Assessment; Mining Impact Assessment; Cumulative effects Assessments.
5. Environmental Impact Assessment regulations and policies in India.

Recommended Books:

1. Betty Bowers Marriott (1997): *Environmental Impact Assessment,* Mc Graw Hill Professional Bookstore.
2. Goel ,R.S. (2000) :*Environmental Impacts Assessment of water Resources Projects -concerns, Policy Issues Perceptions and Scientific Analysis,* Oxford Publishing Co. Pvt. Ltd.
3. Goel R.S. and R.N. Srivastava, (1999): *Hydropower and River valley Development -Environment Management, Case Studies and Policy Issues* .Oxford & IBH Publishing Co.Pvt.,New Delhi.
4. Goudie, A., (2000): *The Human Impact on the Natural Environment*, Blackwell, Publishers, Oxford.
5. J. Glasson, R. Therivel and A. Chadwick (1994): *Introduction to Environmental Impact Assessment: Principles and Procedures, Process, Practice and Prospects*, Research Press, Delhi.
6. Judith, Petts (eds.) (1999) *Handbook of Environmental Impact Assessment,* Blackwell Science Publication.
7. Prasad, K. and Goel, R. S., (2000): *Environmental Management in Hydro Electric Projects*, Concept Pub., New Delhi.
8. Richard, K. Morgan (1999): *Environmental Impact Assessment: A Methodological Perspective*, Springer.
9. Sinclair, J., (2000): *Canadian Environmental Assessment in Transition*, University of Waterloo Press, Waterloo.
10. Smith, L.G., (1993): *Impact Assessment and Sustainable Resource Management*, Longman, Harlow.
11. Subramanian, V., (2001): *Text Book on Environmental Sciences,* Narosa Publishing House, N. Delhi.

GEOG6216: Natural Hazards and Disaster Management
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Hazards and disasters: paradigm and classification.
2. Concept of Hazards, Risk, Vulnerability and Disaster and Types.
3. Regional Dimension of hazard: Occurrence and trends, methods of identifying hazard prone regions.
4. Dimensions, causes, risk perception and assessment, preparedness, impacts, responses, trauma and aftermath, vulnerability analysis, mapping and management of social hazards (crime and trafficking; agricultural and industrial hazards; biophysical hazard (epidemic) and animal induced hazards; landslide, earthquake, flood and drought and cyclone).
4. Disaster Losses and Impact – Displacements, livelihood, economy and infrastructure, health.
5. Response to Disasters: International, national, government, non-government, community and individual, media and education.
6. Mitigation and Management: Plans and policies; engineering, economic, social, political and policy initiatives.

Recommended Books:

1. Allan,S., Adam,B. and Carter,C., (eds.), (2000) : *Environmental Risks and the Media*, Routledge, London.
2. Ambala-Bertrand, J.M., (1993)*: Political Economy of Large Natural Disasters: With Special Reference to Developing Countries*, Clarendon Press, Oxford.
3. Blaikie,P., Cannon,T., Davis,I.,(et.al.), (1994) : *At Risk: Natural Hazards, People's Vulnerability, and Disasters,* Routledge, London.
4. Burton,I., Kates,R.W. and White,G.F., (1993) : *Environment as Hazard*, 2nd edition, Guilford Press, New York.
5. Hewitt, K., 1997: *Regions of Risk: A Geographical Introduction to Disasters*, Longman, London.
6. Hood, C. and Jones, D.K.C. (eds.), (1996): *Accident and Design: Contemporary Debates in Risk Management*, UCL Press, London.
7. Kasperson, J.X., Kasperson, R.E. and Turner, B. L., (1995): *Regions at Risk: Comparisons of Threatened Environments, United Nation* University Press, Tokyo.
8. Mitchell, J.K., (ed.) (1999): *Crucibles of Hazard: Mega-Cities and Disasters in Transition*, United Nations University Press, New York
9. Quarantelli, E.L. (ed.) (1998): *What is a Disaster? Perspective on the Question*, Routledge, London.
10. Schneid, T.and Collins, L. (1998): *Disaster Management and Preparedness*, Lewis Publishers, Washington, D.C.
11. Godschalk, D.R.et.al. (1999): *Natural Hazard Mitigation Recasting Disaster Policy and Planning*, Island Press, Washington, D.C.
12. Paraswamam, S.and Umikrishnan, P.V. (2000): *India Disaster Report,* Oxford University Press, New Delhi.

GEOG6217: Urban Impacts on Natural Resources and Environment
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Urban Dynamic and resource use: driving forces of urban growth and changing resource use.
2. Consumption of natural resources in city systems: water, energy, land, soil, biofuels, vegetation and other minerals.
3. Ecological foot prints of mega cities in resource – source regions.
4. Production of resource – waste in urban areas: Production system and generation of wastes, levels and trends in air pollution, water pollution, degeneration of land and soils and solid waste.
5. Issues related to disposal of wastes within peri–urban settings: Impact of air, water and solid waste disposal beyond city boundaries.
6. Hazards and disasters in the cities: Issues of impacts, vulnerability, risks, exposure and mitigation.
7. Climate change and impact on water resources in the cities.

Recommended books

1. National Research Council. 2003. *Cities transformed: Demographic change and its implications in the developing world.* M.R. Montgomery, R. Stern, B. Cohen & H. Reed (Eds.), Panel on urban population dynamics. Committee on Population. Washington DC, National Academy Press.
2. United Nations Centre for Human Settlements. 2002. *The state of the world cities report 2001.* New York: United Nations.
3. United Nations Environment Program. 2002. *State of environment and policy retrospective: 1972-2002.* Ch. 2 in Global Environmental Outlook-3. London: Earthsan.
4. United Nations Population Division. 2002. *World urbanization prospects: The 2001 revision.* New York: United Nations.

POLITICAL GEOGRAPHY AND AREA STUDIES

GEOG6218: Political Geography of India
Internal Assessment 25 End Semester Examination 75

Course content:

1. Geographical Bases of the Indian State: Territoriality, Location and size; Population: Distribution, ethnic and religious composition, quality; Implications in the current geopolitical context.

2. Geographical Factors in India's Political History: Centripetal and centrifugal forces; Role of terrain, Rivers and sea coasts in shaping political history;

3. Geography of internal conflicts and problems of Nation Building: Religious conflicts: Linguistic conflicts, separatist movements, terrorism; environmental movements, river water disputes.

