Maharaja Ganga Singh University, Bikaner

SYLLABUS

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

(Choice Based Credit System)

Session: - 2024-25 and 2025-26
(Semester III and Semester IV)

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

Semester III: Two Core Compulsory, One Core Elective and One Elective Open Theoretical Courses, Two Practical Courses and One Foundation Course

GFC-300	Geography Foundation Course	Basic Communication Skills or Basic Computer Course or Seminar + Academic Writing
GCC-301	Geography Core Compulsory	Geo-spatial Techniques
GCC-302	Geography Core Compulsory	Geography of India
GCE-303	Geography Core Elective	A. Geography of Eurasia or B. Geography of North and South America
GEO-304	Geography Elective Open	A. Agriculture Geography or

		B. Geography of Health
	Practical	
GPC-305	Geography Practical Compulsory	Practical (Combined Practical for GCC - 301 and GCC-302)
GPC-306	Geography Practical Compulsory	Practical (Combined Practical for GCC -303 and GCC-304)

Semester IV: Two Core Compulsory, One Core Elective and One Elective Open Theoretical Courses, Two Practical Courses and One Foundation Course

GFC-400	Geography Foundation Course	Environmental Health and Hygiene
GCC-401	Geography Core Compulsory	Settlement Geography
GCC-402	Geography Core Compulsory	Political Geography
GCE-403	Geography Core Elective	A. Social and Cultural Geography or B. Industrial Geography
GEO-404	Geography Elective Open	A. Geography of Rajasthan or B. Regional Planning and Development
	Practical	
GPC-405	Geography Practical Compulsory	Practical (Combined Practical for GCC - 401 and GCC-402)
GPC-406	Geography Practical Compulsory	Practical (Combined Practical for GCC -403 and GCC-404)
GCE-407	In lieu of paper GCE-403 or GEO-404	Dissertation

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 402
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 403 A	GCE 403 B	GEO403A	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-III									
Theory Papers									
GFC-300	Basic Communication Skills or Basic Computer Course or Seminar + Academic Writing	Foundation Course	1	1	-	2 (Non-CGPA)	-	-	S/NS
GCC-301	Geo-spatial Techniques	Core Compulsory	3	1	-	4	20	80	36 %
GCC-302	Geography of India	Core Compulsory	3	1	-	4	20	80	36 %
GCE-303	A. Geography of Eurasia or B. Geography of North and South America	Core Elective	3	1	-	4	20	80	36 %
GEO-304	A. Agriculture Geography or B. Geography of Health	Elective Open	3	1	-	4	20	80	36 %
Total Theory Marks							80	320	
							400		36% aggregate
Practical									
GPC-305	Practical (Combined Practical for GCC 301 and GCC-302)	Practical Compulsory	-	-	8	4	20	80	36 %
GPC-306	Practical (Combined Practical for GCC 303 and GCC-304)	Practical Compulsory	-	-	8	4	20	80	36 %
Total Credits						**24**	**Grand Total**	**600**	36% aggregate
Semester-IV									
Theory Papers									
GFC-400	Environmental Health and Hygiene	Foundation Course	1	1	-	2 (Non-CGPA)	-	-	S/NS
GCC-401	Settlement Geography	Core Compulsory	3	1	-	4	20	80	36 %
GCC-402	Political Geography	Core Compulsory	3	1	-	4	20	80	36 %
GCE-403	A. Social and Cultural Geography or	Core Elective	3	1	-	4	20	80	36 %

	B. Industrial Geography								
GEO-404	A. Geography of Rajasthan or B. Regional Planning and Development	Elective Open	3	1	-	4	20	80	36 %
GCE-407	Dissertation	In lieu of paper GCE-403/ GEO-404					100		36 %
Total Theory Marks							80	320	
							400		36% aggregate
Practical									
GPC-405	Practical (Combined Practical for GCC 401 and GCC-402)	Practical Compulsory	-	-	8	4	20	80	36 %
GPC-406	Practical (Combined Practical for GCC 403 and GCC-404)	Practical Compulsory	-	-	8	4	20	80	36 %
Total Credits						**24**	**Grand Total**	**600**	36% aggregate

- A candidate shall be required to obtain 36% marks to pass in theory, practical and internals separately.
- The marks of Internal Evaluation – 20 Marks theory paper, 20 Marks practical paper - should be given based on seminar/assignments/presentations/class tests/logical thinking/application of knowledge and skills, other activities etc. based on syllabus.

