SYLLABUS

M.A./M.Sc. Geography

02 Years Semester

(Effective from academic session 2012-13)

Department of Geography

School of Earth Science

H.N.B. Garhwal University Srinagar, Garhwal

(A Central University)

SYLLABUS

M.A./M.Sc. GEOGRAPHY (Effective from 2012-13 Session)

I[st] Semester

Code	Paper No.	Title of Course/ Paper	Marks		
			Internal Assignment	End Semester Exam	Credit
SOES/GEG/C001	I	Geographic Thought	40	60	03
SOES/GEG/C002	II	Advance Geomorphology	40	60	03
SOES/GEG/C003	III	Geography of Natural Resources	40	60	03
SOES/GEG/C004	IV	Geography of India	40	60	03
SOES/GEG/C005	V	India-Locational Aspects (Map)	40	60	03
SOES/GEG/C006	VI	Practical I - Cartography	40	60	03
		Total	240	360	18

II[nd] Semester

Code	Paper No.	Title of Course/ Paper	Marks		
			Internal Assignment	End Semester Exam	Credit
SOES/GEG/C007	VII	Geography of Himalaya	40	60	03
SOES/GEG/C008	VIII	Advance Climatology	40	60	03
SOES/GEG/C009	IX	Environmental Study	40	60	03
SOES/GEG/C010	X	Remote Sensing & GIS	40	60	03
SOES/GEG/C011	XI	World Locational Aspects Map (excluding India)	40	60	03
SOES/GEG/C012	XII	Practical II – Remote Sensing, GIS & Field Work	40	60	03
		Total	240	360	18
Self Study Course					
SOES/GEG/SS01	I	Social Geography (Qualifying)	40	60	03

III[rd] Semester

Code	Paper No.	Title of Course/ Paper	Marks		
			Internal Assignment	End Semester Exam	Credit
SOES/GEG/C013	XIII	Research Methodology and techniques	40	60	03
SOES/GEG/C014	XIV	Model & Theory in Human Geography	40	60	03
SOES/GEG/C015	XV	Practical III – Quantitative Techniques and Mapping	40	60	03
		Total	120	180	09
Elective		Any Three of the following elective (optional) course			
SOES/GEG/C001	XV (a)	Bio Geography	40	60	03
SOES/GEG/C002	XV (b)	Geo-Hydrology	40	60	03
SOES/GEG/C003	XV (c)	Natural Hazards & Disaster Management	40	60	03
SOES/GEG/C004	XV (d)	Urban Geography	40	60	03
SOES/GEG/C005	XV (e)	Political Geography	40	60	03
SOES/GEG/C006	XV (f)	Cultural Geography	40	60	03
SOES/GEG/C007	XV (g)	Geography of Soil and Land Use	40	60	03
SOES/GEG/C008	XV (h)	Geographical Information Science	40	60	03
		Total	120	180	09
Self Study Course					
SOES/GEG/SS02	II	Assignment based Seminar (Qualifying)	40	60	03

IVth Semester

Code	Paper No.	Title of Course/ Paper	Marks		
			Internal Assignment	End Semester Exam	Credit
SOES/GEG/C016	XVII	Uttarakhand – A Regional Analysis	40	60	03
SOES/GEG/C017	XVIII	Dissertation	40	60	03
SOES/GEG/C018	XIX	Practical IV – Surveying and Weather Analysis	40	60	03
		Total	120	180	09
Elective		Any Three of the following elective (optional) Papers			
SOES/GEG/C009	XX (a)	Human Ecology & Sustainable Development	40	60	03
SOES/GEG/C010	XX (b)	Regional Planning & Development	40	60	03
SOES/GEG/C011	XX (c)	Oceanography	40	60	03
SOES/GEG/C012	XX (d)	Population Geography	40	60	03
SOES/GEG/C013	XX (e)	Geography of Rural Settlements & Central Places	40	60	03
SOES/GEG/C014	XX (f)	Agriculture Geography	40	60	03
SOES/GEG/C015	XX (g)	Glacial Geomorphology	40	60	03
SOES/GEG/C016	XX (h)	Geography of Tourism and Recreation	40	60	03
		Total	120	180	09
Self Study Course					
SOES/GEG/SS03	III	Medical Geography (Qualifying)	40	60	03

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Head of Deptt. Geography
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M.A./M.Sc. of Geography 02 Years Semester
Guidelines for continuous internal assessment for post graduate courses of Geography Semester System

Only those candidates who had offered Geography as one of the optional subject in B.A./ B.Sc. III level may be admitted to M.A./M.Sc. Geography course. No private is allowed. Candidate must pass in theory and practical examinations separately.
Effective from the Ist semester admission for the academic session 2012-13 and onward.

1. Two sessional tests of continuous internal assessment 40%
2. End semester (Terminal) Exams 60%

- Continuous internal assessment may include objective tests, written test, snap test, assignment, paper presentation, participation in class discussion and laboratory work etc.; suitable to the course paper presentation should be given priority and presentation must be one of the important method of internal assessment.
- Weightage of 2 marks for attendance component out of 40 marks for continuous assessment shall be available only to those student who attend 75% and more of classroom theory and practical.

(i) 76% attendance and above upto 85% : 2 marks
(ii) Above 85% : 3 marks

- There will be six core (compulsory) papers including practical in I semester and same pattern in II semester.
- There will be three core (compulsory) including practical and three elective (out of the offered elective papers) in III semester and same pattern in IV semester.
- For all courses/paper core and elective the credits will be three for each. End semester exam will be 02 hours duration.
- One qualifying self study courses of minimum 03 credits is mandatory but not to be include in the grades. Maximum 03 self study courses are allowed. This study can be taken up in II or IV semester. This paper should be inter disciplinary in nature.