4. Geography of Electoral support and Representation: Constituencies and their evolution, Redstricting: Issues and concerns; Patterns of electoral support and representation; politico electoral regions of India

5. Geography of International Relations: India's bilateral relations with SAARC nations; India's position in the Indian Ocean region; between two worlds India's position in world politics.

Recommended Books:

1. Adhikari S, 1997, Political Geography, Rawat publications, Jaipur and Delhi
2. Bandhopadhya J, 1991'The Making of India's Foreign Policy, Allied Pub, Delhi
3. Bhambri, C.P.: 1991: Political Process in India, Vikas, New Delhi
4. Brass, P.R., 1990: The Political Economy of India since Independence, Cambridge University Press, New Delhi.
5. Brass P.R, 1983, Caste, Faction and Party in Indian Politics, Vol I and II, chankya Pub, Delhi
6. Brass P R 2003 The production of Hindu Muslim Violence in Contemporary India, Oxford University Press, Delhil
7. Basu, S., 1992: Regional movement: Ethnicity identity, IIAS, Simla.
8. Deshpande, C.D., 1992: India: A Regional Interpretation, I.C.S.S.R, New Delhi.
9. Harrisson S et al (eds) 1999, India and Pakistan: the first fifty years, Woodrow Wilson Centre and Cambridge Univ Press
10. Oommen T.K., 1990: Protest and Change Studies in Social Movements, Sage, New Delhi
11. Pannikar KN, 1955, Geographical Factors in India's History, Bharatiya Vidya Bhavan, Bombay
12. Rudo0lph and Rudolph 1987, In pursuit of Lakshmi
13. Schwartzberg J, 1989, A Historical Atlas of South Asia
14. Weiner M and J Osgoodfield (eds) 1975 and various years, Electoral Politics in the Indian States, Centre for International Studies, MIT
15. Varshney A, 2002, Ethnic Conflict and Civic Life: Hindus and Muslims in India,Yale Univ Press, New Haven

GEOG6219: Geography of Federalism
Internal Assessment: 40 End Semester Examination: 60

Course Outline:

1. The State: Concept and evolution; Nation, and the nation-states, types of states, shape and location of state.

2. Definition of Federalism: Concept, approaches and types, geography and federalism.

3. A Spatio-temporal analysis of the classical federation of Switzerland.

4. Evolution of Indian Federation: Pre-colonial period, colonial period, post-colonial period and state reorganisation.

5. Centre-State Relations: Spatial nature of administrative, judiciary and financial relations.

6. Government's Policies: Development planning, agricultural policies, industrial policies, land reforms and Panchayati Raj.

7. Regionalism and its Manifestations: Types of movements, Inter-State river water disputes, Inter-State boundary disputes.

Recommended Books:

1. Bajpai A., 1997: Panchayati Raj and Rural Development, Sahitya Prakashan, Delhi.
2. Bhambri, C.P.: 1991: Political Process in India, Vikas, New Delhi.
3. Brass, P.R., 1997: The Political Economy of India since Independence, Cambridge University Press, New Delhi.
4. Basu, S., 1992: Regional movement: Ethnicity identity, IIAS, Simla.
5. Dandekar, V.M., 1996: Indian Economy: 1947-92, Sage, New Delhi.
6. Deshpande, C.D., 1992: India: A Regional Interpretation, I.C.S.S.R, New Delhi.
7. Dikshit, R.D, 1975: The Political Geography of Federalism, Macmillan, New Delhi.
8. Gopalkrishan, R., 1991: Political Geography of India's North-East, Har-Anand Publications, Delhi.
9. Inamdar, N.R., 1992: Development Administration in India, Rawat, Jaipur.
10. Kothari, R., 1970: Politics in India, Oriental and Longman, New Delhi.
11. Oommen T.K., 1990: Protest and Change Studies in Social Movements, Sage, New Delhi
12. Singh, R., 1991: Social Movements, Old and New: A Post-Modernist Critique, Sage publications, New Delhi.

GEOG6220: Electoral Geography
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Scope and Contents of Electoral Geography: Evolution of electoral geography in different phases: Review and understanding of work done in electoral geography with special reference to India: Scope of Electoral Geography.

2. Types of Electoral Systems

3. Source Material, techniques and approaches in electoral geography.

4. Electoral Geography– Geography of Voting, Geographic Influences on Voting Pattern, Geography of Representation, Gerrymandering.

5. The Geography of Power through Elections.

6. Case Studies of Indian Elections.

Recommended Books

1. Busteed, M. A. (ed.), (1983): *Development in Political Geography,* Academic Press, London.
2. Tayler, P.J. and House, J. (1984): *Political Geography: Recent Advance and Future Direction,* Crom Helm, Kent.
3. Burnett, A.D. and Taylor, P.J. (1981): *Political Studies from Spatial Perspectives,* John Wiley and Sons, New York.
4. Pacione, M. (ed.), (1985): *Progress in Political Geography,* Crom Helm, U.K.
5. Gudgin, G. and Taylor, P.J. (1979): *Seats, Votes and the Spatial Organisation of Elections,* London, Pion Ltd.
6. Taylor, P.J. and Johnston R.J. (1979): *Geography of Elections,* Crom Helm, U.K.

GEOG6221: Political Geography of Central Asia
Internal Assessment: 40 End Semester Examination: 60

Course Outline:

1. Central Asia in Global Perspectives: Central Asia and the world, external links, political alignment and geopolitics.

2. Physical Environment: Relief, landscape, temperature, pressures and winds directions, water balance and environmental hazards.

3. Economic Structure: Natural resources, livestock, crops, agricultural regions and evolution of economic regions.

4 Cultural Landscape: Ethno- linguistic region, human development, rise of great powers, region in the period of Bolshevik revolution.

5 Political Systems: Political parties, extremist politics, radical movements and foreign policy.

6 Transport and Communication: Railways, roads, airways and international tourism.

7 Perspective and Linkages of the Region with Russia and its Southern Neighbours.

Recommended Books:

1. Adshead, S.A.M., 1993: Central Asia in World History, Macmillan, London.
2. Allworth, E., (ed.), 1994: Central Asia: 130 Years of Russian Dominance: A Historical Overview, University Press, Durham.

3. Anderson, J., 1997: The International Politics of Central Asia, University Press, Manchester.
4. Banuazizi, A. and Weiner M., (eds.), 1994: The New Geopolitics of Central Asia and its Borderlands, I.B. Tauris, London.
5. Capisani, G.R., 2000: The Handbook of Central Asia: A Comprehensive Survey of the New Republics, I.B. Tauris, London.
6. Ferdinana, P., (ed.), 1994: The New Central Asia and its Neighbours, Pinter, London.
7. Gleason, G., 1997: The Central Asia States: Discovery Independence, Westview press, Boulder.
8. Hunter, S., 1996: Central Asia since Independence, Praeger, Westport.
9. Pomfret, R.W.T., 1995: The Economics of Central Asia, Princeton University Press, Princeton.
10. Ruffin, M.H., and Waugh, 1999: Civil Society in Central Asia, University of Washington Press, Seattle.