Scheme of Semester - End DCCT (Theory) Paper Examination

1. English/Hindi shall be the medium of instructions and examination.
2. There will be semester end examination.
3. Each Theory paper is of 100 Marks (4 Credits).
4. The evaluation scheme shall comprise external evaluation and internal evaluation. The internal evaluation will carry 20 marks while the Semester-end examination will carry 80 marks for each Theory paper.
5. The duration of the written examination for the theory paper shall be three hours.
6. A course will contain 5 units.
7. The question paper shall contain three sections.

Maximum Marks: 80 **Duration: 3 Hrs.**

Section A

(10 x 1 = 10 marks)

Section A (10 marks) shall contain 10 questions, two from each Unit. Each question shall be of 1 mark. All the questions are compulsory. Section A will be prepared such that questions (i) through (v) are multiple-choice questions, while questions (vi) through (x) will be fill-in-the-blank questions.

Section B

(5 x 5 = 25 marks)

Section B (25 marks) shall contain 5 questions (two from each unit with internal choice). Each question shall be of 5 marks. The candidate is required to answer all 5 questions. The answers should not exceed 150 words.

Section C

(3 x 15 = 45 marks)

Section C (45 marks) shall contain 5 questions, one from each Unit. Each question shall be of 15 marks. The candidate is required to answer any three questions by selecting these three questions from different units. The answers should not exceed 500 words.

Scheme of End Semester DCCP (Practical) Paper Examination

1. Each Practical Paper in Geography is combined practical for two theory papers; hence each Practical paper will carry 100 marks (4 Credits).
2. Evaluation scheme shall comprise external evaluation and internal evaluation. The internal evaluation will carry 20 marks while the end Semester examination will carry 80 marks for each Practical paper.
3. The duration of the practical examination shall be Eight hours.
4. Scheme: **8** periods per week (for each of the practical paper) per batch of **20** students.

M.A./M.Sc. Semester III

GFC-300	Basic Communication Skills or Basic Computer Course or Seminar + Academic Writing
GCC-301	Geo-spatial Techniques
GCC-302	Geography of India
GCE-303	A. Geography of Eurasia or B. Geography of North and South America
GEO-304	A. Agriculture Geography or B. Geography of Health
GPC-305	Practical (Combined Practical for GCC - 301 and GCC-302)
GPC-306	Practical (Combined Practical for GCE -303 and GEO-304)

Course Title: Geo-spatial Techniques
Course Code: GCC 301

Time: 3 Hours **M.M. 80+20**

Unit I

Fundamentals of Remote Sensing, EMR, Types of Bands, Resolution, Sensor, FCC, Characteristics of LANDSAT, LISS, SENTINAL, SRTM, MODIS, IKONOS, ASTER data sets.

Unit II

Digital image processing techniques: contrast enhancement, band rationing, spatial filtering, PCA, Vegetation Indices, Visual Image Interpretation, Unsupervised & Supervised Image Classification

Unit III

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 IV

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.

Unit V

Application of Remote sensing and GIS in Flood Hazard mapping and mitigation;

Flood Hazard mapping and mitigation, Landslide Hazard mapping and mitigation, Earthquake Hazard mapping and mitigation, Cyclone Hazard mapping and mitigation, Management of Surface water Resources, Management of Forests and Wild life resources

Suggested Readings:

Avery, T.E., and G.L. Berlin. Fundamentals of Remote Sensing and Air photo 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: Geography of India
Course Code: GCC- 302

Time: 3 Hours **M.M. 80+20**

Unit I

Topography, Geology, Climate, Drainage, Natural Vegetation, Soils.

Unit II

Distribution and use of minerals, fossil fuel resources, hydro power and renewable energy resources: Solar and Wind Energy.

Unit III

Distribution of major Agricultural crops: wheat, rice, tea, coffee, sugarcane, millets, pulses, cotton
Distribution and factors of localization of major industries: Iron and Steel, Aluminum, Cement, Petrochemical Refining, Chemicals.

Unit IV

Population distribution, density and growth, population problems and policies. Economic activities, Urbanization.