Ist Semester

Code	Paper No.	Title of Course/ Paper	Marks		
			Internal Assignment	End Semester Exam	Credit
SOES/GEG/C001	I	Geographic Thought	40	60	03
SOES/GEG/C002	II	Advance Geomorphology	40	60	03
SOES/GEG/C003	III	Geography of Natural Resources	40	60	03
SOES/GEG/C004	IV	Geography of India	40	60	03
SOES/GEG/C005	V	India-Locational Aspects (Map)	40	60	03
SOES/GEG/C006	VI	Practical I - Cartography	40	60	03
		Total	240	360	18

SOES/GEG/C001 GEOGRAPHICAL THOUGHT

Paper I

Time: 2 Hrs Internal Assessment : 40 Marks

End Semester Exam : 60 Marks

Note: The paper consists of four units. Two questions will be set from each unit. The candidate will be required to attempt 04 questions in all. Answer should be precise. All questions carry equal marks.

UNIT I

Contribution of Greeks and Romans with special reference to Ptolemy and Strabo, Geography and Arab World, Geography as a Science of: (i) Location (ii) Distribution (iii) Areal Differentiation (iv) Relationship (v) Special Organization and (vi) Religion.

UNIT II

German School of Geography – Humboldt, Ritter and Retzel

French School of Geography – Blache & Brunches

American School of Geography – Sauer & Huntington

British School of Geography – Mackinder & Herbertson

Unit III

Models and Paradigm, System Theory, Phenomenological approach, Dualism between: (i) Physical and Human Geography (ii) Regional and Systematic Geography; Quantitative Revolution.

UNIT IV

Positivism, Pragmatism, Functionalism, Idealism, Existentialism, Behavioural, Radical and Humanistic Geography, Future of Geography and Contribution of Indian Geographer.

Book Recommended:

1. Haggett, P.: Geography – A Modern Synthesis.
2. Chorley, R.J. and Hagget, P.: Model in Geography.
3. Johnston, R.J. and Claval, P.: Geography since the Second World War. An International Survey, Crown Halm, Sydney, 1984.
4. Johnston, R.J.: The Future of Geography, Methuen, London, 1988.
5. Adhkarl, S.: Fundamentals of Geographical Thought, Chaitanya Publishing House, Allahabad, 2006.
6. Bunkse. V.E.: Geography and the Art of Life, John Hopkins University Press, Baltimore, 2004.
7. Marcus, D.: Post-Structuralism in Geography, The Diabolical Arts of Spatial Sciences Edinburgh University Press, Edinburgh, 1999.
8. Galle, G. and Wilmot, C. (ed.): Geography in America at the Down of the 21st Century, Oxford University Press, Oxford and New York 2003.

9. Hubbard, P., at al: Space, Theory and Contemporary Human Geography, Continuum, London, 2002.
10. Majid Hussain: Geography Thought (2007).
11. Dixit, R.D.: Geographical Thought: A Critical History of Ideas, Prentice Hall of India, New Delhi, 2001.
12. Dixit, R.D.: Bhaugolic Chintan, Prentice Hall of India, New Delhi, 2001.

SOES/GEG/C002 ADVANCE GEOMORPHOLOGY

Paper II

Time: 2 Hrs Internal Assessment : 40 Marks

End Semester Exam : 60 Marks

Note: The paper consists of four units. Two questions will be set from each unit. The candidate will be required to attempt 04 questions in all. Answer should be precise. All questions carry equal marks.

UNIT I

Fundamental concepts of Geomorphology; methods and approaches of landforms study, Theories of landscape development by Gilbert, Davis, penk and hack and morphogenetic region.

UNIT II

Plate tectonics, Mountain building, isostasy, tectonic Geomorphology, Theories of slope development by young and king, peneplain and pediplains, geological structure and rocks.

UNIT III

Geomorphic process – River, glacier air, underground water and coastal, mass movement and resultant landforms, morphometry of drainage basin, profile of equilibrium rejuvenation and polycyclic landscape.

UNIT IV

Applied Geomorphology engineering works, Anthropogenic process and landscape planning, Regional Geomorphology of Malwa plateau, Ganga plain, Nepal and Konkan region.

Books Recommended:

1. Bloom, A.L.: Geomorphology, Prentice Hall, New Jersey USA, 1979.
2. Goudie, A.: Geomorphological Techniques, George Allen and Unwin, London, 1981.
3. Washborn, A.L.: Periglacial Process and Environment, Edward Arnold, London, 1973.
4. Young, A.: Slopes, Oliver and Boyd, London, 1972.
5. King, C.A.M.: Techniques in Geomorphology, Edward Arnold, London, 1968.
6. Embleton, C. and Theories, J.: Processes in Geomorphology, Arnold Hienman, London, 1979.

7. Phodes, D.D. and William, G.P.: Adjustment of Fluvial Process, George Allen and Unwin, Boston, 1982.
8. Tricart, L. and Callam: Introduction to climate Geomorpholgy, Longman, London, 1972.
9. Derbyshrine, E. Gregory K.J. and Halls, J.R.: Geomorphological Processes, Butterworths, London, 1979.
10. Gregory, K.J. and Willing, D.E.: Drainage Basin Processes and Forms, Edward Arnold, London, 1973.
11. Gregory, K.J. and Willing, D.E.: Man and Environment Processes, Butter Worths, London, 1981.

SOES/GEG/C003 GEOGRAPHY OF NATURAL RESOURCES

Paper III

Time: 2 Hrs Internal Assessment : 40 Marks

End Semester Exam : 60 Marks

Note: The paper consists of four units. Two questions will be set from each unit. The candidate will be required to attempt 04 questions in all. Answer should be precise. All questions carry equal marks.

UNIT I

Concept of Natural Resources, Classification, Dynamic Theory of Resources, Resources Scarcity and adequacy, Resources Regionalization, Economic development and resources.

UNIT II

Land, Water, Mineral, Energy and Biotic Resources Distribution, Use-misuse and conservation- global and Indian Scenario.

UNIT III

Resources appraisal, resources depletion and emerging issues like desertification, deforestation, loss of bio-diversity, energy crises, water scarcity and conflicts.

UNIT IV

Natural resource data management system, sustainable development and conservation of resources, integrated resource development, Globalization and resources, community participation and governance and contemporary issues.

