Maharaja Ganga Singh University, Bikaner

SYLLABUS

M.A./M. Sc. in GEOGRAPHY (Semester)

(Choice Based Credit System)

Session: - 2024-25
2025-26

Submitted by:
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Convenor, Board of Studies for Geography
Maharaja Ganga Singh University

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Background

Considering the curricular reforms as instrumental for desired learning outcomes, all the members of the Board of Studies made rigorous attempts to revise the curricula of Postgraduate Programmes in alignment with National Education Policy-2020 and UGC Quality Mandate for Higher Education Institutions2021. The process of revising the curriculum could be prompted with the adoption of "Comprehensive Roadmap for Implementation of NEP". The roadmap identified the key features of the Policy and elucidated the Action Plan with well-defined responsibilities and indicative timeline for major academic reforms.

The process of revamping the curriculum started with a series of webinars and discussions conducted by the University to orient the teachers about the key features of the Policy, enabling them to revise the curriculum in sync with the Policy. Proper orientation of the faculty about the vision and provisions of NEP-2020 made it easier for them to appreciate and incorporate the vital aspects of the Policy in the revised curricula focusing on creating holistic, thoughtful, creative, and well-rounded individuals equipped with the key 21st century skills 'for the development of an enlightened, socially conscious, knowledgeable, and skilled nation'.

With NEP-2020 in background, the revised curricula articulate the spirit of the Policy by emphasizing upon integrated approach to learning; innovative pedagogies and assessment strategies; multidisciplinary and cross-disciplinary education; creative and critical thinking; ethical and Constitutional values through value-based courses; 21st century capabilities across the range of disciplines through life skills, entrepreneurial and professional skills; community and constructive public engagement; social, moral and environmental awareness; Organic Living and Global Citizenship Education (GCED); holistic, inquiry-based, discovery-based, discussion-based, and analysis based learning; exposure to Indian knowledge system, cultural traditions and classical literature through relevant courses offering 'Knowledge of India'; fine blend of modern pedagogies with indigenous and traditional ways of learning; flexibility in course choices; student-centric participatory learning; imaginative and flexible curricular structures to enable creative combination of disciplines for study; offering multiple entry and exit points; breaking the silos of disciplines; integration of extra-curricular and curricular aspects; exploring internships with local industry, businesses, artists and crafts persons; closer collaborations between industry and higher education institutions for technical, vocational and science programmes; and formative assessment tools to be aligned with the learning outcomes, capabilities, and dispositions as specified for each course. The University has also developed consensus on adoption of Blended Learning with 10% component of online teaching and 90% face to face classes for each programme.

The revised curricula of various programmes could be devised with concerted efforts of the Faculty, Heads of the Departments, Members of the Board of Studies, and Deans of Schools of Study. The Vice Chancellor of the University conducted series of meetings with Heads and Deans to deliberate upon the vital parameters of the revised curriculum to formulate a uniform template featuring Background, Programme

Outcomes, Programme Specific Outcomes, Postgraduate Attributes, Structure of Masters Course, Learning Outcome Index, Semester-wise Courses and Credit Distribution, Course-level Learning Outcomes, Teaching Learning Process, Blended Learning, Assessment and Evaluation, Keywords, References and Appendices.

To ensure the implementation of curricular reforms envisioned in NEP-2020, the University has decided to implement various provisions in a phased manner. Therefore, the curriculum may be reviewed annually so as to gradually include all relevant provisions of NEP-2020.

Programme Outcomes (PO)

Vision

To build responsive, responsible, sensitive, creative, and thoughtful citizens with a comprehensive understanding of regional, national, and international perspectives.

Mission

To strive towards the educational, cultural, economic, environmental and social advancement of the region and the nation at large by providing multidisciplinary liberal education involving arts, sciences, social sciences, education, law and commerce & management and quality programmes which inculcate and enhance students' creative and innovative insights, equipping them with both professional and vocational skills, leading to Bachelors', Masters', Professional, Vocational and Doctorate Programmes.

Program Objectives:

1. To disseminate knowledge of Earth's highly varied physical environment.

2. To provide an understanding of mankind's adaptation to, and settlement in, varied environmental settings.

3. To enhance an understanding of the spatial organization at local, regional, and global scales.

4. To provide practical training on the use of survey instruments and geo-spatial analytical techniques for Geographical analyses.

5. To sensitize students about the unprecedented pace and scale of adverse environmental impact of human activities during last 100 years.

6. To empower students with spatial analysis and decision making skill sets which help promotion of sustainable development and environmental conservation.

7. To prepare students for successful careers in academic and research institutes, as technical advisors to administrative departments dealing with spatial decision making, geo-spatial consultants to industries, businesses and NGOs.

Programme Outcomes (PO)

The PG Courses of Faculty of Social Science will be able:

PO	Description
PO1	To acquaint students with recent knowledge and techniques in social and applied spatial sciences.
PO2	To develop understanding of environmental and socio-cultural basis of life.
PO3	To provide insight into ethical implications of scientific research for sustainable development and environmental protection.
PO4	To develop problem solving innovative thinking with robust communication and writing skills in youth.
PO5	To understand application of spatial knowledge for human wellbeing and sustainable development.
PO6	To impart practical and project based vocational training for preparing youth for a career in research and entrepreneurship for self-reliance.

Program Specific Outcome (PSO)

PSO	Description
PSO-1	To contribute to sustainable development and wise use of resources for benefit of society through education and research on environment with an inter-disciplinary approach with focus on spatial relationships.
PSO-2	To provide knowledge on natural and built environments and their dynamic interaction for promotion of the quest of sustainability.
PSO-3	To create awareness on forest and biodiversity conservation, global warming and climate Change, and human adaptation possibilities and strategies.
PSO-4	To educate students on assessment of environmental footprint of human activities in simple to complex socio-economic setups.
PSO-5	To give knowledge on concepts, tools and modern techniques for mapping of Earth surface, change detection, modelling of environmental and socio-economic processes and scenario generations.
PSO-6	To educate students on urban and regional development and planning.

Post Graduate Attributes

The graduate attributes of our students shall be aligned with those of our University in terms of touching “the life of every student through inculcating virtues of empathy, ethics, efficiency, and respect for diversity, prudence and creativity with compassion”. We wish to achieve this through rigorous teachings and research effort, which remains the basic tenet of our teaching-learning philosophy. The following are the University’s graduate attributes which we emphasize.

- In-depth domain knowledge
- Interdisciplinary perspective
- Competence for research and innovation
- Analytical competence
- Critical thinking
- Problem solving competence
- Decision making
- Information technology skills
- Ability to work independently
- Capacity for creativity
- Contribute to societal well-being & sustainability.

Structure of Programme

Ist Semester: Four Core Compulsory Courses, One Foundation Course, and One Practical Course

GFC-100	Geography Foundation Course (Audit)	Elementary Concepts of Geography
GCC-101	Geography Core Compulsory	Geo-tectonics and Geomorphology
GCC-102	Geography Core Compulsory	Climatology
GCC-103	Geography Core Compulsory	Oceanography
GCC-104	Geography Core Compulsory	Environmental Geography
Practical		

IInd Semester: Four Core Compulsory Courses, One Foundation Course, One Practical Course

GFC-200	Foundation Course (Audit)	Human Values
GCC-201	Geography Core Compulsory	Economic Geography: Concepts, Principles and Techniques
GCC-202	Geography Core Compulsory	Population Geography
GCC-203	Geography Core Compulsory	Quantitative Methods in Geography
GCC-204	Geography Core Compulsory	Evolution of Geographical Thought
Practical		

IIIrd Semester: Two Core Compulsory, One Core Elective, One Elective Open, One Practical Course

GCC -301	Geography Core Compulsory	Geo-spatial Techniques for Earth Surface Observation
GCC -302	Geography Core Compulsory	India: Physical Setting and Geographical Issues
GCE-303	Geography Core Elective	(A) Eurasia: Physical Setting and Geographical Issues OR (B) Americas: Physical Setting and Geographical Issues
GEO-304	Geography Elective Open	(A) Agriculture Geography OR (B) Industrial Geography
Practical		

IVth Semester: Two Core Compulsory, One Core Elective, One Elective Open, One Practical Course

GCC-401	Geography Core Compulsory	Settlement Geography
GCC-402	Geography Core Compulsory	Political Geography
GCE -403	Geography Core Elective	(A) Cultural and Social Geography OR (B) Geography of Health
GEO -404	Geography Elective Open	(A) Rajasthan: Physical Setting and Geographical Issues OR (B) Regional Planning and Development
GCC-405	In lieu of paper GCE-403/ GEO-404	Dissertation
Practical		

Learning outcome Index of the courses

(i)Programme outcome (PO) and programme Specific Outcome (PSO)

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
PO1	✓	✓		✓	✓	✓
PO2	✓		✓	✓		✓
PO3		✓	✓		✓	
PO4	✓	✓		✓		✓
PO5			✓	✓		✓
PO6		✓			✓	

(ii)Programme Specific Outcome (PSO) and Core Courses

	GCC 101	GCC 102	GCC 103	GCC 104	GCC 201	GCC 202	GCC 203	GCC 204	GCC 301	GCC 302	GCC 401	GCC 404
PSO1	✓		✓	✓	✓		✓		✓	✓		✓
PSO2	✓	✓				✓			✓		✓	✓
PSO3		✓		✓				✓				✓
PSO4	✓		✓	✓		✓	✓			✓		✓
PSO5			✓		✓				✓		✓	✓
PSO6	✓	✓		✓	✓						✓	✓

(iii) Programme Specific Outcome (PSO) and Elective Courses

	GCE 303 A	GCE 303 B	GEO 304 A	GEO 304 B	GCE 402 A	GCE 402 B	GCO403A	GEO403 B
PSO1	✓	✓	✓	✓	✓	✓		✓
PSO2		✓	✓	✓	✓	✓		
PSO3	✓		✓	✓		✓	✓	
PSO4		✓		✓	✓			
PSO5	✓		✓		✓		✓	✓
PSO6	✓	✓				✓		✓

Semester Wise Credit Distribution as per

CHOICE BASED CREDIT SYSTEM (CBCS)