Unit IV

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

Suggested Readings:

Agarwal,A.N.1995:Indian Economy ,Problems of Development and Planning,Vishwa Prakasan ,New Delhi
Misra,S.K,and Puri,V.K. 1997: Indian Economy,Himalaya Publishing House, Mumbai
Adams, W.M. 1995: Green Development: Environmental Sustainability in the Third World, Rout1edge, London.
Dasgupta P, 1996: An enquiry into Wellbeing and distribution. Clarendon Press oxford
Gerald M. & Roucc J 2003: Leading Issues in Economic Development, OUP
Powar.M 2003: Rethinking Development Geographies, OUP
Chandra R.G., Tribal development in India : the contemporary debate, Sage New Delhi
Smith. K, Environmental hazards : assessing risk and reducing disaster, Routledge London
Desai Vasant, Forest management in India-issues and problems, Himalaya Publishing House Bombay
Swaminathan S(2007) : Agriculture cannot wait,Academic Foundation, New Delhi
Sharma .T.C.& Coutinho .O. (1989): Green revolution gaps,Rawat.

Course Title: Geography of Eurasia

Course Code: GCE 303 (A)

Time: 3 Hours **M.M. 80+20**

Unit I

Asia: landforms, climate, vegetation, soils.

Unit -II

Asia: population distribution, recourse use and economic activities, urbanization.

Unit III

Europe: landforms, climate, vegetation, soils.

Unit IV

Europe: population distribution, recourse use and economic activities, urbanization.

Unit V

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.

Xu, H. J., Wang, X. P., & Yang, T. B. (2017). Trend shifts in satellite-derived vegetation growth in Central Eurasia, 1982–2013. Science of the Total Environment, 579, 1658-1674.

Chytrý, K., Willner, W., Chytrý, M., Divíšek, J., & Dullinger, S. (2022). Central European forest–steppe: An ecosystem shaped by climate, topography and disturbances. Journal of Biogeography, 49(6), 1006-1020.

Srymbetov, T., Jetybayeva, A., Dikhanbayeva, D., & Rojas-Solórzano, L. (2023, February). Mapping non-conventional atmospheric drinking-water harvesting opportunities in Central Eurasia: The case of Kazakhstan. In Natural Resources Forum (Vol. 47, No. 1, pp. 87-113). Oxford, UK: Blackwell Publishing Ltd.

J. Biersack, and S. O'Lear, "The Geopolitics of Russia's Annexation of Crimea: Narratives, Identity, Silences, and Energy," Eurasian Geography and Economics 55, no. 3 (May 2014): 247-69.

G. Ioffe and Z. Zayonchkovskaya, "Immigration to Russia: Inevitability and Prospective Inflows," Eurasian Geography and Economics 51, no. 1 (Jan-Feb 2010): 104-25.

Course Title: Geography of North and South America

Course Code: GCE 303 (B)

Time: 3 Hours **M.M. 80+20**

Unit I

North America: landforms, climate, vegetation, soils,

Unit II

North America: population distribution, recourse use and economic activities, urbanization

Unit III

South America: landforms, climate, vegetation, soils,

Unit IV

South America: population distribution, recourse use and economic activities, urbanization

Unit V

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.
Hardwick, Susan W., Fred M. Shelley, and Donald G. Holtgrieve. 2013. The Geography of North America: Environment, Culture, Economy. 2nd edition: Pearson, Boston, MA.
Woodard, Colin. 2011. American Nations: A History of the Eleven Rival Regional Cultures of North America.: Penguin Books, New York.
Birdsall et al., 2009. Regional Landscapes of the United States and Canada 7th Edition.: John Wiley and Sons, New York.

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

Time: 3 Hours **M.M. 80+20**

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.

Unit-III

Models in agricultural land use: concept, need and principles; Von Thuenen's Agricultural Location Theory and its recent modification. Measurement of levels of agricultural development: concept and methodology.

Unit IV

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.

Unit V

Applied Agriculture Geography: Land classification- need and basis of classification British, American, Indian, Irish patterns, Land use data- sources, types of mapping and problems.

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: Geography of Health
Course Code: GEO 304 (B)

Time: 3 Hours **M.M. 80+20**

Unit I

Nature, scope and significance of Geography of Health; its development and distinction from Medical Science. Physical factors affecting human health and diseases- Topography/Relief, Climate: Temperature and Humidity, Groundwater Quality, Soils, Vegetation

Unit II

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 III

Classification of Diseases- Genetic, Communicable and Non-Communicable; Occupational and Deficiency Diseases. WHO classification of diseases; Deficiency disorders and problems of Malnutrition in India.

Unit IV

Pattern of World distribution of major diseases; Ecology, Etiology and Transmission of major diseases: Cholera, Malaria, Tuberculosis, Hepatitis, Cardiovascular, Cancer, AIDS and SARS – CoV (Corona).