Books Recommended:

1. Holechek. J.L. et al: Natural Resources- Ecology, Economics and Policy, Prentice Hall, New Jersey, 2000.

2. Kates, R.W. and Burton, I. (ed): Geography, Resources and Environment, Vol, II, University of Chicago Press, Chicago, 1986.
3. Mc Laren, D.J. and Sklnnet, B.J. (ed): Resources and World Development, Jogn Wiley and Sons, New York, 1986.
4. Newson, M.D.: Land, Water and Development, River Basin System and Management, Routledge, London, 1991.
5. Owen, S. and Owen, P.L.: Environment Resources and Conservation, Cambdridge University Press, New York, 1991.
6. Rees, J.: Natural Resources, Allocation, Economics and Policy, Methuen, London, 1988.
7. Redcliff, M.: Sustainable Development, Exploring the Contraction, Methuen, London, 1987.
8. Simmons, I.G.: Earth, Air and Water Resources and Environment in Late 20th Century, Edward, Arnold, 1991.
9. Thomas, Alan, et al: Environmental Policies and NGO Influence, Routledge, London, 1985.
10. Mather, A.S. and Chapman, K.: Environmental Resources, Longman Scientific and Technical, London, 1995.
11. Harper, C.L.: Environment and Society Human Perspectives on Environment Issues, Prentice Hall, New Jersey.
12. Burton, I. and Kates, R.W. (ed): Readings in Resource Management and Conservation, 1965.
13. Allen, S.W. and Leonard, J.W.: Conserving Natural Resources, Mc Graw Hill, New York.
14. Smith, G.H. (ed): Conservation of Natural Resources, John Wiley, New York.

SOES/GEG/C004 GEOGRAPHY OF INDIA

Paper IV

Time: 2 Hrs

Internal Assessment : 40 Marks

End Semester Exam : 60 Marks

Note: The paper consists of four units. Two questions will be set from each unit. The candidate will be required to answer one question from each unit. The candidate will be required to attempt 04 questions in all. Answer should be precise. All questions carry equal marks.

UNIT I

Indian federalism, India unity in diversity (view points from social geography), physiography, Drainage (volume), Climate mechanism of Indian monsoon (recent theories), soil and natural vegetation.

UNIT II

Human development index and its components, Growth and distribution and density of population, Trends of Urbanization special distribution pattern of satellites (rural & urban).

UNIT III

Agro-climate region, Rainbow revolution, Industrial Complex and Industrial regions, Major river valley projects, energy crises and food security.

UNIT IV

Growing importance of ports, last two five years plans, experience of Rural Planning, Integrated R.D.P., Multi level planning, Community participation & governance and planning contemporary issues and Economic reforms – Multinationals and liberalization.

Books Recommended:

1. Mishra, R.P. et al: Regional Development Planning in India, Vikas Publishers, New Delhi, 1978.
2. Mishra, R.P. (ed): Local Level Planning and Development, Sterling Publication New Delhi.
3. Diamond, D. (ed): Regional Disparities and Regional Policies, Program Press, Oxford, 1982.
4. Subrahmayam, K.N. (ed): Economic Development and Planning in India, Pub. New Delhi, 1985.
5. Sundaram, K.V., Mishra, R.P. and Rao, V.L.S.P.: Spatial Planning for a Tribal Region, inst. Of Development Studies, Mysore, 1971.
6. Regional Science Association: Regional Planning in India, IIT, Kharagpur, 1995.
7. Prasad, K.V.: Planning at the Grass Roots, Sterling Pub, Pvt. Ltd, New Delhi.
8. Chand, Mahesh and Puri, V.K.: Regional Planning in India, Allied, New Delhi, 1983.
9. Chandna, R.C.: Regional Planning: A comprehensive Text, Kalyani Publication, New Delhi.
10. Tiwari, R.C.: Geography of India, Prayag Pushtak Bhawan, Allahabad, 2008.
11. Tiwari, R.C.: Bharat ka Bhoogal, Prayag Pushtak Bhawan, Allahabad, 2008.
12. Mishra, R.P.: Regional Planning and National Development, Vikas Publications, New Delhi.

SOES/GEG/C005 INDIA – LOCATIONAL ASPECTS (MAP)

Paper V

Time: 2 Hrs Internal Assessment : 40 Marks

End Semester Exam : 60 Marks

Objective: The paper is designed to acquaint the students with the importance of location as one of the important aspects of geographical studies. The aim to promote awareness among students about Atlas.

There will be two parts of this course:

(A) An outline map of India will be providing to the students and they will have to mark locations on it. 15 locations will be given and 01 mark for each correct location.

(B) An outline map of India with indicated location of features in the numerals will be provided. Students will identify the location features. 15 locations features will be given for identification and 01 mark to each correct identification.

Students will provide write up (for both A and B part) on the significant geographical relevance and importance of the locations (marked and identified), whether physical, economic, cultural, ecological, environmental and commercial etc. in 30 words on each. 01 mark is allotted for each write-up.

Distribution of Marks:

(A) Locations	15 Marks
Write up in 30 words	15 Marks
(B) Identification of Locations	15 Marks
Write up in 30 words	15 Marks

Course Contents:

Physical – Mountain and ranges, river, forest, soil, lakes and natural regions.

Cultural – State and Capitals, Important Cities, Population, Rural-Urban, Tribal Areas, Planning Region.

Economic – Agricultural region/belts, Industrial region and complexes, Power plants, Hydro power projects, important industries, important ports and transport routes, important resources.

Others – Bio-diversity, National Parks, Environment, Ecology and contemporary issues.

Note: Examiner (Paper Setter) should select location and identified locations from all aspects of course and covering the entire map distributed all across. Repetition of location of same nature and character should be avoided.

Examiner will provide key of both A and B part. Map provided to the student should be of same scale/size on which key is prepared. For part A a blank map should be attached with the question paper. For part B numerically identified map to be enclosed with question paper. For evaluation of this paper, key is of utmost importance prepared by the paper setter.

Books Recommended:

1. India & the World – NATMO, Shool Atlas, Oxford-Atlas & Time UK Print World Atlas and Uttarakhand Atlas.

SOES/GEG/C006 PRACTICAL I (Cartography)

Paper VI

Time: 1 + 1 = 3 Hrs. Internal Assessment : 40 Marks

End Semester Exam : 60 Marks

Note: The syllabi for practical is related to laboratory work on cartographic mapping. The practical exam will be of three hours duration. The division of marks in practical shall be as given below.