GEOG6222: Political Geography of Middle East
Internal Assessment: 40; End Semester Examination: 60

Course Outline

1. Middle East as a region: Territorial Evolution, space relationship and interdependencies.

2. Political history and administrative structure: Evolution of national boundaries and administrative structures.

3. Geographical bases of geo-ethnic regions: Relief, climate, language, migration, types of geo-ethnic regions.

4. Economic structure: Agriculture, mineral oil, industry, role of petroleum in regional economies.

5. Conflict resolution: Economic, social, political, centripetal and centrifugal forces.

6. Foreign Policy: Spatial Problems, linkages with developing and developed countries.

7. Middle East and the global economy.

Recommended Books

1. Ayubi, N. N. 1995: *Over- Stating the Arab State:* Politics and Society in the Middle East, I.B. Tauris, London.
2. Barkley, H., 1993: *The Politics of Economic Reform in the Middle East,* MacMillan, London.
3. Beinin, J., and Stork, J., 1997: *Political Islam,* I.B. Tauris, London.
4. Cleveland, W.L., 1994: *A History of the Modern Middle East,* Westview Press, Oxford.
5. Findlay, A.M., 1996: *The Arab World,* Routledge, London.
6. Fisher, W.B., 1985: *Middle East: A Physical, Social and Regional Geography,* Cambridge University Press, Cambridge (7th edition).
7. Owen, R., 1992: *State, Power and Politics in the making of the Modern Middle East,* Routledge, London.
8. Richard, A. and Waterbury, J.A., 1996: A Political Economy of the Middle East, Westview Press, Colorado, (Revised).
9. Shamim A. and Sayigh Y., (eds) 1998: *The Cold War and The Middle East,* Oxford University Press, Oxford.
10. Wilson, R., 1995: *Economic Development in the Middle East,* Routledge, London.

AGRICULTURAL AND RURAL STUDIES

GEOG6223: Agricultural Development and Land Degradation
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Agricultural Development: Concept, criteria and historical perspective of agricultural development
2. Determinants of agricultural development: Physical; techno-economic; cultural and socio-institutional
3. Agricultural Development in India: Pre-Independence period; Post-independence period; dynamics of agricultural land use; agricultural productivity; socio-economic and ecological consequences of agricultural development.
4. Land Degradation: Concept, process and approaches, Regional pattern and consequences of: ground water depletion and contamination; salinity and alkalinity; deteriorating soil fertility and soil erosion.
5. Land Degradation in India: Identification and delimitation based on NWDB; classification and their spatial distribution; regeneration of degraded land and its sustainability; Case Studies
6. Sustainable Agricultural Development: Concept and methods; issues and strategies of sustainable agricultural development.

Recommended Books:

1. Adams, W.M., 1990: Green Development: Environment and Sustainability in the Third World, Routledge, London.
2. Blaikie, P. and Brookfield, H., 1987: Land Degradation and Society, Methuen, London.
3. Boels, D., 1982: Proceeding of Soil Degradation, Ratterdon.
4. Chisholm, A and Dumsday, R. (eds.), 1987: Land Degradation, Problem and Policies, Cambridge.
5. Davidson, D.A., 1992: Evaluation of Land Resources, Longman, Essex.
6. D'Souza G.E. and Gebremedhin T.G., (ed) 1998: Sustainability in Agriculture and Rural Development, Ashgate Publishing Co., Aldershot.
7. Eden, M.J. and Parry, J.T., 1996: Land Degradation in the Tropics: Environmental and Policy Issues, Printer Pub., Lon.
8. Fabos,J.G. , 1985 : Landuse Planning : From Global to Local Challenge, Bowden and Culver, NY.
9. Johson, D.L. and Lewis, L.A., 1995: Land Degradation: Creation and Destruction, Blackwell, Oxford.
10. Matlock, W.O., 1998: Realistic Planning for Arid Lands: Natural Resource Limitation to Agricultural Development, Horward Academy Press, London.
11. Mc.Rabie, G. (ed), 1990: Tools for Organic Farming: A Mannual of Appropriate Equipments and Treatments, Bootscap press, New York.
12. Rattan, L., 1995: Sustainable Development of Soil Resources in the Humid Tropics, U.N. University Press, Tokyo.
13. Wong, M.H., et al.1999: Remediation and Management of Degraded Land, Lewis Pub. Boca Raton.
14. Young, A., 1998: Landuse Resources: Now and for the Future, Cambridge University Press, Cambridge.

GEOG6224: Land Use Planning
Internal Assessment: 40 End Semester Examination: 60

Course Outline:

1. Approaches to Land use Surveys: Census approach, Unit area approach; sampling approach; Remote sensing approach; review of land use surveys in India.

2. Determinants of Land use: Physical, techno-economic, institutional, and socio-cultural.

3. Models and Theories of Land use: General land use model, Diagrammatic model, Category model of NRSA, Physical Optima, Economic Optima, Model of Land use Competition Locational model.

4. Dynamics of Land use and Land Cover: Past trends and emerging patterns; analysis of land use change; monitoring rural land use change.

5. Land Capability Classification: Concept and criteria; land capability classification in U.S.A., China, U.K. and India; land capability and land use planning in India.