Paper Code	Paper Name	Course	Lecture	Tutorial	Practical	Total Credits	Maximum Marks		Minimum Passing Marks
							Internal Marks	External Marks	
Semester-I									
Theory Papers									
GFC-100	Elementary Concepts of Geography	Foundation Course	2	2	-	Non-CGPA	50	-	18 (36%)
GCC-101	Geo-tectonics and Geomorphology	Core Compulsory	3	1	-	5	10	40	13 (25 %)
GCC-102	Climatology	Core Compulsory	3	1	-	5	10	40	13 (25 %)
GCC-103	Oceanography	Core Compulsory	3	1	-	5	10	40	13 (25 %)
GCC-104	Environmental Geography	Core Compulsory	3	1	-	5	10	40	13 (25 %)
Total Theory Marks							40	160	
							200		72 (36% aggregate)
Practical									
GPC-105	Practical	Core Compulsory	-	-	12	5	20	80	36 (36% aggregate)
Total Credits						**25**	**Grand Total**	**300**	
Semester-II									
Theory Papers									
GFC-200	Human Values	Foundation Course	2	2	-	Non-CGPA	50	-	18 (36%)
GCC-201	Economic Geography: Concepts, Principles and Techniques	Core Compulsory	3	1	-	5	10	40	13 (25 %)
GCC-202	Population Geography	Core Compulsory	3	1	-	5	10	40	13 (25 %)
GCC-203	Quantitative Methods in Geography	Core Compulsory	3	1	-	5	10	40	13 (25 %)
GCC-204	Evolution of Geographical Thought	Core Compulsory	3	1	-	5	10	40	13 (25 %)
Total Theory Marks							40	160	
							200		72 (36% aggregate)
Practical									
GPC-205	Practical	Core Compulsory	-	-	12	5	20	80	36 (36% aggregate)
Total Credits						**25**	**Grand Total**	**300**	

Paper Code	Paper Name	Course	Lecture	Tutorial	Practical	Total Credits	Maximum Marks		Minimum Passing Marks
							Internal Marks	External Marks	
Semester-III									
Theory Papers									
GCC-301	Geo-spatial Techniques for Earth Surface Observation	Core Compulsory	3	1	-	5	10	40	13 (25 %)
GCC-302	India: Physical Setting and Geographical Issues	Core Compulsory	3	1	-	5	10	40	13 (25 %)
GCE-303	(A) Eurasia: Physical Setting and Geographical Issues OR (B) Americas: Physical Setting and Geographical Issues	Core Elective	3	1	-	5	10	40	13 (25 %)
GEO-304	(A) Agriculture Geography OR (B) Industrial Geography	Elective Open	3	1	-	5	10	40	13 (25 %)
Total Theory Marks							40	160	
							200		72 (36% aggregate)
Practical									
GPC-305	Practical	Core Compulsory	-	-	12	5	20	80	36 (36% aggregate)
Total Credits						**25**	**Grand Total**	**300**	
Semester-IV									
Theory Papers									
GCC-401	Settlement Geography	Core Compulsory	3	1	-	5	10	40	13 (25 %)
GCC-402	Political Geography	Core Compulsory	3	1	-	5	10	40	13 (25 %)
GCC-403	(A) Cultural and Social Geography OR (B) Geography of Health	Core Elective	3	1	-	5	10	40	13 (25 %)
GCC-404	(A) Rajasthan: Physical Setting and Geographical Issues OR (B) Regional Planning and Development	Elective Open	3	1	-	5	10	40	13 (25 %)
GCC-405	Dissertation	In lieu of paper GCE-403/ GEO-404	-	-	-	5	-	50	13 (25 %)
Total Theory Marks							40	160	
							200		72 (36% aggregate)
Practical									
GPC-405	Practical	Core Compulsory	-	-	12	5	20	80	36 (36% aggregate)
Total Credits						**25**	**Grand Total**	**300**	

M.A./M.Sc. First Semester

GFC-100	Elementary Concepts of Geography
GCC-101	Geo-tectonics and Geomorphology
GCC-102	Climatology
GCC-103	Oceanography
GCC-104	Environmental Geography

Course Title: Elementary Concepts of Geography
Course Code: GFC – 100

Time: 3 Hours **M.M. 50**

UNIT I

Subject matter of Geographical inquiry: description and explanation of spatial patterns of physical environment and cultural landscape as an interdisciplinary science. Attributes of Place: Location and Locality, Geometry, Geographical Environment. Ascertaining location on Earth's Surface: Determination of latitude and Longitude, Concepts of Distance, Direction and Scale.

UNIT II

Evolution of mapping techniques. Age of Exploration and Discovery of Continents. The dynamic relationship between Man and Environment: Determinism vs Possibilism; Dualisms in Geography: Physical and Human Geography; Land use and occupations of Man.

UNIT III

Approaches to Regional study: Uniqueness of Region, Region as an Organism; Unit for Spatial Planning and Organization. Theoretical (agricultural, industrial, and central place models) and Applied Geography (spatial diffusion and GIS based mapping and environmental simulations).

Suggested Reading:

Adhikari, S. (1992). Geographical Thought. Allahabad: Chaitanya Pub. House.
Blis, H. J. (1971). Geography Regions and Concepts. New York: John Wiley of Sons INC.
Board, C., Chorley, R., & Stoddart, D. (1974). Progress in Geography.
International Reviews of Current Research Vol - 6.
Bunge, W. (1962). Theoritical Geography. London: Glenerp.
Chorley, R., & Haggett, P. (1965). Frontiers in Geographical Teaching. Oxford: OUP.
Coffey, W. (1981). Geography - Towards a General Spatial System Approach. USA: British Library Cataloguing in Pub.Data.

Dickinson, R. (1969). Makers of Modern Geography. Ludhiana: Lyall Book Depot.
Dikshit, R. (2006). Geographical Thought - A Contextual History of Ideas. New Delhi: Prentice Hall of India Private Limited.
Dikshit, R. (1994). The Art and Science of Geography:Selected Reading. New Delhi: Prentice Hall India Ltd.
Dunbar, G. (1991). Modern Geography:An Encyclopedic Survey. Chicago: St.James Press.
Freeman, T. (1971). A Hundred Years of Geography. London: Gerald Duckworth & Co.Ltd.
Gregory, D., & Walford, R. (1988). Horizons in Human Geography. London: Macmillan.
Hartshorne, R. (1968). Perspectives on the Nature of Geography. John Murray,London: Association of American Geographers,Great Britain.
Hartshorne, R. (2002). The Nature of Geography. New Delhi: Rawat Pub.Co.
Harvey, D. (2003). Explanation in Geography. New Delhi: Rawat Pub.Co.
Harvey, D. (1979). Social Justice and the City. Great Britain: The Pitman Press,Bath.
Harvey, E., & Holly, B. P. (2002). Themes in Geographical Thought. New Delhi: Rawat Pub.Co.
Husain, M. (2007). Models in Geography. New Delhi: Rawat Pub. Co.
Hussain, M. (1995). Evolution of Geographical Thought,3rd edition. New Delhi: Rawat Pub.co.
Hussain, M. (1994). Regional Geography. New Delhi: Anmol Pub.Ltd. Johnston, R. (2000). Geography and Geographers. London: Oxford University Press,New York.Edward Arnold.
Johnston, R., & Hemer, J. (1990). Regional Geography:Current Developments and Future Prospects. London & New York: Routledge Publishers. Legg, S. (2007). Spaces of Colonialism. UK: Blackwell Publishing.
Massey, D. (1994). Space,Pace and Gender. Minnesota: University of Minnesota Press.
Messy, D., & Allen, J. (1984). Geography Matters:A Reader,. Cambridge: Cambridge University Press.
Moss, P. (2002). Feminist Geography in Practice Research and Methods. UK: Blackwell Pub.Co.
Murdoch, J. (2006). Post-Structuralist Geography. New Delhi: Sage Publications Limited.
Pandey, P. (1983). Modern Geographical Trends. New Delhi: Todays and Tommorow Printers andPublishers.
Peet, R. (2003). Radical Geography. New Delhi: Rawat Pub.Co.
Peet, R., & Thrift, N. (1989). New Models in Geography. Boston,Sydney,Wellington: Unwin Hyman.
Raju, S., & Lahiri-Dutt, K. (2011). Doing Gender Doing Geography Emerging Research in India. UK: Routledge.

Course Title: Geo-tectonics and Geomorphology
Course Code: GCC 101

Time: 3 Hours **M.M. 40+10**

Unit I

Origin of Earth's Magnetic Field; Paleomagnetism; Plate Tectonics as a Unified Theory of Global Tectonics; Tectonic and Neo-tectonic processes; Earth's Interior- with special reference to Seismology; Earth Movements; Endogenetic Processes- Faulting and Folding; Vulcanism and associated structures.

Unit II

Exogenic Processes; Weathering; Mass Movement- Controlling Factors and Landforms; River Channel Patterns (Straight, Meandering, Braided); Factors regulating Entrainment, Transportation and Deposition of Sediments in Rivers; Fluvial Landforms; Dynamics of Aeolian, Glacial and Marine processes, and landforms; Morpho dynamics of Barchans and Longitudinal Dunes.

Unit III

Models of Landform Development by Davis, Hack and Young; Application of Geomorphology in Feasibility Assessment of Engineering and Industrial Projects; Geomorphic Approach to Hazard Studies; Morphogenetic Regions; Regional Geomorphology of Thar Desert and Aravalli Region.

Suggested Readings:

Ahmed, E., 1985, Geomorphology, Kalyani Publishers, New Delhi.
Ahmed, E., 1972, Coastal Geomorphology of India,Orient Longman.
Chorley, R., Schumm, S. and Sugden, D.E. 1994. Geomorphology, Methuen, London.
Cook and Doorncamp. 1988. Geomorphology in Environment Management, London
Dayal, P., 1995, A Textbook of Geomorphology, Shukla Book Depot. Patna
Dury, G.H.,1967, Essays in Geomorhology, Heinemann Educational Books Ltd, London
Faniran, A. and Jeje, L.K. 1983. Humid Tropical Geomorphology, Longman, London
Fairbridge, R.W., 1968, The Encyclopaedia of Geomorphology, (Edge), Rainhold Book Corporation,
New Youk
Goguel, J. and Thalmann, H. E., 1962, Tectonics, W.H.Freeman and Compnay
Kale, V.S. and Gupta, A. 2001. Introduction to Geomorphology, Orient Longman Ltd., Hyderabad
Knighton, D.1998: Fluvial Forms and Processes: A New Perspective, Arnold, London
King, L.C., 1965 Morphology of the Earth, Oliver and Boyd, Edinburgh.
Leopold,L.B., et al, 1964, Fluvial Processes in Geomorphology, Eurasia Publishing House, New Delhi.
Mitchell, C.W 1991. Terrain Evaluation, 2nd edition, Longman Scientific & Technical, Harlow
Morisawa, M. (editor) 1994. Geomorphology and Natural Hazards, Elsevier, Amsterdam.