Unit V

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

Suggested Readings:

Aikat, B.K. (1985): Tropical diseases in India, Arnold Meinemann, Delhi, 1st Edition

Akhtar Rais (1990): Environmental population and health problems, Ashish Publishers Home, New Delhi.

Ansari, S.H. (2005): "Spatial Organization of health care facilities in Haryana" NGJI, Vol 51, PP 3-4, 51- 61.

Chakrabarti, N. (1954): "Some factors influencing the mortality of cholera. Calcutta," Medical Journal, Vol. 51.

Determinants of Health (1995): A New Synthesis. John Frank. Current Issues inPublic Health, 1:233240.

Egles, J. and Woods, K.J. (1983): The Social Geography of Medicine and Health, Groom Helm London, 1st addition.

K. Chaubey, "Epidemic of HIV/AIDS in India: A Study in Medical Geography. "Annals of NAGI, Vol. XXV No.1, 2005 pp 28-33.

Learmonth, A.T.A. (1985): Diseases in India, Concept Pub. Company, New Delhi,1st Edition.

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

Robert G. Evans, Morris Barer, and Theodore Marmor. (1994): "Why are Some People Healthy and Others Not? The Determinants of the Health of Populations". Aldine Transaction, USA.

Shafi, M. (1967): "Food Production, efficiency and Nutrition in India." The Geographer, Vol. pp. 23-27.

Siddiqui, M.F. (1971): "Concentration of Deficiency Diseases in Uttar Pradesh. The Geographer, Vol. 18 Pp 90-98.

Singhai, G.C. (2006): Medical Geography, Vasundhra Publication, Gorakhpur, 2006. Wilkinson R G. (1996): "Unhealthy Societies: The Afflictions of Inequality", Routledge, London

Course Title: Practical (Combined Practical for GCC-301 and GCC-302)
Course Code: GPC – 305

Distribution of marks:	**Marks**
1. Lab work/ Written work: 4 hrs duration	40
2. Record work & viva- voce: 1 hr duration	10 +5 =15
3. Field Visit & viva-voce: 1 hr duration	08 +2 =10
4. Field Survey & viva-voce: 2 hr duration	10 + 5= 15
5. Internal Evaluation	20
Total	100

Note: The candidate is required to answer/attend any 4 exercises (10 marks each) out of 6 exercises during Lab Work/ Written work and 20 candidates shall be examined in one batch.

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. Stereoscopy.

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.

A one-day field visit will be conducted for GNSS survey and location mapping to demonstrate the use of GNSS technology in spatial data collection. A report based on the activity is to be submitted by each student.

Surveying Instrument - Working Principal and Uses: GPS/ GNSS.

Course Title: Practical (Combined Practical for GCE-303 and GOE-304)
Course Code: GPC – 306

Distribution of marks:	**Marks**
1. Lab work/ Written work: 4 hrs duration	40
2. Record work & viva- voce: 1 hr duration	10 +5 =15
3. Field Visit & viva-voce: 1 hr duration	08 +2 =10
4. Field Survey & viva-voce: 2 hr duration	10 + 5= 15
5. Internal Evaluation	20
Total	100

Note: The candidate is required to answer/attend any 4 exercises (10 marks each) out of 6 exercises during Lab Work/ Written work and 20 candidates shall be examined in one batch.

Distribution maps: qualitative and quantitative.
Representation of geographical data using diagrams: Divided rectangles and circles for land use and crop pattern;
Choropleth for: industrial workers per square km.; length of roads per square km; number of buses per day
Statistical Methods in Geography- Kendall's Ranking Method, Weaver crop combination method.
Chorochromatic map, Isochrones maps.
Cartograms: equal cost distance cartograms, value area cartograms, traffic flow cartograms.
Annual water deficiency and surplus graph.

Trilinear Chart. Semi log and log graph
Agricultural or Health survey in the local area and preparation of report.

Surveying Instrument - Working Principal and Uses: Indian Clinometer, Abney Level.