6. Land use Planning: Agro-climatic region, agricultural planning region, land use policy and planning.

Recommended Books:

1. Adams, W.M., 1990: Green Development: Environment and Sustainability in the Third World, Routledge, London.
2. Blaikie, P. and Brookfield, H., 1987: Land Degradation and Society, Methuen, London.
3. Basu, D.N. and Guha, G.S., (1996): Agro-Climatic Regional Planning in India, Vol I and II, Concept Publications, New Delhi.
4. Davidson, D.A., 1980: Soil and Landuse Planning, Longman, New York.
5. Davidson, D.A., 1992: Evaluation of Land Resources, Longman, Essex.
6. D'Souza G.E. and Gebremedhin T.G., (ed) 1998: Sustainability in Agriculture and Rural Development, Ashgate Publishing Co., Aldershot.
7. Eden, M.J. and Parry, J.T., 1996: Land Degradation in the Tropics: Environmental and Policy Issues, Printer Pub., Lon.
8. Fabos,J.G. , 1985 : Landuse Planning : From Global to Local Challenge, Bowden and Culver, NY.
9. Johson, D.L. and Lewis, L.A., 1995: Land Degradation: Creation and Destruction, Blackwell, Oxford.
10. Matlock, W.O., 1998: Realistic Planning for Arid Lands: Natural Resource Limitation to Agricultural Development, Horward Academy Press, London.
11. MIsra, S.G., Mani, D., (1991): Soil Pollution, Ashgate Publishing Co. Aldershot
12. Mc.Rabie, G. (ed), 1990: Tools for Organic Farming: A Mannual of Appropriate Equipments and Treatments, Bootscap press, New York.
13. Rattan, L., 1995: Sustainable Development of Soil Resources in the Humid Tropics, U.N.University Press, Tokyo.
14. Wong, M.H., et al.1999: Remediation and Management of Degraded Land, Lewis Pub. Boca Raton.
15. Young, A., 1998 : Landuse Resources : Now and for the Future, Cambridge University Press, Cambridge.

GEOG6225: Dryland Farming
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Dryland farming: Concept, nature and scope; methods of identification and delimitation
2. Dryland characteristics and degradation process: Physical, biological, social and institutional
3. Models of Dryland Development and management: Risk and uncertainty model
4. Land Capability Classification in Dryland: Concept, criteria and capability classes, patterns of general landuse
5. Dryland Farming Technology and Cultivation Practices: Absorption of rainwater in the soil, soil moisture conservation, and erosion control; availability and potential of irrigation; patterns of crop landuse and crop combination; agricultural productivity.
6. Problems and Prospects of Dryland Agriculture: Alternate mode of landuse opportunities: Animal Husbandry, forestry, horticulture and pisiculture.

Recommended Books:

1. Beamont, P., (1989): *Environmental Management and Development in Drylands*, Routledge, London.
2. Bruins H.I., Lithwick H. (eds) (1998): *The Arid Frontier Interactive Management of Environmental Development*, Academic publishers, Netherland.
3. Dixon, J.A., James, D.E. and Sherman, P.B., (1989): *Economics of Dryland Management*, Earth scan Pub., London.
4. Doi, R.D., (1991): *Semi-arid Land System: Use and capability*, Pointer, Jaipur.
5. Glantz, M.H., (ed) (1994): *Drought Follows the Plan*, Cambridge University Press, Cambridge.
6. Gliessman, S.R., (ed) (2001): *Agro ecosystem Sustainability: Developing Practical Strategies*, CRC Press, Boca Raton, New York.
7. Louise, E., et al. (2001): *Agroforestry in Sustainable Agriculture*, CRC Press, Boca Raton, New York.
8. Jodha N.S. (2000): Living On the Edge: Sustaining Agriculture and Community Resources in *Fragile Environment*, Concept Publications, Delhi.
9. Jodha N.S. (1989): Technology Options and Economic Policy for Dryland Agriculture Living On the Edge: Sustaining Agriculture and Community Resources in *Fragile Environment*, Concept Publications, Delhi.
10. Moellering, H. (ed.) (1992): *Spatial Data Transfer Standards: Current International Status*, Elsevier Applied Sciences, London.
11. Omar, S.A.S et al. (eds), (1998): Sustainable Development in Arid Zones (vol. 1 Assessment and monitoring of Desert Ecosystems, Vol. II: Management and Improvement of Desert Resources), A.A. Balkerna Pub., Ratterdam.
12. Purandar, A.P. and Jaiswal, A.K., (1993): *Transfer of Integrated Land Use Technology under Dryland Farming*, National Institute of Rural Development, Hyderabad.
13. Quershi. S. (1989): *Regional Perspective on Dry Farming: Tribal Societies and Development through Environmental Regeneration, Oxford, New Delhi.*
14. Reeve, P.E. et al (1999): *GIS, Organisation and People: A Socio-Technical Approach*, Taylor and Francis, London.

15. Shafi, M. et al., (1998): *India's Drylands: Tribal Societies and Development through Environmental Regeneration*, Oxford, New Delhi.
16. Singh, S.D. (ed.), (1997): *Water Harvesting in Desert*, Manak Publications, New Delhi.
17. Tomlin, C. Dana, (1990): *Geographic Information Systems and Cartographic Modeling*, Prentice Hall, Englewood ediffs, New York
18. Walker, B.H. (ed), (1997): *Management of Semi-Arid Ecosystem*, Amsterdam, Elsevier.

GEOG6226: Food Security System
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Food Security: Concept, approaches, indicators and methods of measurement.

2. Distributional Patterns of Food Resources: Agriculture, animal husbandry, inland fisheries, forest, horticulture and marine.

3. Factors and Patterns of Food Resources Consumers: Population, density and distribution, age, sex and occupation.

4. Food Resources and Human Consumer Interface: Demand and availability of food resources in calorific and monetary value, poverty, hunger and vulnerability.

5. Regional Pattern of Food Security: Bases of measurements, comparison of relations with developed countries and developing countries on selected parameters of food security.

6. Regional Dimensions of Food Security in India: Distributional pattern of consumers - total population and agricultural population; food availability - calorific and monetary value, food security and insecurity regions, food consumption and nutritional status, problem of malnutrition.

7. Public Distribution System and Food Security: Structure and Policy of P.D.S; Regional Variation, Transport Network and P.D.S, Impact of P.D.S. on food security with special reference to non-food crop regions of India.

8. Food Security through Sustainable Agriculture. Global environmental change and food security and other mitigation strategies.

Recommended Books:

1. Barun, J. et al. 1992: Improving Food Security of the Poor: Concept Policy andProgramme, International Food Policy Research Institute, Washington.
2. Chakravarty, A. K. 1970: Food Sufficiency Patterns in India, Geographical Review, Vol. LX, New York.
3. Chopra, et al. (eds), 1998: Crop Productivity and Sustainability – Shaping the Future, Oxford and IBH Pub. Co. New Delhi
4. Chung, K, et al. 1997: Identifying the Food Insecure: The Application of Mixed Method Approaches in India; International Food Policy Research Institute, Washington.