Morisawa, M. 1985. Rivers, Longman, London.
Melhorn, W.N. and R. C. Flemal, 1975, Theories of Landform Development, George Alen and Unwin.
Ollier, C.D. 1981: Tectonic Geomorphology, Longman Scientific & Technical, London.
Petts, G. and Foster, I. 1985. Rivers and Landscapes, Edward Arnold, London.
Petts, G.E. and Amoros, C. (editors) 1996. Fluvial Hydrosystems, Chapman and Hall, London.
Rice, R.J. 1988. Fundamentals of Geomorphology, 2nd edition, Longman Scientific and Technical,London.
Selby, M.J. 1985. An Introduction to Geomorphology, Clarendon, Oxford.
Sharma, H.S. 1987. Tropical Geomorphology: A Morphogenetic Study of Rajashan, South Asia Books, Jaipur.
Starkel, L. and Basu, S. 2000 Rains, Landslides and Floods in the Darjeeling Himalaya, Indian National Science academy, New Delhi.
Strahler, A. N. and Strahler, A. H., 1978, John Wiley and Sons, New York
Summerfield, M.A. (Editor) 1991. Global Geomorphology: An Introduction to the Study of Landforms, John Wiley and Sons Ltd., New York.
Singh, Savindra, 2000. Geomorphology, Prayag Pustak Bhavan
Thornbury, W.D. 1969. Principles of Geomorphology, Wiley Eastern Limited, New Delhi.
Tinkler, 1985. A Short History of Geomorphology, Croom Helm Ltd., Beckenham.
Valdiya, K.S. 1998. Dynamic Himalaya, University Press (India) Ltd., Hyderabad.
Wilson, J.P. and Gallant, J.C. (editors) 2000. Terrain Analysis: Principles and Applications, John Wiley, and Sons Ltd. New York.
Wirthmann, A. 2000. Geomorphology of the Tropics, Translated by Busche, D. Springer-Verlag, Berlin.
Wooldridge, S.W., 1965, An Outline of Geomorphology, Longman Young,
A., 1972, Slopes, T. and A. Constable Ltd, Edinburgh

Course Title: Climatology
Course Code: GCC 102

Time: 3 Hours **M.M. 40+10**

Unit I

Composition and Structure of atmosphere; Insolation; Temperature and its Inversion; Adiabatic processes and Instabilities; Green House Effect; Pressure and Wind Distribution; Forces controlling Motion of air; Jet Stream; General Circulation in the atmosphere; Precipitation- Causes, Forms, Types.

Unit II

Air Masses and Fronts- Types, Characteristics and Weather Conditions; Monsoon- Distribution, Characteristics and Theories of Origin; Extreme Weather Eevents- Cloudbursts; Ocean-Atmospheric Interaction- El Nino, Southern Oscillation

(ENSO) and La Nina; Cyclones- Temperate and Tropical (Distribution, Characteristics and Origin); Norwesters and Western Disturbances in India.

Unit III

Climatic Classification of Koeppen and Thornthwaite; Climatic Changes- Evidence, Possible Causes; Global Warming- Causes, Environmental and Social Impacts; Weather Forecasting; Applied Climatology- Data Collection, Interpretation and Generation of climatic information in reference to Agro-climatology (Water Budget and Crop Callender), Urban Climatology (Urban Heat Island and Architecture), Bio-Climatology (Human Comfort and Morbidity).

Suggested Readings:

Anthes, R. 1997: Meteorology, 7th edition, Prentice-Hall Inc., Upper Saddle River

Barry, R.G. and Chorley, R.T. 1992: Atmosphere, Weather and Climate, 6th edition, Routledge, London

Brigg, G.R. 1996 : The Ocean and Climate, Cambridge University Press, Cambridge

Cock, N.K. 1995 : Geohazards: Natural and Human, Prentice Hall, Englewood Cliffs Critchfield, H.J.

1983: General Climatology, 4th edition, Prentice Hall India Ltd., New Delhi

Das, P.K. 1995 : Monsoons, 2nd edition, National Book Trust, New Delhi

Elsom, D.M. 1992 : Atmospheric Pollution: A Global Problem, 2nd edition, Blackwell Pub. Co., London

Lal, D.S. 1993 : Climatology, 3rd edition, Chaitanya Pub. House, New Delhi

Linacre, E. and Geerts, B. 1997 : Climates and Weather Explained, Routledge, London

Lutgens, F.K.. and Tarbuck, E.J. 1998 : The Atmosphere: An Introduction to Meteorology, 7th edition,

Prentice-Hall Inc., Upper Saddle River

Moran, J.M. and Morgan, M.D. 1997 : Meteorology: The Atmosphere and the Science of Weather, 5th edition, Prentice-Hall Inc.

Pant, G.B. and Kumar, R.K. 1997: Climates of South Asia, John Wiley and Sons Ltd., Chichester

Smith, K. 1996 : Environmental Hazards: Assessing Risk and Reducing Disaster, 2nd edition, Routledge,

LondonTaylor, J.A. (editor) 1974 : Climatic Resources and Economic Activity, David & Charles, London

Byers H .R. 1959: General Meteorolgy, Mcgraw Hill Book Company

Oliver J.E. & Hioddore J.J, 2003.: Climatology: An atmospheric science, Pearson

Lal, M, 1993: Global Warming: concern for tomorrow,Tata Mcgraw Hill

Course Title: Oceanography
Course Code: GCC-103

Time: 3 Hours **M.M. 40+10**

Unit-I

Definition and scope of oceanography, major sea voyages, oceanography, and other sciences; Distribution pattern of land and sea, Origin of ocean basins: Wegner's drift hypothesis, Sea floor spreading and Plate Tectonics.

Unit-II

Depth of ocean, Ocean floor profile-continental shelf, slope, ridge and deeps, abyssal plains; Submarine canyons; Configuration of ocean floors of Indian Ocean and Atlantic Ocean. Coral reefs-origin and distribution; Ocean deposits.

Unit-III

Temperature of oceans; Salinity in oceans; Density of oceans; Tsunami; Ocean currents and their impact on climate and economy; oceans as source of food, mineral and energy resources; Sea-level changes: evidence, mechanism, and impact.

Suggested Readings:

Denny, M., 2008, How the Ocean works: An introduction to Oceanography, Princeton University Press, New Jersey.
Garrison, T., 1995, Essentials of Oceanography Wardsworth Pub. Co., London.
S. Kerhsaw., 2004, Oceanography: An Earth Science Perspective, Routledge, UK. Sharma, R.C. and V. Vatal., 1986. Oceanography for Geographers, Chatanaya Publishing, Allahabad.
Shepart, F., 1969, The Earth Beneath the Sea, Athneum, Rev. ed., New York.
Singh, Savindra., Oceanography, 2014, Pravalika Publications, Allahabad. Thurman,V.Harold., 1987, Essentials of Oceanography, A Bell & Howell Company, Columbus/ Toronto/ Sydney.
Von Arx, W.S., 1962, An Introduction to Physical Oceanography, Addison, Wesley, New York

Course Title: Environmental Geography
Course Code: GCC-104

Time: 3 Hours **M.M. 40+10**

Unit I

Environmental Geography: Concepts and Study of Ecological History; Approaches to Environmental Studies: Environmentalist, Holistic, Organismic and Human Ecological; Ecosystem: Meaning and concepts of ecosystem, Classification and components of eco-system, Trophic structure, Ecological pyramid, Energy flow and Biogeochemical cycle; Ecological regions of India.

Unit-II

Environmental pollution- meaning, types, sources, causes and impacts; Air, Water and Land pollutions; Environmental Degradation – Nature, process, types and causes of environmental degradation; Crisis in Biodiversity; Greenhouse effect, Global warming, Ozone depletion and Desertification.

Unit-III

Production Technology and Environmental Change, Technological Fix; Carbon Concentration and Sequestration; Red, Brown and Green Technology; Global Resource Scarcity with special reference to Food and Energy; Tragedy of the commons; Environmental Politics of Resource and Development with Special Reference to Climate Change, Earth Summits, and Protocols.

Suggested Readings:

Adams, W.M. 1995: Green Development: Environmental Sustainability in the Third World, Rout1edge, London

Alexander, D. 1993: Natural Disasters, Research Press, New Delhi Allaby, M. 1996: Basics of Environmental Science, Routledge, and London Allaby, M. 2006: The Encyclopaedia of Natural Calamities, Viva, Kolkata.

Arnold, D. & Guha, R. 1995: Nature, Culture & Imperialism, OUP, New Delhi Barrow, C. J. (2003). Environmental Change and Human Development. Arnold Publication.

Bhattacharra, R.N. (Ed.) Reprint, 2007. Environmental Economics – An Indian Perspective, Oxford University Press, New Delhi.

Blaikie, P., Cannon, To Davis, I. and Wisener, 1994: At Risk: Natural Hazards, People's Vulnerability and Disasters, Routledge, London

Brown, J.H. & Lomolino, M.V. 1998: Biogeography, Sinauer Associates, USA.

Bryant, E.A. 1991: Natural Hazards, Cambridge University Press, And Cambridge.

Buchholz, R.A. 1993: Principles of Environmental Management, the Greening of Biosphere, Prentice Hall Inc., New Jersey

Canter, L. W. 1996: Environmental Impact Assessment, 2nd edition, McGraw Hill, New York.

Chambers, R., Saxena, N.C. & Shah, T. 1989; To the Hands of the Poor: Water and Trees, Oxford & IBH, New Delhi.

Chary, S. N. (2008). Environmental Studies. Macmillan Publication.

Cox, C.B & Moore, P.D. (2000) Biogeography - An Ecological & Evolutionary Approach, Blackwell Science Ltd, Oxford, London

Das, M.C. 1993: Fundamentals of Ecology, Tata Mc Graw Hill, New Delhi.

Echlom, E.P. 1991: Down To Earth, EWP, New Delhi.

Elsom, D.M. 1992: Atmospheric Pollution: A Global Problem, 2nd edition, Blackwell Pub. Co., London.

Farmer, A. 1997 : Managing Environmental Pollution, Routledge, London.

Gadgal, M. & Guha, R. 1993 ; This Fissured Land- An Ecological History of India, O U P, New Delhi.