Laboratory work (Cartography) - 30

Session Record Work - 20

Viva-voce - 10

The laboratory work is divided into four unit. Two exercises are to be set from each unit with internal choice and candidates will be required to attempt four exercises in all. The cartographic mapping work examination will be of three hours duration in which exercises will be given on cartographic. All questions carry equal marks.

UNIT I

Mercator's, Polyconic, International, Gnomonic (Equatorial Aspect), Gall's, Steorographic, Interrupted mollwede's and sinusoidal.

UNIT II

Slope analysis by aWenthworth's, Smith's, Henry-Raiz's and Robinson's Methods, Analysis of relief characteristics from contour, Profile Transverse, Longitudinal, Serial, Superimposed, Projected and Composite.

UNIT III

Morphometric analysis – Area height, Altimetric frequency and Hypsometric curve, Drainage density, Stream order, Elongation, Circularity and Bifurcation ratio, Geomorphic Mapping.

UNIT IV

Interpretation of Topographical maps – Land use and settlements, Topographical mapping, Geological Cross Section Drawing.

Books Recommended:

1. Barrett, E.C. & Courtis, L.F.: Introduction to Environmental Remote Sensing.
2. Dickinson, G.O.: Maps and Areal Photographs.
3. Smith, H.T.V.: Aerial Photographs and their Applications.
4. Deekshatula, B.L. & Rajani, Y.S.: Remote Sensing.
5. Davis, P.: Data Description and Presentation.
6. Garnett, A.: Geographical Interpretation of Topographical Maps.
7. Mishra, R.P. & Ramesh, A.: Fundamentals of Cartography.
8. Raja, Moonis: Source of Sociao-Economic Data.
9. Sharma, J.P.: Practical Geography (Hindi).

II[nd] Semester

Code	Paper No.	Title of Course/ Paper	Marks		
			Internal Assignment	End Semester Exam	Credit
SOES/GEG/C007	VII	Geography of Himalaya	40	60	03
SOES/GEG/C008	VIII	Advance Climatology	40	60	03
SOES/GEG/C009	IX	Environmental Study	40	60	03
SOES/GEG/C010	X	Remote Sensing & GIS	40	60	03
SOES/GEG/C011	XI	World Locational Aspects Map (excluding India)	40	60	03
SOES/GEG/C012	XII	Practical II – Remote Sensing, GIS & Field Work	40	60	03
		Total	240	360	18
Self Study Course					
SOES/GEG/SS01	I	Social Geography (Qualifying)	40	60	03

SOES/GEG/C007 GEOGRAPHY OF THE HIMALAYA

Paper VII

Time: 2 Hrs. Internal Assessment : 40 Marks

End Semester Exam : 60 Marks

Note: The paper consists of four units. Two questions will be set from each unit. The candidate will be required to answer one question from each unit. The candidate will be required to attempt 04 questions in all. Answer should be precise. All questions carry equal marks.

UNIT I

Geo-physical identity, original of Himalaya and its structure, Himalaya as regional entity, Geo-political issues, Cultural Appraisal, Himalaya people, Geo-sensitivity of Himalaya, Future of Himalaya.

UNIT II

Physiographic, Landforms, Drainage (volume) and Himalaya as water tower, Glacier, Lakes, Passes, Climate, Natural Vegetation, Natural Hazards, Geo-Ecological Problems of Himalaya created by anthropogenic activities.

UNIT III

Demography and Economy – Distribution, density and growth of population, Migrations, Urbanization, Rural and Urban Population, Agriculture Industry, Animal Husbandry, Horticulture, Tourism and Power projects.

UNIT IV

Geographical account of western, central and eastern Himalaya, Regional analysis of Kashmir, Laddak, Kangra and Lahul, Doon, Kathmandu Valley, Tista Valley Mountain Development Planning and Policy.

Books Recommende:

1. Lal, J.S. & Moddie: The Himalaya – Aspect of Change A.D. (ed).
2. Bose, S.C.: Land and people of the Himalaya.
3. Singh, O.P. (ed): The Himalaya – Nature, Man and Culture.
4. Joshi, S.C. and Others: Kumaun Himalaya.
5. Nityanand and Kumar, K.: The Holy Himalaya – Geographical Interpretation of Garhwal Himalaya.
6. Kharkwal, S.C.: Uttarakhandm – Physio-Culture Complex.
7. Maithani, D.D.: Central Himalaya: Ecology, Environmental Resources & Development.
8. Rawat, M.S.S. (ed): Central Himalaya- Evironment Development Vol. I & II.
9. Valdiya, K.S. (ed): Kumaun: Land and People (1988).
10. Bhatt, H.P. & Bhatt Sangita: Environmetal Dimensions of Rural Settlements in the Himalaya in 1993.

SOES/GEG/C008 ADVANCE CLIMATOLOGY

Paper VIII

Time: 2 Hrs. Internal Assessment : 40 Marks

End Semester Exam : 60 Marks

Note: The paper consists of four units. Two questions will be set from each unit. The candidate will be required to answer one question from each unit. The candidate will be required to attempt 04 questions in all. Answer should be precise. All questions carry equal marks.

UNIT I

Meaning, Scope and Development of Climatology, Atmopheric Equilibrium, Adiabatic Temperature Change, Jet Stream, El-Nino, La-Nina, Walker Circulation, Southern Oscillation, Precipitation and Humidity.

UNIT II

Air masses – Origin, Growth, Classification and distribution, Horizontal and Vertical motion of winds, Fronts and Fronts Genesis, Cyclones and Anti-cyclones, Temperate and Tropical Cyclones.

UNIT III

Climate Classification of Koppen and Thornthwalte, Major climate types, Weather analysis – Data Acquisition and dissemination and weather forecasting- methods, types and accuracy, weather and human behavior, Weather modification, Atmospheric Hazards- Cloud Bursts.