5. George,P.S., 1994 : Food Security in South Asia : Performance and Prospects Economic and Political Weekly, Vol.29, No.15 April 30
6. Minhas, B.S., 1976: Towards National Food Security, Indian Journal of Agricultural Economics, Vol. 31, No. 4.
7. Mohammad,N., 2002: Reginal Patterns Of Food Security In India , Annals, NAGI, Vol.21, Delhi
8. Radhakrishna, R., 1991: Food and Nutrition: Challenge for Policy, Journal of the Indian Society of Agricultural Statistics, Vol. 53, No.3, December.
9. Reutlinger, S., 1977: Food Insecurity: Magnitudes and Remedies, Washington, U.S.A.
10. Sen, A.K., 1981: Poverty and Famines: An essay in entitlement and Deprivation, Oxford University Press, Delhi.
11. Shafi, M and Aziz, A. (eds), 1989: Food Systems of the World, Rawat Pub., Jaipur.

12. Srivastava, H. C. (ed), 1993: Biotechnological Applications for Food Security in Developing Countries, Oxford and IBH Pub. Co., New Delhi
13. Valdes, A. (ed), 1981 : Food Security for Developing Countries, Westview Press, Colorado.

GEOG6227: Marketing Geography
Internal Assessment: 40 End Semester Examination: 60

Course outline:

Nature and scope of Geography of Marketing.

Approaches: Functional, morphological, cultural-historical and spatial.

Development of marketing systems. Classification of Markets: Rural, urban and intra-urban.

Periodic Markets: Periodicity, locational and distributional patterns, fair as a market place.

Analysis of hinterlands, market size and hinterland relationships; modes and patterns of consumer and trader travels, consumer behaviour, functional hierarchy of markets; functional interaction between markets.

Geographic study of markets in India, Ghana/ Nigeria, South Africa, Brazil, Russia, Kenya and Germany.

(viii) Role of market centres in regional development.

Recommended books:

1. Barnum, G.: *Market Centres and Hinterlands in Baden - Wurrttemberg,* Chicago, Chicago University Press, 1968.
2. Berry, B.J.L.: *Geography of Market Centres and Retail Distribution,* Englewood Cliffs, Prentice Hall, 1967.
3. Good, C.M.: *Rural Markets and Trade in East Africa,* Chicago University Press, 1970.
4. N.C.A.E.R.: *Markets, Towns and Spatial Development in India,* New Delhi, 1965.
5. Saxena, H.M.: *Geography of Transport and Market Centres,* S. Chand & Co., New Delhi, 1975.
6. Saxena, H.M.: *Marketing Geography,* Rawat Publications, 1990.
7. Thompson, Grahame; Frances Jennifer; Levacic Rosalind & Jeremy Mitchell: *Markets, Hierarchies and Networks,* Sage Publications, 1994.

8. Christaller, W.: *Central Places in Southern Germany,* Englewood Cliffs, Prentice Hall, 1966.
9. Hodder, B.W.: *Markets in West Africa, Ibadan,* Ibadan University Press, 1969.
10. Saxena, H.M.: *Rural Markets and Development,* Rawat Publications, 1988.

PHYSICAL GEOGRAPHY

GEOG6228: Analytical Physical Geography
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Humidity and Aridity Indices: Koeppen, Bailey and Thornthwaite classification; soil-water balance determining climatic comfortability.

2. Extreme value distribution for river discharges leading to flooding; Waybill's plotting position, Gumbel and Log Pearson Type III distributions.

3. Surface Soil Loss Equations of Watersheds.

4. Aerial Platforms and aerial photography, photoscales and stereoscopy; Aerial photo interpretation keys; identifying salient structures and landforms for given stereo-pair.

5. Rock and mineral identification.

6. Topographic Map Reading and Landform Mapping.

7. Interpretation of Geological Maps.

8. Quantitative Analysis of Morphometric data.

Recommended Books:

1. Chorley R.J., (Ed.), (1972): *Spatial Analysis in Geomorphology*, Harper and Row.
2. Doornkamp. J.C. and King, C.A.M., (1971): *Numerical Analysis in Geomorphology: An Introduction***,** Arnold, London.
3. Eugene, A.T., (1977): *Interpretation of Aerial Photographs*, Burgess Publishing Co., Minneapolis.
4. John, E. Oliver and John, J. Hidore (2003): *Climatology: An Atmospheric Science,* Pearson Education Pvt. Ltd. Delhi.
5. Mayer, L., (1990): *Introduction to Quantitative Geomorphology*, Prentice Hall, New Jersey.
6. Morisawa, M. (1983): *Geomorphological Laboratory Manual*, John Wiley & Sons, New York.
7. Pal, S K., (1998): *Statistics for Geoscientists: Techniques and Application,* Concept Pub. Co. New Delhi.
8. Upton, W. B. (1970): *Landforms and Topographic Maps*, John Wiley & Sons, New York.

GEOG6229: Biogeography
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Biogeography: Concept, approaches and relevance.

2. Evolution of Plants and Animals: Theories, classification and characteristics.

3. Community Dynamics and Energy Flow: Food webs, biogeochemical pathways, ecological succession, climax concept, and ecosystem balance.

4. Factors Influencing the Community: Physical, biological and human.

5. Floristic and Zoogeographic Division with special reference to India: Migration and dispersal, barriers and disjunctions; latitudinal and altitudinal distribution, realms, regions and provinces.

6. Major Ecological Communities: Composition and Structure - forest, grassland, desert, island, mountain and aquatic.

7. Adaptations of Plants and Animals to the Environment: Classification and characteristics.

8. Biodiversity in India: Concept, distribution, legislation, conservation and institutions.

Recommended books:

1. Cox, C.B. and Moore, P.D., (1993): *Biogeography: An Ecological and Evolutionary Approach*, 5th Edition, Blackwell, Oxford.
2. Dansereau, P., (1957): *Biogeography: An Ecological Perspective*, Ronald Press, New York.
3. Good, R., (1953): *Geography of the Flowering Plants*, Longman, Green & Co.London.
4. Haggett, R.J., (1998): *Fundamentals of Biogeograpy*, Routledge, London.
5. Illies, J., (1974): *Introduction to Zoogeography*, translated by W.D.Williams, Macmillan, London.
6. Jeffries, M.J., (1997): *Biodiversity and Conservation*, Routledge, London.
7. Pielou, E.C., (1979): *Biogeography*, John Wiley and Sons, New York.
8. Pimm,S.L., (1991) : *Balance of Nature-Ecological Issues in the Conservation of Species and Communities*, University Press, Chicago.
9. Shimvell, D.W., (1971): *Description and Classification of Vegetation*, University of Washington Press, Seattle.
10. Walter, H., (1993): *Vegetation of the Earth in Relation to Climate and the Ecophysiological Conditions*, English University Press Limited, London.
11. Wilson, E.O., (1992): *Diversity of Life*, Massachusetts Harvard University Press, Cambridge.