Gilpin, A. 1996 : Dictionary of Environment and Sustainable Development, John Wiley and Sons Ltd., Chichester:

Gilpin, A. 1997 : Environmental Impact Assessment: Culling Edge for the Twentyfirst Century, Cambridge University Press, Cambridge: 181p.

Hugget, R. & Cheesman, I.(2002) Topography & The Environment, Prentice Hll, New York, London.

Huggett, R.J (Reprint 2002) Fundamentals of Biogeography, Routledge, London & New York.
Hynes, R. (1982). Environmental Science Methods. London: Chapman & Hall. I.G. Simmons – Ecology of Natural Resources, New York.
Johansen, B. E. (2006). Global Warming in the 21st Century. Atlantic Publication.
Maiti, S. K. (2001). Handbook of Methods in Environmental Studies, Water and Waste Water Analysis. Jaipur: ABD Publishers.
Malhotra, R. (2008). Global Warming . Global Vision Public House.
Marsh, W.M. and Grossa, J.M. 1996: Environmental Geography: Science, Landuse and Earth Systems, John Wiley and Sons Inc., New York.
Mathur, M.H. & Marsden, D. 1998 : Development Projects and Impoverishment Risk, OUP, New Delhi.
Marsh, W.M. & Grossa(Ir). I.(1996) Environmental Geography- Science, Land use & Earth Systems, John Willey & Sons, New York
Manivasakam, N. 1984 ; Environnental Pollution, NBT, New Delhi.
Mackenzie, A., Ball, A.S. & Virdee, S.R. (Reprient 2001). Instant Notes in Ecology, Viva Books PrivateLtd. New Delhi, Mumbai & Chennai.
Middleton, N & Keefe, P.O (2001) Redefining Sustainable Development, Pluto Press, London, Sterling & Virginia.
Mishra, R. N. (2008). Environment and Forest Resource Management . New Delhi: Sonali Publication, .
Odum, E.P. 1971 : Fundamentals of Ecology, WB Saunders, USA
Park, C. 1998: The Environment: Principles and Applications, Routledge, London:43
Pickering, K. and Owen, L.A. 1997 : An Introduction to Global Environmental Issues, 2nd edition, Routledge, London:
R.Guha(Ed) 1994: Social Ecology, OUP, New Rajagopalam, R. (2005). Environmental Studies. Oxford University.
Roberts, N. (editor) 1994: The Changing Global Environment, 3rd edition, Blackwell Pub. Co., London.
Rosenbaurn, W.A. 1991: Environmental Politics & Policy, EWP
Sukla, R S. & Chandel, P.S. 1991: Plant Ecology, S.Chand & Co. Ltd., New Delhi.
Speth, I.G. (Reprint 2005) Global Environmental Challenges – Transitions to a Sustainable World, Orient Longman, New Delhi.
Tivy,J & Hare,O.G.(1981) Human Impact On The Ecosystem, Oliver & Boyd, Edinburg & New York.
Turk, I. & Turk. A. (1988) Environmental Science, Saunders College Publishing, New York.
Ta'I, B., Murphy, P. & Rana, P.S. (Ed.2007) Environmental Impact Assessment, Indo-Australian Perspective, Bookwell, New Delhi.
New York.
Vogler, J. 1995: The Global Commons: A Regime Analysis, John Wiley and Sons Ltd., Chichester
Wathern, P. (editor) 1988: Environmental Impact Assessment: Theory and Practice, Routledge, London.
Whyte, I.L.1995: Climate Change and Human Society, Arnold, London.
Woodward, F.I. 1992: Global Climatic Change: The Ecological Consequences, Academic Press, London.

Practical

Time: 4 Hours **M.M. 80+20**

General principles and classification of projections: mathematical construction, properties, limitations, and uses of Zenithal, Conical and Cylindrical projections. Distortions related to different projections: distance; direction; area and scale variation. Concept of UTM Projection and Conversion of Latitude and Longitude to UTM coordinates.

Profile drawing and analysis: serial, superimposed, projected and composite. fluvial morphometric techniques. Preparation of altimetric frequency curves and hypsometric curves of drainage basins. Slope Analysis (Wentworth)

Data representation techniques: Isotherms, Isohytes, Rainfall dispersion diagrams, Aridity index, Heat index, Water balance analysis, Instruments for measuring elements of weather and climate. Components of Indian Daily Weather Maps. Interpretation of Weather Maps.

Evaluation of Practical Notebook and Viva-Voce

Suggest Readings:

Kellaway, G. P. 1970: Map Projections, Methun and Co. Ltd., London.

Monkhouse F.J. and Wilkinson, H.R. 1971: Maps and Diagrams: Their Compilation and Construction,B.I. Publications Private Limited, New Delhi.

Maceachren, A. M. and Taylor, D. R. F. 1994: Visualization in Modern Cartography, Permamon. UK.

Dorling, D. and Fairbirn, D. 1997: Mapping Ways of Representing the World, Longman. England.

M.A./M.Sc. Second Semester

GFC-200	Human Values
GCC-201	Economic Geography: Concepts, Principles and Techniques
GCC-202	Population Geography
GCC-203	Quantitative Methods in Geography
GCC-204	Evolution of Geographical Thought

Course Title: Economic Geography: Concepts, Principles and Techniques
Course Code: GCC-201

Time: 3 Hours **M.M. 40+10**

Unit I

Definition, Scope, and development of Economic Geography. Economic activities and sectors (primary, secondary, tertiary, and quaternary). Geographical basis of economic activities: systematic approach and spatial approach. Concept of economic development, indicators of development, sustainable development, Human Development. Basic Elements of World Economy; Spatial Structure of World Economy.

Unit II

Agricultural Regions- Concepts and techniques of Delineation; World Agricultural Systems. Von Thuenen's model of agriculture location and its modification. Industrial Location theories: Weberian Location analysis, Losch's economics of locations, Isard's space economy. Major Industrial Regions of the World; Spatial Distribution of Iron & Steel, Cotton Textile and Petro Refining Industries; Emerging Industries with special reference to Food Processing and ICT in India.

Unit III

Concept of Accessibility and Connectivity; Transportation: Modes, Comparative Cost Advantage; Networks- Types and Network Graphs; Connectivity of Networks and their Measurement Indices. Significance of Trade and its role in World and Regional Economy. Concept of Economic region, techniques of delimitation of economic regions, economic regionalization of India. World Trade Organization (WTO)

Suggested Readings:

Alexander, J.W. (1963) Economic Geography, Prentice - hall Inc
Boyce, Ronald Reed (1974) The Bases of Economic Geography, Holt, Rine Hart and Winston Inc, New York.
Brereton, E. 1992: Resource Use and Management, Cambridge University Press, Cambridge.
Datt, R. & K.P.M. Sundaram (2006) Indian Economy, Prentice - hall Inc

Elliotte, j. A. 1994: An Introduction to Sustainable Development: The Developing World, Routledge, London.
Hurst, Michael E. Eliot (1974) Transportation Geography: Comments and Readings, Mc. Graw-Hill Book Company Ltd.
Johnston, R.J., Taylor, P.J. and Watts, M.J. (editors): 1995: Geographies of Global Change: Remapping the World in the Late Twentieth Century, Blackwell, Oxford.
Mitchell, B. 1997: Resources and Environment Management, Addison Wesley Lon~an Ltd., Harlow. Pickering, K. and Owen, L.A. 1997: An Introduction to Global Environmental Issues, 2nd edition, Routledge, London.
Taaffe E.J. & H. L. Gauthier (1973) Geography of Transportation, Prentice-hall Inc.
United Nations Populations Fund 1997: India Towards Population and Development Goals, OxfordUniversity Press, New Delhi.
Unwin, T. (editor) 1994: Atlas of World Development, John Wiley and Sons Ltd., Chichester.
World Bank 1996: From Plan to Market: World Development Report 1996, Oxford University Press, Oxford.
World Resources Institute 1998: World Resources 1998-99: A Guide to the Global Environment, Oxford University Press, Oxford

Course Title: Population Geography
Course Code: GCC 202

Time: 3 Hours **M.M. 40+10**

Unit I

Demography versus Population Geography: Concept and Subject Development. Sources of Population Data: Census, Sample Survey, Vital Statistics, International Sources. Population Distribution: Spatial Pattern. Population Growth: Measurement and Trend in India. Population Density: Factors, Trend and Distribution. Population Composition and Characteristics of India: Age, Sex, Rural-Urban, Occupational Structure Literacy and Education.

Unit II

Components of Population Change. Fertility: Measurement Techniques, Social and Economic Theories, National Trend. Mortality: Measurement Techniques, Life Table, National Trend. Migration: Types, Streams, Ravenstein's Law, Theory of Intervening Opportunities, Gravity Model, Diaspora, and Identity Crisis.

Unit III

Theories of Population Change: Malthusian, Neo-Malthusian, Optimum Population, Demographic Transition. Population Projection: Techniques and World Scenario. Population Development and Environment. Population Policies in Developed and Developing Countries. National Population Policy

Suggested Readings:

Asha A. Bhende, Tara Kanitkar (1978), Principles Of Population Studies, Himalaya Publishing House.

Jacob S. Siegel and David A. Swanson (2004), The Methods and Materials of Demography

K. Srinivasan (1998) 'Basic Demographic Techniques and Applications', New Delhi: SAGE India.

R.C. Chandna (1986), A Geography of Population, Kalyani Publishers.

Shryock, H.S. and J.S. Siegel (1971). The Methods and Materials in Demography (Vol. I and II), Washington DC, US Bureau of Census.

Agarwala and Sinha, 1977, India's Population Problems, Tata McGraw-Hill Publishing Co. Ltd., New Delhi

Bird, J., 1977: Centrality and Cities, Routledge, London

Borooah, G.L., 1938, Population Geography of Assam, Mitali Publications

Cassen, R.H., 1978, India: Population, Economy and Society, English language Book society and Macmillan

Chandna R.C. 2005: Population Geography, Kalyani publishers

Chitambar, J.B. 1993: Introductory Rural Sociology, Wiley Eastern, New Delhi

Clout, Hugh D., 1972, Rural Geography-An Introductory survey, Pergamon Press

Dickinson, R.E. 1968: City and Region: A Geographical Interpretation, Routledge and Kegam Paul Ltd. London.

Diddee, J., 1997: Indian Medium Towns, Rawat Publications, Jaipur.