UNIT IV

Climatic Changes – Definition and detection, Tree rings, Glacial ice & Oxygen isotope analysis, Causes, Plate Tectonics, Volcanic activities, Orbital Variations, Solar Variability, Human impact on global climate, Global Warming, Artificial climate and acid precipitation.

Books Recommended:

1. Chorley, R.J. and Barry, R.G.: Atmosphere, Weather and Climate Methuen & Co. Ltd. London, 1995.
2. Critchfield, H.J.: General Climatology, Prentice Hall of India, New Delhi, 2002.
3. Hidoore, J.J.: Global Environment Change, Prentice Hall, New Jersey, 1996.
4. Lockwood, J.G.: World Climatology, Elbs and Edward Arnold (Pub.) Ltd., 1979.
5. Miller, A. et al: Elements of Meteorology, Merrill and Columbus.
6. Oliver, J.E. & Hiddore J.J.: Climatology: An Atmosphere Science, Pearson Education, India, 2003.
7. Thomson, R.D. and Perry, A.: Applied Climatology, Routledge, London and New York, 1997.
8. Trewartha, G.T.: An introduction to climate, McGraw Hill Series in Geography, 1954.
9. Lal, D.S.: Climatology, Sharda Pushtak Bhawan, Allahabad.
10. Singh, Savindra: Climatology, Prayag Pushtak Bhawan, Allahabad, 2005.
11. Lal, D.S.: Jalvayu Vigyan, Sharda Pushtak Bhawan, Allahabad.
12. Singh, Savindra: Jalvayu Vigyan, Prayag Pushtak Bhawan, Allahabad.

SOES/GEG/C009 ENVIRONMENTAL STUDY

Paper – IX

Time: 2 Hrs. Internal Assessment : 40 Marks

End Semester Exam : 60 Marks

Note: The paper consists of four units. Two questions will be set from each unit. The candidate will be required to answer one question from each unit. The candidate will be required to attempt 04 questions in all. Answer should be precise. All questions carry equal marks.

UNIT I

Meaning and scope of environmental geography, Basic Principles of environmental geography, Composition and type of environment, Ecological Principles, Man-Environment relationship, Restoration of Ecology.

UNIT II

Ecosystem: Concept and components, Trophic levels, Food Chain and Food Webs, Energy flow in the ecosystem, Ecosystem stability, High land, low land interactive system, Human ecology adatptation.

UNIT III

Environmental degradation, Environmental Population (Air, Water and Solid Waste), Ganga Pollution and Ganga Action Plan, Environmental Problems- Global Warming, Ozone depletion and Green House Effects, Transformation of narure by man, Global Glacial Imblances.

UNIT IV

Environmental Management: Concepts and approaches; Ecosystem management strategies, Environmental dimension in planning sustainable development, Eco-development, limits to growth, Environmental consciousness, National Environmet Policies and Programs, Environmental Impact Assessment, Rio Summit, Kyoto Protocol & Carbon Trading.

Books Recommende:

1. Sing. L.R. et al.: Environmental Management, Allahabad Geographical Society, Allahabad.
2. National Academy of Sciences: Understanding Climate Changes, Washington, D.C.
3. Furley, P.A. and Neway, W.W.: Man and the Biosphere, Butterworth, London.
4. Arvil, R.: Man and Environment, Penguin.
5. Bennet, R.J. and Chorley, R.J.: Environmental System- Philosophy, Analysis and Control, Methuen, London.
6. Singh, Savindra: Environmental Geography, Prayag Pushtak Bhawan, Allahabad.
7. Detwler, T.R.: Man's impact on the Environment, McGraw Hill, New York.
8. Detwler, T.R. and Marcus, M.G.: Urbanization and Environment, Duxbury Press, California.
9. Sing, Savindra: Paryavaran Bhoogal, Prayag Pushtak Bhawan, Allahabad.
10. Odum, E.P.: Fundamentals of Ecology, W.B. Sounders Co. Philaelfia, 1971.
11. Mather, A.S. and Chapman, K.: Environmental Resources, Longman Group Ltd. U.K., 1995.
12. Hobbs, J.B.: Applied Climatology, Butherworth, London.
13. Bhatt, H.P. and Bhatt Sangita (ed): Environment- Yeseterday, Today & Tommorrow, 1992, Galgotia Publication, New Delhi.

SOES/GEG/C010 REMOTE SENSING AND GIS

Paper X

Time: 2 Hrs. Internal Assessment : 40 Marks

End Semester Exam : 60 Marks

Note: The paper consists of four units. Two questions will be set from each unit. The candidate will be required to answer one question from each unit. The candidate will be required to attempt 04 questions in all. Answer should be precise. All questions carry equal marks.

UNIT I

Definition, process and stages of Remote Sensing, energy, sources and radiation; EMR, energy interaction with atmosphere and earth surface principles of micro wave Remote Sensing.

Types of R.S., Plateforms; satellites and sensor; sensor resolution, digital image and satellite imagery, elements of visual image interpretation; digital image processing technuques.

UNIT II

Definition, history types, classification and planning mission of A.P.; Basic geometric characteristics- scale, height, overlap, mosaic, resolution, stereoscopic coverage, Fundamental concept of Photogrammetry, orientation, relief displacement, sterescopic, 3D viewing, Users of A.P. in landorm mapping and urban planning.

UNIT III

Definition, Concept, Scope and components of GIS, Data and information, geo-referencing and rectification, data inputing methods and GPS.

Data base, type of data. Data models in GIS, Data integration, Geospatial data analysis.

UNIT IV

Computer cartography and mapping in digital age, internal GIS, Web GIS, DTM, Recent trends of GIS, Emerging brances of GIS Science.

Application of Remote Sensing and GIS in watershed management, Weather information, Disaster forecast and geo-information.