GEOG6230: Geomorphological Analysis
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Approaches in Analysis of Geomorphological Forms and Processes: A state of art.
2. Major Erosion Surfaces: Peneplains, pediplains, periglacial and exhumed surfaces; their identities, forms and models of evolutions.
3. Mega-geomorphology: Plate tectonics and sea-floor spreading, modes of landform development and morpho-genetic regions.
4. Analysis of Tectonic, Structural Landforms: Vertical movements and horizontal displacements rates of geomorphological subsidence, glacial eustasy and deltaic loading.
5. Depositional Landforms and their Processes: Alluvial channel - its hydraulic geometry; forms of drainage patterns and systems; typology of river deposition.
6. Microforms and Processes: Analysis of slopes, their classification and slope mapping; analysis of sediments in geomorphology, particle size classification; their distribution and analysis.

Recommended Books

1. Allison, Robert (ed.) (2002): *Applied Geomorphology: Theory and Practice*, John Wiley and Sons.
2. Bridges, E.M. (1990): *World Geomorphology*, Cambridge University Press.
3. Goudie, A., (1995): *The Changing Earth: Rates of Geomorphogical Processes*, Blackwell, Oxford.
4. Hugget, Richard, J., (2003), *Fundamentals of Geomorphology*, Routledge (UK).
5. Johathan, P., (1999): *Earth Surface Systems: Complexity Order and Scale*, New York.
6. Kale, V. S., and Gupta A., (2001): *Introduction to Geomorphology*, Orient Longman, Hyderabad.
7. Luna Bergere Leopold (1995): *Fluvial Process in Geomorphology*, Courier Dover Publications.
8. Thorn, Collin, E., (1988): *Introduction to Theoretical Geomorphology*, Unwin Hyman, Boston
9. Vitek, J.D., and Gardino, J.R. (eds.), (1993): *Geomorphology - The Research Frontier and Beyond*; Elesevier, Amsterdam.

GEOG6231: Geography of Himalayas
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Origin of Himalayas: Himalayas as a regional entity – physical, historical, social -cultural, ecological, sustainable regional development.
2. Development Process – Pre-colonial, colonial, independence and post war period and present trends
3. Sectoral Development – agriculture, horticulture, forestry, animal husbandry, mining, tourism.
4. Resilience and vulnerability - environmental and political.

5. Approaches to Development - hill area region development, highland – lowland development, watershed approach, and integrated resource management.

6. Spatial Characteristics of Development – indicators of development, regional disparities, regions at risk.

7. Search for a Sustainable Himalayas – movements and identity, non – government organizations, decentralization and panchayati raj institution and laws.

Recommended Books:

1. Bose, S.C., (1976): *Geography of the Himalaya*, National Book Trust, New Delhi.
2. Chaube, S.K. (ed.), (1985): *The Himalayas: Profiles of Modernization and Adaptation*, Sterling Publishers Private Limited, New Delhi.
3. Gupta. K.M. (ed.), (1990): *Himalaya: Man and Nature*, Lancer Books, New Delhi.
4. Joshi, M.P., Fanger, A.C. and Brown, C.W. (eds.), (1981): *Himalaya: Past and Present*, Shree Almora Book Depot, Almora.
5. Joshi, S.C. (ed.), (1984): *Rural Development in the Himalaya: Prospects and Problems*, Gyanodaya Prakashan, Nainital.
6. Kapur, A., (1995): *Paradise in Peril – An Ecological Profile of the Kashmir valley*, Allied publishers, Delhi.
7. Lall, J.S. (ed.), (1981): *The Himalaya: Aspects of Change*, Oxford university Press, Delhi.
8. Pangtey, Y.P.S. and Joshi, S.C. (eds.), (1987): *Western Himalaya, Volume 1 Environment*, Gyanodya Prakashan, Nainital.
9. Randhawa, M.S., (1970): *The Kumaon Himalayas*, Oxford and IBH Publishing Company, New Delhi.
10. Sah, N.K., Bhatt,S.D., Pande,R.K. (eds.), (1990) : *Himalaya: Environment, Resources and Development*, Shree Almora Book Depot, Almora.
11. Valdiya, K.S. (ed.), (1988): *Kumaon: Land and People*, Gyanodaya Prakashan, Nainital.

GEOG6232: Terrain Modelling and Evaluation
Internal Assessment: 40; End Semester Examination: 60

Course outline:

1. Principles of Photogrammetry: Stereoscope Parallax and height determination; Orthorectification; Global Positioning System based altitude determination; contouring.

2. Digital Terrain Model: Contour/point interpolation – IDW, Spline, Krigging etc.; SAR Ineterferometry; Laser Scanning; Quality assessment of DTM.

3. Terrain Analysis on grided DEM: slope, aspect, curvature, flow direction, watershed delineation etc.; Terrain classification; Secondary topography attributes-wetness indices, stream-power indices, radiation indices, temperature indices etc.

4. Geomorphological, Hydrological and Biological applications of Digital Terrain Model.

5. 3-D visualization of the terrain and identification of landform and land cover features.

Recommended Books

1. Bell, S. (1999): *Landscape: Pattern, Perception and Process*, E&FN Spoon, NY.
2. Burrough, P.A. and McDonnell, R.A., (1998): *Principles of Geographic Information Systems*, Oxford University Press, Oxford.
3. Clifford, N., (2003): *Key Methods in Geography*, Sage Publications Inc.
4. Davis, J.C., (1986): *Statistics and Data Analysis*, 2nd edition, Wiley.
5. De Mers, Michael N., (1999): *Fundamentals of Geographic Information Systems*, John Wiley & Sons, New York.
6. El-Rabbany, A., (2002): *Introduction to GPS*, Artech House.
7. Jensen, J.R., (2004): *Remote Sensing of the Environment: An Earth Resource Perspective*, Pearson Education.
8. Henderson, F.M. and Lewis. A.J. (eds), 1998, *Manual of Remote Sensing, Vol.2, Principles and Application of Imaging Radar*, 3rd edition, Wiley.
9. Lawrence, C.J., Byard, R.J. and Beaven, P.J., 1993, *Terrain Evalusation Manual*, HMSO Publications, London.
10. Lyon, J., (2003), GIS *for water Resources and Watershed Management*, Taylor & Francis.
11. Sabins, Floyd F. Jr., (1997): *Remote Sensing: Principles and Interpretation*, W.H. Freeman, New York.
12. Wilson, J.P. and Gallant, J.C. (eds), 2000, *Terrain Analysis: Principles and Applications*, John Wiley &Sons.