Flint C and Flint.D, 1999: Urbanisation Changing Environments, Collins, London

Garnier, J. Beaujeu, 1966, Geography of Population, Commonwealth Printing Press Ltd.

Ghosh, S. 1998: Introduction to Settlement Geography, Orient Longman Ltd., Calcutta

Hassan, M. Izhar, 2005, Population Geography, Rawat Publications

Herbert, David and Thomas, Colin, 1982: Urban Geography A First Approach,Jhon Wiley & Sons, New Delhi

Hudson, F.S. 1970: Geography of Settlements, Macdonald and Evans Ltd., PlymouthHusain,

Kuppuswany, B., 1975, Population and Society in India, Popular Prakashan, Bombay

Law.N,Smith.D,(1991),Decision Making Geography, Stanley Thornes Pub. Ltd, Leckhampton

Mandal, R.B. (2000): Urban Geography: A Textbook, Concept Pub. Co., New Delhi.

Mandal, R.B. 1988: Systems of Rural Settlements in Developing Counties, Concept Pub. Co., New Delhi

Mandal, R.B., Uyanga, J. and Prasad, H., 2007, Introductory Methods in Population Analysis, Concept Publishing Company

Course Title: Quantitative Methods in Geography
Course Code: GCC 203

Time: 3 Hours **M.M. 40+10**

Unit I

Introduction: Types of Data: Nominal, Ratio, Interval, Discrete, Continuous. Concepts of Population, sample; parameter, statistics. Measures of central tendency: Mean, Mode, Median. Measurement of dispersion: standard deviation, and variance; Correlation and Regression analysis, Indices of inequality and disparity.

Unit II

Concept of Probability. Probability Distribution – Normal, Binomial and Poison. Permutation and Combination. Sampling Techniques; Standard Error of Mean; Confidence interval; Test of Significance.

Unit III

Hypothesis formulation – Null Hypothesis and Alternate Hypothesis. Hypothesis testing: Student T Test, Z Test; Chi-Square, Mann-Whitney Test and Mann-Kendall Test; F-Distributions, Analysis of Variance, one-way and two-way classification. Pattern Analysis: nearest neighbor analysis, Time Series analysis.

Suggested Readings:

Alvi, Z. 1995: Statistical Geography: Methods and Applications, Rawat Pub. New Delhi.

Pal, S.K. 1999: Statistics for Geoscientists, Concept publishing Company, New Delhi

Silk, J. 1979: Statistical techniques in Geography, George Allen and Unwin, London

Ahuja, R. (2001). Research Methodology. Kolkata: Rawat Publication.

Das, D. L. (2000). Practice of Social Research. New Delhi: Rawat Publication.

Harper, C., & Marcus, R. (2007). Research for Development: A practical Guide. New Delhi: Vistaar Publication.

Kothari, C. (2009). Research Methodology: Methods and Techniques. Kolkata: New Age International Publishers.

Misra, H., & Singh, V. (1998). Research Methodology in Geography: Social and Policy Dimension. New Delhi: Rawat Publication.

Misra, R. (2001). Research Methodology: A handbook. New Delhi: Concept Publishing Company.

Mondal

Panneerselvam, R. (2009). Research Methodology. Learning private limited. Singh, K. (2007). Quantitative Social Research Methods. New Delhi: Sage Publication.

Somekh, B., & Lewin, C. (2005). Research Methods in Social Science. New Delhi: Vistaar Publication.

Course Title: Evolution of Geographical Thought
Course Code: GCC 204

Time: 3 Hours **M.M. 40+10**

Unit-I

Historical Development of the Geographical Thoughts: Contribution of major proponents in geography in the ancient world (the Greeks, the Romans, and Indians). Geography of Vedic age and Geography of Puranas: sources of puranic geography, Puranic continents and oceans, the mountain system and river systems. Development of geography in India. Development of Geography during the Middle Ages.

Unit-II

The emergence of scientific geography in the 18th and 19th centuries. Foundation of modern geography: Contribution of German, French, British and American schools. Contribution of Ritter, Humboldt, Ratzel, Semple, Huntington, Richthophan, Vidal-de-la Blache, Brunches, Sauer and Hartshorne.

Unit-III

Paradigms in Geography. Positivism and quantitative revolution; Idiographic and Nomothetic Approaches; Behavioral Geography; Radicalism and Development of Critical Geography; Welfare approach in Geography; Geography of equality; Social Justice and Environmental Justice; Humanistic Approach in Geography; Post modernistic approaches in Geography.

Practical

Time: 4 Hours **M.M. 80+20**

Principle of topographical map numbering system, Interpretation: structure, relief, drainage, vegetation, transport, and settlement from topographical maps. Preparation of Overlays from Topographical Map.

Nearest Neighbour Analysis of settlement distribution. Survey Schedule/ Questionnaire: Household Survey, Market Survey, Tourist Survey, Socio-economic Survey etc. Calculation of Human development index, Poverty index, Gender related development index from the given data.

Collection of demographics and socio-economic data at household level (Duration one week) from primary and / or secondary sources and preparation of analytical survey report to assess the development of an area highlighting the socio-economic conditions, problems, and suggestions for the development.
Evaluation of Practical Notebook and Viva-Voce

Suggested Readings:

Dickinson, G.C.: Statistical mapping of statistics, London
Khan, Z A: Text book of Practical Geography, Concept, New Delhi, 1998.
Lawrence,GRP: Cartographic Methods, London, 1971.
Monkhouse, FJ & Wilkinson HR: Map & Diagram, Methuen, London, 1994.
Robinson AH et,al. : Elements of Geography, John Willey, New York, 1995.
Sarkar, A K: Practical Geography: A Systematic Approach, Oriental Longman, Calcutta, 1997.
Saroj K. Pal: statistics for Geosciences- Techniques and applications, Concept, New Delhi, 1998.

M.A./M.Sc. Third Semester

GCC-301	Geo-spatial Techniques for Earth Surface Observation
GCC-302	India: Physical Setting and Contemporary Geographical Issues
GCE-303	(A) Eurasia: Physical Setting and Geographical Issues OR (B) Americas: Physical Setting and Geographical Issues
GEO-304	(A) Agriculture Geography OR (B) Industrial Geography

Course Title: Geo-spatial Techniques for Earth Surface Observation
Course Code: GEO 301

Time: 3 Hours **M.M. 40+10**

Unit I

Fundamentals of Remote Sensing, EMR, Types of Bands, Resolution, Sensor, FCC, Characteristics of LANDSAT, LISS, SENTINAL, SRTM, MODIS, IKONOS, ASTER data sets. Digital image processing techniques: contrast enhancement, band rationing, spatial filtering, PCA, Vegetation Indices. Visual Image Interpretation, Unsupervised & Supervised Image Classification.

Unit II

Fundamentals of GIS, Import of spatial data, Geo-Referencing of analogue Maps & Images. Spatial data forms, representation of spatial data in GIS environment. Linking of attribute data to spatial objects; spatial queries, working with Buffer, spatial analysis.

Unit III

Mapping and assessment of dynamic earth surface and change detection at: (a) seasonally changing agricultural fields; (b) year to year variations in snow cover, inland water bodies, rainfall distribution (c) long term changes in forest cover and urban expansion

Suggested Readings:

Avery, T.E., and G.L. Berlin. Fundamentals of Remote Sensing and Airphoto Interpretation, Macmillan, New York.1992.
Campbell, J.B. Introduction to Remote Sensing, Guilford, New York.1996.
Curran, Paul J. Principles of Remote Sensing, Longman, London & New York. 1985.
Joseph, G. Fundamentals of Remote Sensing, Universities Press Hyderabad. 2005.
Lillisand, T.M. and P. W. Kiefer. Remote Sensing and Image Interpretation, New York. John Wiley & Sons.1986.
Burrough, P.A. and McDonnell, R.A. Principles of Geographic Information System. Oxford: Oxford University Press. 1998.
Chang, Kang-tsung. Introduction to Geographic Information Systems. New Delhi: Tata McGraw-Hill.2006.
Doberstein, Dan. Fundamentals of GPS Receivers: A Hardware Approach. New York: Springer

Course Title: India: Physical Setting and Contemporary Geographical Issues
Course Code: GEO 302

Time: 3 Hours **M.M. 40+10**

Unit I

Introduction: Geological structure and Physiographic Regions, Drainage Systems, Climatic Characteristics, Natural Vegetation and Soil

Unit II

Agriculture: nature, problems, main crops, and prospects. Distribution and use of minerals, fossil fuel resources. Industrial complexes and industrial regions; Population: characteristics, composition and distribution, Urbanization.

Unit III

Contemporary Issues: Environmental Pollution and degradation, Regional Disparities in regional Development, globalization and Indian Economy, Rural-Urban Divide, Development of transport and Information technology and its impact on society and economy

Suggested Readings:

Centre for Science & Environment (1988): State of India's, Environment, New Delhi.
Deshpande, C.D. (1992): India: A Regional Interpretation, ICSSR & Northern Book Centre, New Delhi.
Dreze, J. & Sen A. (ed.) (1996): India's Economic Development and Social Opportunity, Oxford University Press, New Delhi.
Gautam, A. (2009): Advanced Geography of India, Second Edition, Sharada Pustak Bhawan, Allahabad.
Husain, M. (2008): Geography of India, Tata McGraw-Hill, New Delhi.
Khullar, D.R. (2006): India: A Comprehensive Geography, Kalyani Pub., New Delhi.
Kundu A. and Raza, M. (1982): Indian Economy: The Regional Dimension. Spectrum Publishers, New Delhi.
Robinson, F. (1989): The Cambridge Encyclopedia of India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan & Maldives, Cambridge University Press, London.
Singh R.L. (ed.) (1971): India-A Regional Geography, National Geographical Society of India, Varanasi.
Spate, O.H.K. & Learmonth, A.T.A. (1967): India & Pakistan, Methuen, London.
Tirtha R. & Krishan, G. (1996): Emerging India, Rawat, Jaipur.
Tiwari, R.C. (2010): Geography of India, Prayag Pustak Bhawan, Allahabad.

Course Title: Eurasia: Physical Setting and Contemporary Geographical Issues
Course Code: GCE 303 (A)

Time: 3 Hours **M.M. 40+10**

Unit I

Asia: landforms, climate, vegetation, soils, population distribution, mineral resources, and economic activities.

Unit II

Europe: landforms, climate, vegetation, soils, population distribution, mineral resources, and economic activities.