Suggested Readings:

Barry Kavanagh and Frank W. G. T. Bailey "Surveying for Construction"
Charles D. Ghilani and Paul R. Wolf "Elementary Surveying: An Introduction to Geomatics" Basak N. N. "Surveying and Levelling"
Charles L. Cheetham "Introduction to Geodetic Surveying"
Chauhan, P. R. "Practical Geography" Wasundhara Prakasan Gorakhpur.
David M. Clark "Engineering Surveying"
Dickinson, G.C.: Statistical mapping of statistics, London
Dorling, D. and Fairbirn, D. 1997: Mapping Ways of Representing the World, Longman. England.
Kanetkar, T.P. "and Kalkarni, S.V. Surveying and Leveling" part 1, Page 355
Kellaway, G. P. 1970: Map Projections, Methun and Co. Ltd., London.
Khan, Z A: Text book of Practical Geography, Concept, New Delhi, 1998.
Lawrence, GRP: Cartographic Methods, London, 1971.
Maceachren, A. M. and Taylor, D. R. F. 1994: Visualization in Modern Cartography, Permamon. UK.
Monkhouse F.J. and Wilkinson, H.R. 1971: Maps and Diagrams: Their Compilation and Construction, B.I. Publications Private Limited, New Delhi.
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.
Singh LR. & Singh R. Mapwork and Practical Geog. p. 154

M.A./M.Sc. Semester IV

GFC-400	Environmental Health and Hygiene
GCC-401	Settlement Geography
GCC-402	Political Geography
GCE-403	A. Social and Cultural Geography or B. Industrial Geography
GEO-404	A. Geography of Rajasthan or B. Regional Planning and Development

GPC-405	Practical (Combined Practical for GCC-401 and GCC-402)
GPC-406	Practical (Combined Practical for GCE-403 and GEO-404)
GCE-407	Dissertation

Course Title: Settlement Geography
Course Code: GCC 401

Time: 3 Hours **M.M. 80+20**

Unit I

Definition, scope, and development of settlement geography. Settlement types, their characteristics, and differences. Factors influencing origin, growth, and distribution of settlements.

Unit-II

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-III

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-IV

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. Problems of Urbanization. Smart city: Concept, need and implementation in India.

Unit – V

Rural Settlements- Definition, Nature & Characteristics of Rural Settlements; Morphology of Rural Settlements- Site, Situation & Types; Layout- Internal and External; Rural House types & Building Material with respect to 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. 80+20**

Unit I

Nature, Scope and recent developments in Political Geography; Approaches to Study; Major Schools of Thought; Classical Geopolitics and Critical Geopolitics;

Unit -II

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 III

Colonialism, Decolonization, Neocolonialism; Geopolitical World Order- Origin and Cessation of Cold War; Global Strategic Views; Globalisation and the crisis of the Territorial State.

Unit IV

Geopolitical significance of Indian Ocean; Political Geography of West Asia.

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

Unit V

Electoral Geography; Locality; Gerrymandering; Trends in Federal and State Elections in India Since 1990

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

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

Time: 3 Hours **M.M. 80+20**

Unit-I

The Nature Meaning & Scope of Cultural Geography. Approaches in cultural geography. The contribution of Otto Schluter and Carl Sauer. Cultural Areas & Cultural Realm. 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)

Unit III

Classification and distribution of Religious and linguistic groups in India. Concept, spatial distribution and problems of Scheduled Caste and Scheduled Tribe Groups in India.

Unit-IV

Folk Culture: Crisis and Transformation; Assimilation of Culture Cultural Globalization and Segregation: Space and Power

Unit V

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.
Singh, K.S.: Tribal Situation in India, Indian Institute of Advanced Studies, Shimla, 1972

Course Title: Industrial Geography
Course Code: GCE 403 (B)

Time: 3 Hours **M.M. 80+20**

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.

Unit-II

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.

Unit-III

Distribution, recent trends, problems, and prospects: Iron & steel industry, Aluminium industry, cotton textile industry, automobile, pulp & paper, cement industry and petro chemical industry.

Unit IV

Important industrial regions of the world. Case study of the following regions: (i) The Ruhr basin industrial region. (ii) The Great Lakes industrial region. (iii) The Guangdong industrial region (iv) The Mumbai Pune industrial region. (v) The Chotanagpur industrial region. (v) Industrial centres of Rajasthan: Bhiwadi, Bhilwara, Jaipur.

Unit V

New trends in industrial geography. 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.

Course Title: Geography of Rajasthan
Course Code: GEO 404 (A)

Time: 3 Hours **M.M. 80+20**

Unit I

Landforms, Geology, Climate, Drainage, Natural Vegetation, Soils

Unit II

Distribution and use of minerals, fossil fuel resources, hydro power and renewable energy resources,

Unit III

Spatial variations in Distribution of: agricultural crops, industries, population, economic activities, and urbanization

Unit IV

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

Unit V

Assessment of Regional and Urban Development Initiatives in Rajasthan: Indira Gandhi Nahar Pariyojana; Chambal Project; Aravalli Hill Development Project; Urban Development: Jaipur Development Authority and Bikaner Development Authority

Suggested Readings:

Despande C. D. (1992): India-A Regional Inter-Pretation ICSSR, Northern Book Centre, New Delhi.