SOCIAL DIMENSIONS IN GEOGRAPHY

GEOG6233: Geography of Crime
Internal Assessment: 40; End Semester Examination 60

Course outline:

Concept, Definition and typologies of crimes
Theological Bases: Dynamics of value system, ethics and institutional regulations to prevent crime.
Dynamics and spatial dimensions of crime.
Theories of crime and space- Anomie, Cultural transmission, crowding; labeling and conflict theory.

Areas of Crime / Crime Areas
Locales of crime: open, built and deserted environment
Nature of crime, place of crime, crime target and criminal
Patterns of crime in world and India
Gender and crime, nature of crime, target group

Crime and Regulation
Crime and role of International organizations
Crime, Justice and the State
Crime and Societal regulations
Spatial gaps in regulation of crimes

Case studies of crime from Metropolitan cities of India and world.

References:

1. Pain Rachel, Barke Michael, Fuller Duncan, et. al., (2001), Introducng Social Geographies; London, Arnold
2. Clinard Marshall B. and Abbott, D. J. (1973), Crime in Developing Countries: A Comparative Perspective, Wiley International, 1973.
3. Herbert, D. (1982): The Geography of Urban Crime, Longman, London.
4. Humpheries, D. and Wallace, Don (1980): Capital Accumulation and Urban Crime, Social Problems, Vol. 28, No. 2, pp. 179-193.
5. Newman, O. (1973): Defensible Space, Crime Prevention through Urban Design, Architectural Press, London.
6. Ahmad, A. (1999): Social Geography, Rawat Publishers.
7. Daniels, S. and Lee, R. (eds.) (1996): Exploring Human Geography, Arnold.
8. Castells, M., (1996): The Rise of the Network Society, Basil Blackwell, 1996.
9. Dear, M.J. and Flusty, S. (2000): The Spaces of Postmodernity, Blackwell.
10. Vincent J. Del Casino, (2009): Social Geography- Critical Introduction to Geography, Wiley-Blackwell.
11. Chris Hamnett (ed.), (1996): Social Geography A Reader, Arnold
12. Shaban Abdul, 2010, Mumbai Political Economy of Crime and Space , Hyderabad, Orient Blackswan
13. Crawford, A, (1998), Crime Prevention and Community Safety , London, Longman
14. Evans, D. Fyfe. N R. and Herbert, D. T., (eds.)(1992) Crime. Policing and Place , London Routledge
15. United Nations Interregional Crime and Justice Research Institute (1990): Essays on Crime and Development, Publication No. 36, Rome.
16. Shaban, Abdul (2007): Mumbai: Space, Crime and its Political Economy, Project Report submitted to BRS, TISS, Mumbai. - Theories of Crime, Entire report.

GEOG6234: Demography and Population Policy
Internal Assessment: 40; End Semester Examination: 60

Course outline:

1. Population Geography: Nature, Scope, Development, Sources of Population Data (Census, Registration Systems, Population tables).

2. Theories of Population: Malthus and his Critique; the Demographic Transition Theory.

3. Population Composition: Age, Sex, Literacy, Rural- Urban.

4. Fertility and Mortality: Measurements, Theories, Regional Patterns.

5. Migration: Theories, Typologies, Patterns and Flows; Causes and Consequences

6. Human Development: Concept, Construction of HDI, Regional patterns.

7. Political Economy of Population and the Politics of Population Control.

Recommended Books.

1. Bandarage, Asoka. (1998) *Women, Population and Global Crises: A Political Economic Analysis*, Zed Books, London.
2. Cadwell, John. (1982) *Theory of Fertility Decline*, Academic Press, New York.

3. Crook, Nigel. (1997) *Principles of Population and Development*, oxford university Press ,oxford.
4. Davis, Kinsley. (1949) *Human Society*, Macmillan. Co, New York.
5. Ehrlich Paul R. (1968) *The Population Bomb*, Ballentine Books, New York.
6. Ehrlich and Ehrlich. (1990) *The Population Explosion*, Simon and Schuster, New York.
7. Guilmoto, C.Z and Alian Vagnet. (2000) *Essays on Population and Space in India*, Institut de Pondichery, Pondicherry.
8. Herdt, Gilbert and Shirley Lindenbaum. (1992) Eds *The Time of AIDS: Social Analysis, Theory and Method*, Sage Publications, Newbury Park C A.
9. Johnson, Stanley, P. (1994) *World Population- Turning the Tide- Three Decades of Progress*, Kluwer Academic Publishers Group.
10. Mamdani, Mahmood. (1972) *The Myth of Population Control: Family, Caste and Class in an Indian Village*, Monthly Review Press, New York.
11. Parret, H.R., (1997) *Population Geography*, Oxford and Boyd, Oxford.
12. Preston, Samuel. et al. (2001) *Demography*, Blackwell publishers Inc, Massachusetts, USA.
13. Rao, Mohan. (2004) *From Population Control to Reproductive Health- the Malthusian Arithmatic*._____.
14. Ramachandralu, G and M.Prasada Rao. (2004) *Census 2001 and Human Development in India*, Serials Publication, New Delhi.

GEOG6235: Health, Environment and Society
Internal Assessment: 40; End Semester Examination: 60

Course Outline:

1. Perspectives on Health: Definitions; linking environment, development and health; driving forces in health and environmental trends- population dynamics, urbanization, poverty and inequality, science and technology and life styles.

2. Pressure on Environmental Quality and Health: Human activities and environmental pressure- landuse and agricultural development; industralisation; transport and energy.

3. Exposure and Health Risks: Air pollution; household wastes; water; housing; workplace; global environment change; multiple challenges for health protection.

4. Health and Disease in Environmental Context with special reference to India: Estimating the burden of disease-acute respiratory infections, diarrhoeal diseases , tropical vector-born and newly emerging diseases, injuries and poisoning; mental health conditions, cardiovascular diseases and cancer.

5. Climate Change and Human Health: Changes in climate system - heat, cold and air pollution; extreme weather events; sea level fluctuation; ozone depletion; effects on biological disease agents; food production and nutrition.

6. Linkage Methods for Environment, Development and Health Analysis: Approaches to linkage analysis; health and environmental analysis for decision making; development of environmental health indicators; assessment of health effects.

7. Promotion of environmentally sound healthy settings in India - Districts; cities, neighbourhoods, institutions, markets.