Unit III

Contemporary geographical issues: spatial variations in levels of development, impact of globalization; environmental degradation, impact of demographic transition

Suggested Readings:

De Blij, H.J. and Muller, P.O. 1997: Geography: Realms Regions and Concepts, 8th edition, John Wiley and Sons Ltd., New York.
Cole, J. P. (1996). A Geography of the World's Major Regions. Routledge, London.
Cole, J. P. (1975). Latin America- Economic and Social geography. Butterworth, USA.
Dickenson, J.P. et al. (1996). The geography of the Third World. Routledge, London.
Gourou, P. (1980). The Tropical World. Longman, London.
Kolb, A. (1977). East Asia- Geography of a Cultural Region. Methuen, London.
Minshull, G.N. (1984). Western Europe. Hoddard & Stoughton, New York.

Songquiao, Z.(1994). Geography of China. John Wiley, New York.
Ward, P.W. & Miller, A. (1989). World regional geography: A Question of Place. John Wiley, New York.
Singh, Devendra Prasad. Adhunik Asia ka Bhugol. Sharda, Allahabad. Maurya, S.D. Vishva ka Pradeshik Bhugol. Pravalika, Allahabad.

Course Title: Americas: Physical Setting and Contemporary Geographical Issues
Course Code: GCE 303 (B)

Time: 3 Hours **M.M. 40+10**

Unit I

North America: landforms, climate, vegetation, soils, population distribution, mineral resources and economic activities.

Unit II

South America: landforms, climate, vegetation, soils, population distribution, mineral resources and economic activities.

Unit III

Contemporary geographical issues: Spatial variations in levels of development; Poverty; Population Explosion; Impact of demographic transition; Impact of globalization; Environmental degradation.

Suggested Readings:

De Blij, H.J. and Muller, P.O. 1997: Geography: Realms Regions and Concepts, 8th edition, John Wiley and Sons Ltd., New York.
Patterson, J.H. (1985). Geography of Canada and the United States. Oxford Univ. Press.
Maurya, S.D. Vishva ka Pradeshik Bhugol. Pravalika, Allahabad.
Cole, J. P. (1996). A Geography of the World's Major Regions. Routledge, London.
Cole, J. P. (1975). Latin America- Economic and Social geography.Butterworth, USA.
Dickenson, J.P. et al. (1996). The geography of the Third World. Routledge, London.
Gourou, P. (1980). The Tropical World. Longman, London.
Ward, P.W. & Miller, A. (1989). World regional geography: A Question of Place. John Wiley, New York.
Singh, Devendra Prasad. Teen Dakshini Mahadwipon ka Bhogolik Adhyan. Sharda, Allahabad

Course Title: Agriculture Geography
Course Code: GEO 304 (A)

Time: 3 Hours **M.M. 40+10**

Unit I

Elements of agricultural Geography. Factors affecting agriculture: Physical- relief, climate, soil, water, storage etc. social land ownership and size of holding; Economic input of human and animal power, irrigation, fertilizers, mechanization; financial management, market system, transport, and trade etc.

Unit-II

Types of agriculture, Whittlesey's classification of agricultural regions, Special study of plantation agriculture, Mediterranean, intensive agriculture, dry farming, and their characteristics. Applied Agriculture Geography: Land classification- need and basis of classification British, American, Indian, Irish patterns, Land use data- sources, types of mapping and problems. Models in agricultural land use: concept, need and principles; Von Thuenen's Agricultural Location Theory and its recent modification.

Unit-III

Measurement of levels of agricultural development: concept and methodology, agricultural regionalization, methods of delimitation; Crop ranking, crop combination regions, Detailed study of Kendal, Weaver, Doi and Raffiullah; Cropping intensity and crop diversification; agricultural efficiency.

Suggested Readings:

Ali Mohammed : Dynamics of Agriculture Development in India , Concept, New Delhi.
Gregor, H P : Geography of Agriculture, Prentice Hall, New York, 1970.
Grigg, D B : The Agriculture System of the World, CambridgeUniversity Press, New York, 1974.
Hartshorne, T A & Alexander, J W : Economic Geography, Prentice Hall, New Delhi, 2000.
I.C.A.R.: Soil and Water Conservation Research, (1956- 71).
I.C.A.R : Soil Conservation in India.
Kostrowicki, J : World Types of Agriculture, PolishAcademy, Warsaw, 1976.
Morgan, W B &Nortan, R J C : Agriculture Geography, Mathuen, London, 1971.
Noor Mohammed: Agricultural Land use in India, Inter-India, Delhi. 16
Sachidanand: Social Dimensions of Agricultural Development, National Publishing House, Delhi.
Shafi, M : Land Utilization in Western UP, AMU Aligarh, 1960.
Singh &Dhillon : Agricultural Geography, Tata, McGraw Hill, New Delhi, 1988.
Stamp, L D : The Land of Britain, its use and miss-use, Longman, London, 1962.
Symon Leslie : Agricultural Geography, Bell & Sons, London, 1967.
Pramila Kumar: KrishiBhoogol, M P HindiAcademy.
BrijBhushan Singh: KrishiBhoogol, Gorakhpur.
B. L. Sharma: KrishiBhoogol, Himanshu, Udaipur, 2003.

Course Title: Industrial Geography
Course Code: GEO 304 (B)

Time: 3 Hours **M.M. 40+10**

Unit I

Nature and scope of Industrial Geography. Methods of measuring the spatial distribution of manufacturing industries; Location, quotient, coefficient of geographic association, Index of concentration. Theories and models of industrial location: The least coast school, The transport coast school, the market area school, the marginal location school, the behavioral school. New trends in industrial geography.

Unit-II

Important industrial regions of the world. Important industrial regions of India. Case study of the following regions: (i) The Hooghly side industrial region. (ii) The Damoder valley industrial region. (iii) The Ruhr basin industrial region. (iv) The Great Lakes industrial region. (v) Industrial centres of Rajasthan: Bhiwadi, Bhilwara, Jaipur.

Unit-III

Distribution, recent trends, problems, and prospects: cotton textile industry, automobile, pulp & paper and cement industry. Industrial hazards, and occupational health; Impact of manufacturing industries on economic development; Role of globalization on manufacturing sector.

Suggested Readings:

Alexanderson, C: Geography of Manufacturing, Prentice Hall Bombay, 1967.

Chauhan, M L &Khandelwal, M K: Dyeing, Printing and Textile, Ritu Publication, Jaipur, 2005.

Choudhary, M R: Industrial Geography of India. 4. Estall, R C & Buchanan, R O: Industrial Activity and Economic Geography, Hutchinson & Co. London.

Hartshorne, T A & Alexander, J W: Economic Geography, Prentice Hall, New Delhi, 2000.

Hoover, E M: The Location of Economic Activity, McGraw Hill, New York.

Isard, W: Methods of Regional Analysis, Techno. Press of MIT & John Willey, New York, 1956.

Lloyed, Peter E &Dicken, P: Location in Space: A Theoretical Approach to Economic Geography, Harper & Row, New York, 1972.

Miller, E : A Geography of Manufacturing, Prentice Hall, Englewood Cliffs, New Jersey, 1962.

Riley, R.C. Industrial Geography, Chatto and Windus, London, 1973.

Practical

Time: 4 Hours **M.M. 80+20**

Aerial Photographs: Types, Edge Information, Elements of Air photo Interpretation. Preparation of thematic overlays and feature identification. Scale, Parallax and extraction of relative height of geomorphic features from Aerial photo pairs.

Remote Sensing: Elements of Image Interpretation. Common types of IRS and Landsat sensors and their suitability for analysis of geographical information. Extraction of physical features from satellite images of various resolution and band combinations. Extraction of cultural features from satellite images of various resolution and band combinations. Change detection from multi dated images.

Geographical Information System: Digital Image processing, Spatial analysis through vector overlay. Preparation of annotated thematic maps. Preparation of DEM from spot heights, contours and SRTM data.

Global Navigation Satellite System: Principles of GNSS positioning with special reference to GPS. Collection and retrieval of GNSS positions. GNSS Survey and Location Mapping.
Evaluation of Practical Notebook and Viva-Voce

Suggested Readings:

Walford, P.,1995: Geographical Data Analysis, John Wiley and Sons Inc., New York

Chaisman, N. 1992: Exploring Geographical Information Systems, John Wiley and Sons Inc., New York.

Lillesand, T.M. and Kiefer, R. W. 1994: Remote Sensing and Image Interpretation, 3rd edition, John Wiley and Sons, New York.Oxford and IBH Pub. Pvt. Ltd., New Delhi

Sabins, F.F., 1997 : Remote Sensing: Principles and Applications, 3rd edition, W.H. Freeman & Company, New York

M.A./M.Sc. Fourth Semester

GCC-401	Settlement Geography
GCC-402	Political Geography
GCE-403	(A) Cultural and Social Geography OR (B) Geography of Health
GEO-404	(A) Rajasthan: Physical Setting and Geographical Issues OR (B) Regional Planning and Development
ESCC-405	Dissertation (In lieu of paper GCE-403/ GEO-404)

Course Title: Settlement Geography
Course Code: GCC 401

Time: 3 Hours **M.M. 40+10**

Unit I

Definition, scope, and development of settlement geography. Settlement types, their characteristics, and differences. Factors influencing origin, growth, and distribution of settlements. Theories in settlement geography. Morphological characteristics of rural and urban settlements with special reference to India. Classification of settlements based on population, patterns, spacing and functions.

Unit-II

Aspects of urban places: location, site, and situation - definition, nature, and significance. Theories of Urban Evolution and Growth. Stages of Urban Development: Urbanization, Suburbanization, Counter Urbanization and Re-urbanization. Morphology of urban settlements.

Unit-III

Hierarchy of settlements: Christaller's Central Place theory, Losch's theory of market centres, Zipf's Rank Size Rule, Concept of Primate city - their applications in India; the Urban Fringe. Census classification of Indian towns. Urban housing, policies, and problems with special reference to slums. Smart city: Concept, need and implementation in India.

Suggested Readings:

Ghosh. S. (2015): "Introduction to Settlement Geography", Orient Blackswan Private Limited, Hyderabad

Jyptirmoy Sen (2007): A Textbook of Social and Cultural Geography," Kalyani Publsiher, New Delhi.