Books Recommende:

1. Sabine, F.F.: Remote Sensing- Principles & Interpretation.
2. Lillesand, R.M.: Remote Sensing and Image Interpretation Kiefer R.W.
3. Chauniyal, D.D.: Remote Sensing and GIS (Hindi).
4. Jensen, J.R.: Introductory Digital Image Processing- A Remote Sensing Perspective.
5. Demer, M.N.: Fundamentals of Geographic Information System.
6. Martin, D.S.: Geographic Information System- Socio-Economic Applications.
7. Aronoff, S.: Principles of Geographical Information Systems for Land Resource Assessment.
8. Aronoff, S.: Geographic Information System- A Management Perspective.
9. Bontham Carter, G.F.: Geographic Information System for Geoscientists.
10. Jones, C.: Geographical Information System & Computer Cartography.
11. Ayery, T.E.: Introduction to Aerial Photographs.
12. Pratt, W.K.: Digital Image Processing, John Wiley & Sons Now York (1995).

SOES/GEG/C011 World (Excluding India) Locational Aspects (Map)

Paper XI

Time: 2 Hrs. Internal Assessment : 40 Marks

End Semester Exam : 60 Marks

Note: The paper designed to acquaint the students with the importance of location as one of the important aspects of Geographical Studies. The aim is to promote awareness among students about Atlas. There will be two parts of this course:

(A) An outline map of world will be provides to the students and they will have to mark locations. 15 locations will be given and a mark for each correct location.
(B) An outline map of world with indicated location of features in the numerals will be provided. Students will identify the location features. 15 location features will be given for identification and 01 mark to each correct identification.

Students will provide write up (for both A and B part) on the significant geographical relevance and importance of the locations (marked and identified), whether physical, economic, cultural, ecological, environmental and commercial etc. in 30 words for each. 01 mark is allotted for each write up.

Distribution of marks:

(a)	Locations	15 Marks
	Write up in 30 words	15 Marks
(b)	Identification of Locations	15 Marks
	Write up in 30 words	15 Marks

Physical

Mountains and range, Drainage, forest, soil, natural region, ocean and sea, climate and change, Major currents, major landforms.

Cultural

Nation & capitals, Tribal areas, important cities, cultural regions/realms, Metropolitan, Megalopolis, Population, Agglomeration, Poverty.

Economic

Agro-climate regions & Agricultural regions/human ecological regions, Industrial regions and major industrial centers, major iron and coal fields, transport routes (land and sea).

Environments & Others

Major eco-system, zoo geographical regions, bio-geographical regions, Biome & biomass, popular biosphere reserves, SAARC, ASIAN, OPEC places in news and geographical events, contemporary issues.

Note: Examiner (Paper Setter) should select location and identified locations from all aspects of course and covering the entire map distributed all across. Repetition of location of same nature and character should be avoided.

Examiner will provide key to both A and B part. Map provided to the students should be of same scale/size on which key is prepared. For part A, a blank map should be attached with the question paper. For part B, numerically identified map to be enclosed with question paper. For evaluation of this paper, key is of utmost importance prepared by the paper setter.

Books Recommende:

1. India & the World- NATMO, School Atals, Oxford Atlas & Time UK Print World Atlas.
2. Britanica World Atlas, Environmental Map, Sweden Print, Natural Region of the World.

SOES/GEG/C012 PRACTICAL-II (Remote Sensing, GIS & Field Study)

Paper XII

Time: 2+1 + 3 Hrs. Internal Assessment : 40 Marks

End Semester Exam : 60 Marks

Note: The Syllabi for practical is divided into two sections, Section- 'A' is related to laboratory work and section 'B' is related to field work (Geographical Tour). The Laboratory work is divided into four units. Eight questions will be set selecting at least two question from each unit. The division of marks in practical is given below:

Laboratory Work	:	M.M. 14
Field Work	:	M.M. 30
Sessional Records	:	M.M. 11
Viva-voce	:	M.M. 05

SECTION A – LABORATORY WORK

UNIT I

Basic of Computer, Concept of maps, Coordinates System, Projection (WGS84 and Everest), Types of files, Export/Import file, Layer Stacking of Multispectral Imagery.

UNIT II

Concept of Geo-referencing (maps to image, image to image), sub-setting with the help of AOI layer, Mosaicking, Radiometric and Geometric errors and correction, image classification.

UNIT III

Spatial data integration, Digitization (Point, Line, Polygon), Non Spatial Data Integration, Editing of Spatial and Non-Spatial data, Building Topology.

UNIT IV

Basic of GPS and Computer Cartography & mapping.

SECTION B – FIELD WORK

The field study is compulsory for all students, those who will not take part, will not given any mark for this. The field study work is designed to acquaint the students that, "Geography is an observational science" and field work is one of the important methodologies in geographical studies.

The students are to be sensitized about pre field work preparation, conduct of field work, post field work and report writing.

Filed study tour to provide traverses across and macro regions of the country specially problem areas, areas in news and needs will be arranged of about two week duration. Student will be trained in field work collection of data, mapping, sketching and collection of socio-economic data etc. using observational and interview method etc.

The report will involve statement of objective, selection of area (wigh reasons), method of field study data collection, analysis of collection data/information etc. in which minimum 5 maps and diagrams and 6 pages of write up is necessary.

FIELD STUDY GUIDE (TEACHER):- Will submit a precise report (1 or 2 pages) of field study work with the list of student present/attended the field study to the HOD concern.

Books Recommended:

1. Jenson, J.R.: Introduction to Digital Image Processing, Prentice Hall, Englewood Cliffs, NJ.
2. Pratt, W.K.: Digital Image Processing, John Wiley & Sons, New York, 1995.
3. Hord, R.M.: Digital Image Processing of Remotely sensed data, Academic Press, New York, 1989.
4. Nag, P.: Thematic cartography and Remote Sensing Concept, Publishing House, New Delhi.
5. Blackwell, B.: Statistics in Geography, Basil Blackwell Ltd., 1988.
6. Sinha, P.K. & Sinha, P.: Computer Fundamentals, 3rd Ed. B.P.B. Publishing.
7. Lo, C.P.: Applied Remote Sensing, Longman Scientific and Technical, Harlow, ESSEX.
8. PEUQUET, D.J. & Marble, D.F.: Introductory Readings in Geographic Information Systems, Taylor & Francis, Washington, 1990.
9. Spurr, R.: Photogrammetry and Photo Interpretation, The Rolland Press, Co. London, 1960.