Recommended Books:

1. Akhtar Rais (Ed.), 1990: Environment and Health Themes in Medical Geography, Ashish Publishing House, New Delhi.
2. Avon Joan L. and Jonathan A Patzed. 2001: Ecosystem Changes and Public Health, Baltimin, John Hopling Unit Press(ed).
3. Bradley, D.,1977: Water, Wastes and Health in Hot Climates, John Wiley Chichesten.
4. Christaler George and Hristopoles Dionissios, 1998: Spatio Temporal Environment Health Modelling, Boston Kluwer Academic Press.
5. Cliff, A.D. and Peter, H., 1988 : Atlas of Disease Distributions, Blackwell Publishers, Oxford.
6. Gatrell, A., and Loytonen, 1998 : GIS and Health, Taylor and Francis Ltd, London.
7. Ellliot P.J., et al (ed.), 1992 : Geographical and Environmental Epidemeology Methods for Small Area Studies, Oxford University Press.
8. Hardham T. and Tannav M., (eds): Urban Health in Developing Countries; Progress, Projects, Earthgoan, London.
9. Herman Koreri and Michael Biseri: Environmental Health : Lewis Publishers, New York.
10. Kay, Brian H., (ed),1999: Water Resource Health , Environment and Development, E& FN Spon
11. Murray C. and A. Lopez, 1996: The Global Burden of Disease, Harvard University Press.
12. Moeller Dade Wed., 1993: Environmental Health, Cambridge, Harward Univ. Press.
13. Phillips, D.and Verhasselt, Y., 1994: Health and Development, Routledge, London.
14. Price - Smith, Andrew T., 2000: The Health of Nations, The MIT Press, Cambridge.
15. Stephen T.Holgate ed. 1999: Air Pollution and Health, Academic Press, London.
16. Tromp, S., 1980: Biometeorology: The Impact of Weather and Climate on Humans and their Environment, Heydon and Son.

GEOG6236: Geography of Social Well Being
Internal assessment: 40; End Semester Examination: 60

Course Outline:

1. Welfare Geography and Social Well Being: Theoretical approaches and Development; Human needs and wants; State of Well being and Level of Living, Welfare as the focal theme in human geography.

2. Discrimination, Deprivation and Poverty: Concept of absolute and relative deprivation; Discrimination and Deprivation, place and people's poverty, geographic patterns of rural and urban poverty.

3. Regional Inequalities in Social Well Being: Key indicators of well being, Assessing social well being-choice of indicators , Inter regional differences in levels of social well being; implications for human resource development.

4. Access, Empowerment and Political Participation: Common property resources and access, participation of marginalized groups in decision making, 73 and 74 amendments to constitution, caste succession and rise of regional aspirations.

5. Well Being in a globalizing world: India shining and India invisible, Privatization of welfare sectors, conspicuous consumerism and relative deprivation

Recommended Books:

1. Carley, M., (1982), Social Measurement and Social Indicators, London: Allen and Unwin
2. Dasgupta, P, (1993*) An Enquiry into Well-being and Destitution*, Oxford Univ.Press
3. _____, (2001) *Human Well-being and the Natural Environment*, Oxford Univ. Press
4. Dreze, Jean & Amartya Sen (2002), *India: Development and Participation*, Oxford Univ Press.
5. Miles, I (1985) *Social Indicators for Human Development*: Frances Pinter, London.
6. Morris D. Morris (1979) Measuring the Condition of World Poor, New York: Pergamon Press
7. Smith, David (1973), *A Geography of Social Well-Being in the United States*, McGraw-Hill, New York.
8. Smith D, 1977, *Human Geography- A Welfare Approach*, Edward Arnold, London.
9. UNDP, *Human Development Reports* 1990 to 2002, Oxford University Press also HDR for some states of India.

GEOG6237: Gender and Space with Special Reference to India
Internal assessment: 40; End Semester Examination: 60

Course Outline:

Conceptualising Gender within Geography: Social construction of the feminine and masculine, Development of and theoretical approaches to the study of Gender in geography; Analysing gender and space in India.

Examining Gender in relation to space: Division of space in to private and public spaces, Gendered environments, gendered access to and experience of space; Spatial variations in the construction of gender.

Spatial Patterns and Bases of Gender inequalities: Patriarchy, son preference, social value; new reproductive technology, skewed sex ratios, gender disparities in social wellbeing, gendered patterns of crime and violence.

Gender and "other spaces": Representations of gender in media space, the commodification of feminine and masculine- reassertion of indigenous gender identities.

Gender, Power and Policy: Concept of gender relations, strategic and practical needs; Gender and Development-issues and concerns, Policy analysis from a gendered perspective.

Reading List

1. Agarwal B. (1994) '*A Field of One's Own: Gender and Land Rights in South Asia'*, Cambridge University Press.
2. Boserup E. (1970) '*Women's Role in Economic Development'*, George Allen and Unwin, London.
3. Dube L. (2001) '*Anthropological Explorations in Gender: Intersecting Fields'*, Sage Publications, New Delhi, Thousand Oaks, London.
4. Hanson S. and G. Pratt (1995), '*Gender, Work and Space'*, Routeledge, London and New York.
5. Karve I. (1968), '*Kinship Organisation in India'*, Asia Publishing House, Bombay.
6. Kolenda P. (1987), 'Regional Differences in Indian Family Structure', Rawat Publications, Jaipur.
7. Krishnaraj M, R Sudarshan and A Shariff (1998) *Gender, Population and Development*, Oxford University Press New Delhi.
8. Lund R, 1993, *Gender and Place : Towards a Geography Sensitive to Gender, Place and Social Change-Vols I and II*, Department of Geography, University of Trondheim, Norway.
9. Mackenzie S. (1989) 'Women in the City' in Peet R. and N.Thrift (eds) *New Models in Geography*, volume II, Unwin, London.
10. March C, I. Smyth and M. Mukhopadyay (1999) '*A Guide to Gender Analysis Frameworks*', Oxfam, Great Britain.
11. Massey D. (1994) *'Space, Place and Gender'*, University of Minnesota Press, Minneapolis.
12. Mazumdar V and N Krishnaji (eds) (2001) '*Enduring Conundrum: India's Sex Ratio*', Centre for Women's Development Studies, Rainbow Publishers, Delhi.
13. Mc Dowell L, 1999, *Gender, Identity and Place: Understanding Feminist Geographies,* Blackwell Publishers, Oxford.
14. McDowell, L. and Sharp, J., eds. 1999. *A Feminist Glossary of Human Gography.* London: Arnold.
15. McDowell, L. and Sharp, J, eds. 1997 *Space/Gender/Knowledge: Feminist Books.* London: Arnold.