Bhattacharya, B. (2006). Urban Development in India. New Delhi: Concept Publishing Company
Bird, James 1977: Centrality and Cities. Routledge, London
Cadwallader, M. (1985). Analytical Urban Geography. London: Prentice Hall.
Carter, H. 1981: Urban Geography, 3rd edition Arnold-Heinemann, New Delhi.
Das, A. K. (2007). Urban Planning in India. Jaipur: Rawat Publications.
Dave, M. (1991). Urban Ecology and Levels of Development. Jaipur: Rawat Publications Dickinson, R.E. 1968: City and Region: A Geographical Interpretation. Routledge and Kegam Paul Ltd. London.
Diddee, Jaymala 1997: Indian Medium Towns. Rawat Publications, Jaipur.
Flint C and Flint.D(1999):Urbanisation Changing Environments. Collins, London
Ghosh, S. 1998: Introduction to Settlement Geography. Orient Longman Ltd., Calcutta
Gibbs.J(1961) : Urban Research Methods.East-West Press Pvt Ltd. New Delhi
Glasson,J.(1975): An Introduction to Regional Planning. Hutchinson and Co.,London
Gottdiener, M., & Budd, L. Key Concepts in Urban Studies. New Delhi: Sage Publications .
Hardoy, J. E., Mittin, D. & Satterthwaite, D. 1992 : Environmental Problems in the World Cities. Earthscan Pub. Ltd. London.
Hudson, F.S. 1970: Geography of Settlements, Macdonald and Evans Ltd. PlymouthHerbert, David and
Thomas, Colin, 1982: Urban Geography A First Approach,Jhon Wiley & Sons. New Delhi
Johnston .R.J (2000): The Dictionary of Human Geography.Blackwell. UK
Kaplan.D and Wheeler.J (2008):Urban Geography.John Wiley
Knox, P. 1982: Urban Social Geography. Longman Scientific and Technical, Harlow.
Law.N,Smith.D,(1991),Decision Making Geography. Stanley Thornes Pub. Ltd, Leckhampton
Markandey, K., & Simhadri, S. (2009). Urban Environment and Geoinformatics. Jaipur: Rawat Publication.
Mcdonnell, M. J., Halns, A. K., & Breste, J. H. (2009). Ecology of Cities and Towns. Cambridge University Press.
Misra. H. N. (ed) 1987: Contributions to Indian Geography. Volume 9: Rural Geography, Heritage Pub., New Delhi.
Mohan Sudha 2005: Urban Development and New Localism. Rawat Publications, Jaipur.
Pacione, Micheal, 2001: Urban Geography, Routledge, London
Naqvi, H. K. (1971). Urbanisation and Urban Centres under the Great Mughals. Shimla: Indian Institute of Advance Studies.
Ramachandran R. 1989: Urbanisation arid Urban Systems in India. Oxford University Press, New Delhi.

Course Title: Political Geography
Course Code: GCC 402

Time: 3 Hours **M.M. 40+10**

Unit I

Nature, Scope, and recent developments in Political Geography; Approaches to Study; Major Schools of Thought; Classical Geopolitics and Critical Geopolitics; Geographic Elements and the State (Physical, Human and Economic); State, Nation, Nation-State and Nation Building; Forms of Governance- Federal, Unitary; Frontiers and Boundaries.

Unit II

Colonialism, Decolonization, Neocolonialism; Geopolitical World Order- Origin and Cessation of Cold War; Global Strategic Views; Globalization and the crisis of the Territorial State; Geopolitical significance of Indian Ocean; Political Geography of West Asia.

Unit III

Nature and Scope of Electoral Geography; Political Geography of contemporary India- Unity and Diversity: Centripetal & Centrifugal Forces; Sino-Indian Border Dispute; Kashmir Problem; Insurgency in Border States; Federalism in India; InterState Water Disputes (Special Reference to Sutlej Waters).

Suggested Readings:

Agnew, John (1997) Political Geography: A Reader, Arnold, London

Adhikari, Sudeepta (2002) Political Geography, Rawat Publications, New Delhi

Pounds, Norman J.G. (1963) Political Geography, Mc Graw Hill Book Company Husain Majid (1994) Political Geography, Anmol Publications Pvt. Ltd.

Dikshit, R.D. Political Geography. Prentice Hall of India.

Cox, Kevin R. (2002) Political Geography: Territory, State, and Society, Blackwell Publishers, Oxford.

Course Title: (A) Cultural and Social Geography
Course Code: Paper GCE 403(A)

Time: 3 Hours **M.M. 40+10**

Unit-I

The Nature Meaning & Scope of Cultural Geography. Approaches to cultural geography. The contributions of Otto Schluter and Carl Sauer. Cultural Areas & Cultural Realms. Environment and Culture. Man as modifier of the earth.

Unit-II

The Nature Meaning & Scope of Social Geography. Social Geography in the realm of Social Sciences. Theories of Social Formation and Transformation: Functional Theory (T. Parsons); Conflict Theory (Marx); Critical Theory (Adorno). Social System: Structure and Processes; Caste, Religion and Language in India.

Unit-III

Folk Culture: Crisis and Transformation; Assimilation of Culture; Cultural Globalization and Segregation: Space and Power. Social Transformation and Change in India: Modernization and Sanskritization; Role of Rural – Urban Interaction; Problems of Social Transformation.

Suggested Readings:

Ahmad, Aijazuddin. 1999. Social Geography. Rawat Publication, New Delhi.

Anderson, Jon: Understanding Cultural Geography Places and Traces, London: Routledge, 2010.

Anderson, K. Domosh, M., Pile, S. & Thrift, N. (eds.): Handbook of Cultural Geography, London: Sage Publications, 2003.

Anderson, K. & Gale, F. (eds.): Cultural Geographies, 2 nd edition, Melbourne: Longman 1999.

Appadurai, A.: Modernity at Large: Cultural Dimensions of Globalisation, University of Minnesota Press, Minneapolis, 1996.

Bertolas, R. J.(1998): Cross-cultural environmental perception of wilderness. Professional Geographer, 50(1), pp 98-111.

Cosgrove, D. & Jackson, P. (1987): New directions in cultural geography. Area, 19(2), pp 95-101

Norton, W. and Walton-Roberts, M.: Cultural Geography: Environments, Landscapes, Identities, Inequalities. Ontario: Oxford University Press, 2014.

Price, M. & Lewis, M. (1993): The reinvention of cultural geography. Annals of the Association of American Geographers, 83 (1), pp1-17.

Shurmer-Smith, P (ed.). Doing Cultural Geography, Sage, New Delhi, 2003. Casino Jr., V.D.: Social Geography: A Critical Introduction, John Wiley & Sons, London, 2009.

Jones, E. and J. Eyles: An Introduction to Social Geography, Oxford Univ. Press, London, 1977.

Jones, Emrys (ed.): Readings in Social Geography, Oxford University Press, London, 1975.

Khare, R.S.: Cultural Diversity and Social Discontent, Sage India, New Delhi, Sage India, 1998.

Rao, M.S.A.: Urbanisation and Social Change, Orient Longmans, New Delhi, 1970.

Sareen, T.R. and S.R. (ed.): Castes and Tribes of India, Anmol, New Delhi, 1993. Singer, M. and B.S. Cohn (ed.): Structure and Change in Indian Society, Aldine, Chicago, 1968.

Course Title: (B) Geography of Health
Course Code: GCE 402 (B)

Time: 3 Hours **M.M. 40+10**

Unit I

Nature, scope and significance of Geography of Health; Development of this area; its distinction from Medical Science; Geographical factors affecting human health and diseases arising from them- Physical Factors (Relief, Climate, Soils, Vegetation), Social Factors (Population Density, Literacy, Social Customs, Poverty), Economic Factors (Food and Nutrition, Occupation, Standard of Living), Environmental Factors (Urbanization and Congestion; Water, Air and Noise Pollution, Solid Waste).

Unit II

Classification of Diseases- Genetic, Communicable and Non-Communicable; Occupational and Deficiency Diseases. WHO classification of diseases; Epidemiological transition. Pattern of World distribution of major diseases: Cholera, Malaria, Tuberculosis, Hepatitis, Leprosy, Cardiovascular, Cancer, AIDS.

Unit III

Deficiency disorders and problems of Malnutrition in India. Health Care Planning and Policies- Availability, Accessibility and Utilization of Health Care Services; Primary Health care; Inequalities in Health care Services in India; Family Welfare, Immunization, National Disease Eradication, and Health for All programmes.

Suggested Readings:

Cliff, A. and Haggett, P. (1989). Atlas of Disease Distribution. Basil Blackwell, Oxford.

Hazra, J., Ed. (1997). Health Care Planning in Developing Countries. University of Calcutta, Calcutta.

Learmonth, A.T.A. (1978). Patterns of Disease and Hunger: A Study in Medical Geography. David & Charles, Victoria.

May, J.M. (1959). Ecology of Human Disease. M.D. Pub., New York.

May, J.M. (1970).The World Atlas of Diseases. NBT, New Delhi.

Misra, R. P.(2007). Geography of Health. Concept, New Delhi.

Narayan, K.V. (1997). Health and Development- Inter-Sectoral Linkages in India. Rawat, Jaipur.

Philips, D.R. (1990). Health and Health Care in the Third World. Longman, London.

Pyle, G. (1979). Applied Medical Geography. Winston Halsted Press, Silver Springs, USA.

Rais, A. and Learmonth, A.T. A. Geographical Aspects of Health and Diseases in India.

Sharma, H. S.: Medical Geography

Stamp, L.D. (1964). The Geography of Life and Death. Cornell Univ., Ithaca.

Course Title: Rajasthan: (A) Physical Setting and Geographical Issues
Course Code: GEO 404 (A)

Time: 3 Hours **M.M. 40+10**

Unit I

Introduction: Geological structure and Physiographic Regions, Drainage Systems, Climatic Characteristics, Natural Vegetation and Soil.

Unit II

Distribution and use of minerals, fossil fuel resources, hydro power and renewable energy resources, agricultural crops, agro-climate regions, industries, population, economic activities, and urbanization

Unit III

Contemporary geographical issues: Desertification, Land degradation, spatial variations in levels of regional development, environmental degradation, impact of demographic transition, Climate Change: adaptation and mitigation

Suggested Readings:

Sharma, H. S. and Sharma, M L. Geography of Rajasthan.
Bhalla, L R. Geography of Rajasthan.
Mishra, V. C. Geography of Rajasthan. NBT

Course Title: (B) Regional Planning and Development
Course Code: GEO 404 (B)

Time: 3 Hours **M.M. 40+10**

Unit I

Regional Concept in Geography; Changing concept of Region; Merits and Limitations for application of regional concept to Regional Planning and Development; Concept and Need of Regional Planning; Types of Regions in the context of Planning; Regional Hierarchy; Special Purpose Regions- Metropolitan Regions, River Valley Regions; Problem Regions- Hilly Regions, Regions of Drought and Floods, Tribal Regions.