10. Cole, J.P. and King, C.A.M.: Quantitative Geography, John Wiley, London, 1968.

SOES/GEG/SS01 SELF STUDY PAPER – I

SOCIAL GEOGRAPHY

Time: 2 Hrs. Internal Assessment : 40 Marks

End Semester Exam : 60 Marks

Note: The paper consists of four units. Two questions will be set from each unit. The candidates will be required to answer one question from each unit. The candidate will be required to attempt 04 questions in all. Answer should be precise. All questions carry equal marks

UNIT I

Definition, nature and scope of social geography, major concepts of social geography, Social Geography in the realm of sciences- Social ecology, social space, Social segregation and assimilation, social, social justice, social well being level in India.

UNIT II

Evolution of socio-cultural regions in India: Society as indicator of Regional identity, Social Security, Evolution of socio-cultural region in India: evidence from classical literature. Core and peripheral regions. Social components in region formation: language & direct, social groups- (SC, ST, OBC).

UNIT III

Social transformation and change in India: process and elements of social transformation, Modernization and Sanskritization. Role of ruaral-urban interaction. Problems of social transformation in the traditional society.

IV

Social and ethnic diversity of India and national integration, Social pluralism and development. Society and environment, social pollution, conflicts and violence, emphasis on social planning in the last five years plan.

Books Recommende:

1. Ahmed, A. (1999), Social Geography, Rawat Publication, Jaipur.
2. Carter, John and Jones, T. (1989), Social Geography: An Introduction to Contemporary Issues, Edward Arnold, London.

3. Chandana, R.C. (1989), Spatial Dimension of Scheduled Castes in India, Intellectual Publisher House, New Delhi.
4. Crane, R.I. (1973), Regions and regionalism in South Asia Studies: An Exploratory Study, Durham, Duke University.
5. D.M. Smith (1995), Geography and Social Justice, Black-well.
6. Dube, S.C. (1991), Indian Societies, National Book Trust of India, New Delhi.
7. Dube, S.C.: Tribal Heritage of India, Vias Publishing Co., New Delhi.
8. Ghurye, G.S. (1963), The Scheduled Tribes, Bombay, Populat Prakashan,
9. Guha, B.S. (1994), Racial Elements in Indian Population, Oxford University Press, Bombay.

Short, R.J.: An Introduction to Urban Geography, Routledge and KeganPaul,Londan ,1984Johnston,R.J.:City and Society, Hutchinson, Londan. Herbert, D.T.: Urban Geography: As Social Perspective, David and Charles,newton and About,1977.
Johnson,J.H.: Urban Geography: An Introductory Analysis, Pergamon Press, londan,1972.

Singh,R.L.: Urban Geography in Developing Countries,National Geographical Society of India, Varanasi.

Berry,B.J.L. and Hortan,F.f.: Geographic Prespectives on Urban Systems, Prentice Hall, Englewood Cliffs, New Jersey, 1970.

Ramachandran,R.: Urbanization and Urban Systems of India, Oxford, New Delhi,1993.

Knox, P.L. and Taylor, P.J.: World Cities in a World System, Cambridge University Press, UK, 1995.

Harveay,D.: Social Justice and the City, Arnold, 1973.

SOES/GEG/E005 POLITICAL GEOGRAPHY

Paper-XVI (e)

Time 2 Hrs. Internal Assessment: 40 Marks

End Semester Exam: 60 Marks

Note: The paper consists of four units. Two questions will be set from each unit. The candidates will be required to answer one question from each unit. The candidate will be required to attempt 04 question in all. Answer should be precise all questions carry equal marks.

UNIT I

Meaning, scope, approaches of study and recent development in political geography, Concept of nation, state and spatial factors of state, Buffer state and core area. Concept of geostrategy Geostrategic ideas of Mackinder and Spykman.

UNIT II

Capital City, types of capitals. Boundaries and forntiersand their laws.Implication in the current geopolitical context. Geo Political Significance of indian Ocean NATO, SAARC.

UNIT III

World Geopolitics in changing perspective – colonization. Decolonization, Federalism,strategic basics and military alliances. Non aligned movement, Water disputes and terrorism, indias position in World politics.

UNITIV

Concept, nature and scope of electoral Geography. Parliamentary constituencies in india and legislative allotment of Uttarakhand. National and regional Political Parties and voting behaviors in india and Uttarakhand (case study of three constituencies each from Garhwal, Kumaon&Plain). Changing political map of india. Role and fature of regional parties in Uttarakhand .Recent controversies about re-delineation of constituencies in Uttarakhand and its effects.

Books Recommended:

1. Dikshit,R.D.: Political Geography-a Contemporary Perspective, Tata MaGraw Hill Pub, New Delhi, 1996.
2. Pounds, N.J.G.: Political Geography, McGraw Hill, New York.
3. Dwivedi,R.L.: Political Geography, Chaitanya Publication Allahabad.
4. Dikshit R.D.: Political Geography- A Century of Progress, sage. New Delhi, 1999.
5. Taylor,P.:Political Geography, Longman, London,1985.
6. Short,J.R.: An Introduction to Political Geography, Routledge, London,1982.
7. Bergman,E.F.: Modern Political Geography, WMC Brown. CO Dobuque, lowa, 1975.
8. Nijman,A.J.: The Geopolitics of Power and Conflict, Belhaven Press, 1993.
9. Jonston, R.J.: Geography and the state, Macmillan.
10. Norrls R.E.: and Haring, L.L.: Political Geography, Bell and Hawell, 1980.
11. Dikshit, R.D.: RajnitikBhoogol, Tata MaGraw Hill, New Delhi.
12. Dikshit,S.K.: RajnitikBhoogol, VasundharaPrakashan Gorakhpur.
13. Sinha, Manorma: Political Geography, Horizen Publication, Allahabad.

SOES/GEG/E006 CULTURAL GEOGRAPHY

Paper-XVI (f)

Time 2Hrs. Internal Assessment: 40 Marks

End Semester Exam: 60 Marks

Note. The paper consists of four units. Two questions will be set from each unit . The candidates will be required to answer one question from each unit. The candidate will be required to attempt 04 question in all. Answer should be precise. All question carry equal marks.