Singh R. L.(ed.) (1971): India-A Regional Geography, National Geographical Society, India, Varanasi.

Kundu A., Raza Moonis (1982): Indian Economy: The Regional Dimension, Spectrum Publishers, New Delhi.

Mamoria, C. B.: Advanced Geography of India.

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

Time: 3 Hours **M.M. 80+20**

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.

Unit II

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 III

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;

Unit IV

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 V

Regional Plans of India; Concept of Multi-Level Planning: its need and characteristics in India; Decentralized Planning in India; Peoples' Participation in the Planning Process; Administrative Structure and role of Panchayati Raj; 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: Practical (Combined Practical for GCC-401 and GCC-402)
Course Code: GPC – 405

Distribution of marks:	**Marks**
1. Lab work/ Written work: 4 hrs duration	40
2. Record work & viva- voce: 1 hr duration	10 +5 =15
3. Field Visit & viva-voce: 1 hr duration	08 +2 =10
4. Field Survey & viva-voce: 2 hr duration	10 + 5= 15
5. Internal Evaluation	20
Total	100

Note: The candidate is required to answer/attempt any 4 exercises (10 marks each) out of 6 exercises during Lab Work/ Written work and 20 candidates shall be examined in one batch.

Population potential surface map. Scatter diagram. Nearest Neighbour Analysis of settlement distribution. Calculation of Human development index, Poverty index, Gender related development index.
Measures of Urbanization: Choropleth map of Degree of urbanization; Choropleth map of Urban-Rural ratio; Graphical Representation of Tempo of Urbanization.
Transport network indices.
Preparation of Thematic maps using conventional and GIS tools.
Centrality measures of settlements. Econograph (star diagram of controls of settlement)

Housing survey or Industrial field visit in the local area and preparation of report.

Surveying Instrument - Working Principal and Uses: Dumpy level/ Automatic level

Course Title: Practical (Combined Practical for GCE-403 and GOE-404)
Course Code: GPC – 406

Distribution of marks:	**Marks**
1. Record work & viva- voce: 2 hr duration	15 +5 = 20
2. Field Visit & viva-voce: 2 hr duration	30 +10 = 40
3. Field Survey & viva-voce: 4 hr duration	15 + 5= 20
4. Internal Evaluation	20
Total	100

Surveying-Introduction, Importance and Types - Traverse Survey, Triangulation Survey, Tacheometric Survey.
Surveying Instrument - Working Principal and Uses: Theodolite.
Preparation of Map using Theodolite/ Electronic Digital Theodolite.
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 to be conducted for a duration of at least one week. Submission of study tour report with suitable maps and diagrams is compulsory. Comprehensive Geographical/topographical survey of settlement will be done. 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:
Barry Kavanagh and Frank W. G. T. Bailey “Surveying for Construction”

Charles D. Ghilani and Paul R. Wolf “Elementary Surveying: An Introduction to Geomatics” Basak N. N. “Surveying and Levelling”
Charles L. Cheetham “Introduction to Geodetic Surveying”
Chauhan, P. R. “Practical Geography” Wasundhara Prakasan Gorakhpur.
David M. Clark “Engineering Surveying”
Dickinson, G.C.: Statistical mapping of statistics, London
Dorling, D. and Fairbirn, D. 1997: Mapping Ways of Representing the World, Longman. England.
Kanetkar, T.P. "and Kalkarni, S.V. Surveying and Leveling" part 1, Page 355
Kellaway, G. P. 1970: Map Projections, Methun and Co. Ltd., London.
Khan, Z A: Text book of Practical Geography, Concept, New Delhi, 1998.
Lawrence, GRP: Cartographic Methods, London, 1971.
Maceachren, A. M. and Taylor, D. R. F. 1994: Visualization in Modern Cartography, Permamon. UK.
Monkhouse F.J. and Wilkinson, H.R. 1971: Maps and Diagrams: Their Compilation and Construction, B.I. Publications Private Limited, New Delhi.
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.
Singh LR. & Singh R. Mapwork and Practical Geog. p. 154