Unit II

Planning Process- Sectoral, Temporal and Spatial Dimensions; Short-Term and Long-Term perspectives of Planning. Concepts of Growth and Development; Indicators of Development and their Data Sources; Measuring Levels of Regional Development and Disparities- case study of India; Case studies for Plans of Developed and Developing countries; Regional Development Strategies- Concentration (Perroux, North, Myrdal, Hirschman, Friedmann) vs Dispersal (Agropolitan, Basic Needs, Export-Led, Import Substitution).

Unit III

Regional Plans of India; Concept of Multi-Level Planning: its need and characteristics, in reference to India; Decentralized Planning- characteristics and experience with respect to India; Peoples' Participation in the Planning Process; Administrative Structure and role of Panchayati Raj Institutions in Planning and Rural Development in India; Regional Development in India- Problems and Prospects.

Suggested Readings:

Agarwal, A.N. (1995): Indian Economy, Problems of Development and Planning, Vishwa Prakasan, New Delhi.

Blij, H. j. (1971). Geography Region and Concept. New York: Jhon and Wilay.

Boudeville,J.R.(1966): Problems of Regional Economic Planning, Edinburgh University Press, Edinburgh.

Chand.M, Puri.V.K, (1983): Regional Planning in India, Allied Publishers, New Delhi.

Chandrasekhara, C.S. and Sundaram. K.V (1968): Metropolitan Centres and Regions in India, 21st International Geographical Congress, Metropolitan Growth and Planning.

Chatterjee, B., & Sur, H. (1998). Regional Dimensions of the Indian Economy.
Calcutta: Allied Publishers limited.

Das, A. K. (2007). Urban Planning in India. New Delhi: Rawat Publication.

Dickinson.R.E, (1964): City, Region and Regionalism, A geographical Contribution to Human ecology Kegan Paul Ltd., London. utta,R. & K.P.M, Sundaram,(1997): Indian Economy, S.Chand and Cc.Ltd, New Delhi.

Freeman, T. (1974). Geography and Planning. London: Hutchinson University Library.

Gill,R.(1975):Economic Development :Past and Present, Prentice-Hall of India,New Delhi.

Glasson,J.(1975): An Introduction to Regional Planning, Hutchinson and Co.,London.

Gottman, J., & Harper, R. A. (1967). Metropolis on The Move. New York: John Willy & Sons.

Hall, P. (1974). Urban and Regional Planning. New Zealand: Penguin Books.

Hall, P. (2002). Urban and Regional Planning. New York: Rouledge.

Husain, M. (1994). Regional Geography. New Delhi: Anmol Publication Pvt.Ltd.

Jhonston, R., Haver, J., & Hoekveid, G. (1990). Regional Geography:Current Developments and Future Prospects. London and New York: Routledge Publishers.

Mandal, R. (1990). Patterns of Regional Geography :An InternationalPerspectives. New Delhi: Concept Publishing Company.

Mathew, G. (1986). Panchayati Raj in Karnataka Today:its National Dimention. New Delhi: Concept Publishing company.

Misra, R.P(1969): Regional Planning: Concepts, Techniques, Policies and Case Studies, Concept, New Delhi.

Misra. R.P,Sundaram.K.V & VLS Prakash Rao (1974): Regional Development Planning In India, A New Strategy, Vikas Publishing House Pvt.Ltd., New Delhi.

Misra, S.K, and Puri, V.K.(1997): Indian Economy, Himalaya Publishing House, Mumbai.

Mitra, A. (1965): Levels of Regional Development in India, Government of India

Course Title: Dissertation
Course Code: ESCC 405

M.M.-50

The student will select a topic of research in consultation with his/her supervisor/guide to do research work or carry out a case study on any topic related to earth sciences. The student shall prepare a report of his/her work carried out. The external examiner will evaluate the work carried out and shall award the marks accordingly.

Course Outcomes (COs)

CO1: Plan and engage in an independent investigation of a chosen research topic relevant to environment and society.

CO2: Systematically identify relevant concepts, methodologies, techniques and conclusions..

CO3: Able to do critical review.

CO 4: Communicate research concepts & contexts effectively both orally and in writing.

Suggested Readings:

Work on the Dissertation topic initiated in Semester III with seminar presentation is to be completed with report submission by the end of semester IV.

1. Bucchi, M. and B. Trench, editors. 2008. Handbook of Public Communication of Science and Technology. Routledge.
2. Bella Mody 2001 Designing Messages for Development Communication –An Audience participation-based approach. SAGE Publications.
3. Robert, A.D. and G. Barbara. 2006. How to Write and Publish a Scientific Paper, 6th Edition. Cambridge University Press.
4. Soraya, M.C. and A.S. Cynthia. 2001. Proposal Writing. Sage Publications.
5. Gregory, J. and S. Miller. 1998. Science in Public: Communication, Culture and Credibility. Plenum.
6. Holliman, R., et al., editors. 2009. Investigating Science Communication in the Information Age: Implications for Public Engagement and Popular Media. Oxford University Press.
7. Nelkin, D. 1995. Selling Science: How the Press Covers Science & Technology, 2nd Edition. WH Freeman.
8. Hoffmann, Angelika H. 2009. Scientific Writing and Communication: Papers, Proposals, and Presentations. Oxford.
9. Field, Anthony. 2003. How to Design and Report Experiments. Sage Publications.
10. Glass, David. 2006. Experimental Design for Biologists. Cold Spring Harbor Laboratory Press.
11. Underwood, A.J. 1997. Experiments in Ecology: Their Logical Design and Interpretation Using Analysis of Variance. Cambridge.

Practical

Time: 4 Hours **M.M. 80+20**

Surveying-Introduction, Importance and Types - Traverse Survey, Triangulation Survey, Tacheometric Survey. Dumpy Level survey. Abney Level, Indian Clinometer, Theodolite survey. Preparation of Map using Theodolite/ Electronic Digital Theodolite. Contouring. Preparation of Geomorphic Maps from Field Data.
Evaluation of Practical Notebook and Viva-Voce

Field Study Tour: Field study is a part of curricula in M.A./ M.Sc. IV Semester. The study tour is compulsory and to be conducted for a duration of two weeks. Study tour report submission is compulsory. The field works on one or two of the following: Regional survey, rural study, urban study, industrial study, and study of geomorphic features in India. The tour report must be done with the consultation of the staff in charge and must be submitted to the department at the time of the 4th semester practical examination. Viva voce based on study tour report would be conducted at the end.

Suggested Readings:

Elfic, M.H., Fryer, J.G. Brinkner, R.C. and Wolf, P.R. 1994: Elementary Surveying, 8th edition, Harper Collins Publishers, London.
Hussain, S.K. and Nagaraj, M.S. 1992: Text Book of Surveying, S. Chand & Co. Ltd., New Delhi.
Kanetkar, T.P. and Kulkarni, S. V. 1.988: Surveying and Levelling, Part I, Pune Vidyarthi Griha Prakashan, Pune.
Kochher, C.L. 1993 : A Text Book of Surveying, S.K. Katariya & Sons, Delhi: Briggs,K(1978): Field Work in Geography

Teaching Learning Process

- Lectures
- Discussions
- Simulations
- Role Playing
- Participative Learning
- Interactive Sessions
- Seminars
- Research-based Learning/Dissertation or Project Work
- Technology-embedded Learning

Blended Learning

Preparation of Time Series of Land cover Change maps of nearby regions/localities, field research report, Participation in seminars/conferences, celebration of events related to environment, Script/play on developmental initiatives/achievements and environmental issues, social responsibility and community participation.

Assessment and Evaluation

- Continuous Comprehensive Evaluation at regular intervals to find out each course-level learning outcome i.e. Assignment, Test, Quiz, Seminars.
- Formative Assessment on the basis of activities of a learner throughout the program instead of one-time assessment, followed by Internal Assessment.
- Individual Assignments i.e. Case Study, Practical Record, Dissertation.
- Seminar Presentation, Field/Excursion report writing

Distribution of Credit

Semester	**I**	**II**	**III**	**IV**	**Total**
Credit	25	25	25	25	100

Academic Year	**Semester**	**Core Compulsory**	**Core Elective**	**Open Elective**	**Foundation**
Credit Distribution	I and II	100%	-	-	Non-CGPA
	III and IV	60%	20%	20%	-

Evaluation (Calculation of Score)

Credits & Marks (Theory)
Course Credit = 5
Total Marks = 50

Credits & Marks (Practical)
Course Credit = 5
Total Marks = 100

Grading

Grade Points	Description	% of Marks	Division	Grade
10	Outstanding	90-100	First	O
9	Excellent	80-89	First	A+
8	Very Good	70-79	First	A
7	Good	60-69	First	B+
6	Above Average	50-59	Second	B
5	Average	40-49	Third	C
4	Pass	36-39	Pass	P
0	Fail	Below 36	Fail	F
0	Absent	-	-	Ab

Performance Evaluation (Calculation)

(i) Semester Grade Point Average (SGPA)

SGPA (Si) = Σ (Ci X Gi) / Σ Ci
Where Gi = Grade
Ci = Credit of Course

(ii) Cumulative Grade Point Average (CGPA)

CGPA = Sum of Credits X SGPA of Entire Program/ Sum of Credits up to the end of program

(iii) Conversion of CGPA into Percentage

Percentage % = 9.5 X CGPA (Adopted from CBSE pattern where 9.5 means that percentage should not greater than 95%)

OR

* Conversion of CGPA into Percentage is subject matter of examinations section of the university.

Key-Words

LOCF = Learning Outcome Course Frame work.
NEP 2020 = New Education Policy – 2020
CBCS = Choice Based Credit System
PO = Program Outcome
PSO = Program Specific Outcome
CCE = Comprehensive Continuous Evaluation

Reference

- https://www.education.gov.in/en/nep-new
- The draft subject specific LOCF templates available on UGC website. https://www.ugc.ac.in/ugc_notices.aspx?id=MjY5OQ==
- Draft Blended Mode of Teaching and Learning: Concept Note available on UGC website. https://www.ugc.ac.in/pdfnews/6100340_Concept-NoteBlended-Mode-of-Teaching-and-Learning.pdf

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