UNIT I

Concept Culture and Culture as indicator of regional identity.The study of culture in Geography.Nature, scope concept and significance of cultural Geography.Development of cultural Geography. Cultural Landscape, CulturelProcess, Cultural diffusion.

Unit II

Origin and dispersal of man, Brief cultural history.Migration processes and cultural development –prehistoric primitive agrarian, Industrial revolution. Role of technological in cultural changes in cultural development, Cultural hearths, Cultural Ecology.

Unit III

Human races – Origin and dispersal and related theories, type and distribution, Major ethnic Racial groups and linguistic groups. Resource and cultural –Resource extraction and conversion.Processes and elements of cultural transformation.Cultural segregation and assimilation, cultural unity and distribution.

Unit IV

Cultural realm – Monsoon Asianmeso – African, Mediterranean, Western European, Anglo American, Latin American. Cultural Region –Indo-Aryan, Dravidian, Arabian Islamic ,Anglo American costal , Brazilian, Maxican, English - European

Book Recommended .

1. Spencer, J.E &thomses, W.I : Introducing cultural Geography .
2. Rostlund, F. Outline of cultural Geography.
3. Wegner,P.J&Mikesell, M.W[eds] Reading cultural Geography .
4. Sultar C.I: The cultural Landscape .
5. Frezir, D. E. :Rece and cultural contact in the modern word.
6. Sopher, D.F. : Geography of Religions.
7. Carter G.F. : Man and the land a cultural Geography.
8. Dhora, F.E. &Sommers L.M. [eds] Cultural Geography selected Readings.
9. Coul, B.R. :The origin of civilization society .
10. Brood,J.M. : Geography of mankind .
11. Jain,J.K. &Vohara, D.M.: Sanaskritbhoogol (hindi).
12. Prasad, Gayatri: Sanskrit bhoogol (hindi) .

SOES/GEG/E007 GEOGRAPHY OF SOIL AND LANDUSE

Paper-XVI

Time 2 Hrs. Internal assessment : 40 Marks

End semester Exam :40 marks

Note: The paper consist of four units. Two question will be set from each unit. The candidates will be required to answer one question from each unit. The candidates bill be required to attempt 04 question in all. Answer should be precise. All question carry equal marks.

Unit I

Nature, Scope and Significance of soil Geography; its relation with pedology; Soil forming factors- organic, inorganic, climatic, topography and temporal; Process of soil formation, soil profile.

Unit II

Soil properties; Physical, chemical, biological etc, soil capability. Genetic classification of soil; soil conservation . Methods to improve the physical qualities of soil.

Unit III

Concept nature and significance of landuse in Geography; Urban and rural landuse; development of techniques of soil and description of landuse; determinations of agricultural landuse: Physical, economic, social, institutional and technological; Landuse survey India.

Unit VI

Landuse, land Holding; land tenure system and land capability classification; landuse efficiency Potential land; Landuse Planning, methods and techniques, Landuseafficincy; Potential land; Landuse planning, methods and techniques Landused management Landusesystem and land man retio.

Books Recmmendetion

1. Bunting, B.T. : The Geography of soil .
2. Clark, G.R. : Studyof the soil in the field .
3. Jenny, H. : Factors of soil Formation .
4. Plyusnin, I.I.: Reclamative Soil Science .
5. Robinson, C.W.: Soil there Origin,Constitution & Classification.
6. Gardner, James S.: Physical Geography
7. Gregor; Geography of Agriculture
8. Jacks : Land classification for landuse planning
9. Soil Survey manual, I.A.R.I., new delhi
10. Singh, V.R. Land use patterns in Mirzapur and Environs.
11. Safi, M.: Land Utilization in Eastern U.P.
12. Chisholm,M.: rural Settlement and Landuse.
13. Backman,H.O.&Brady, N.C.: The Nature and Properties of Soils.

SOES/GEG/E008 ADVANCE GEOGRAPHICAL INFORMATION SCIENCE

Paper-XVI (h)

Time 2 Hrs. Internal Assessment: 40 marks

End Semester exam:60 Marks

Note: The paper consists of four units. Two question will be set from each unit. The candidates will be required to answer one question from each unit. The candidate will be required to attempt 04 questions in all. Answer should be precise. All question carry equal marks.

UNIT I

Spatial Science- Geography as a special science, maps and spatial information, dynamics of spatial information, elements of information technology, geographical objects and their relations.

UNIT II

Data Base Management System- GIS data base, spatial data Management system, object oriented data base management system, object relational data base management system; spatial data- elements, sources, quality, data model and GIS data format.

UNIT III

Spatial data analysis- Analysis techniques, Raster data analysis- location operations, neighbor hood operations, distance measurement operation.

Vector data analysis- Buffering overlay, distance measurement, pattern analysis, map manipulation.

UNIT IV

Recent trends in GI Science- Web GIS, Mobile GIS, Computer Cartography, GPS, Mobile Mapping, Mobile application.

Application of GIS- GIS science and society , network modeling, environmental modeling, geo-morphological and land cover/ land use mapping.

Books Recommended:

1. Pratt,W.K.: Digital image processing, John Wiley& Sons, New York (1995)
2. Ayery,T.E.: Introduction to Arial Photographs.
3. Jones,C.: Geographical Information System & Computer Cartography.
4. Bonham Carter, G.F.: Geographic Information system for Geoscientists.
5. Aronoff, S.: Geographic Information System- A Management Perspective.

IVth Semester

Code	Paper No.	Title of Course/ Paper	Marks		
			Internal Assignment	End Semester Exam	Credit
SOES/GEG/C016	XVII	Uttarakhand – A Regional Analysis	40	60	03
SOES/GEG/C017	XVIII	Dissertation	40	60	03
SOES/GEG/C018	XIX	Practical IV – Surveying and Weather Analysis	40	60	03
		Total	120	180	09

Elective		Any Three of the following elective (optional) Papers			
SOES/GEG/C009	XX (a)	Human Ecology & Sustainable Development	40	60	03
SOES/GEG/C010	XX (b)	Regional Planning & Development	40	60	03
SOES/GEG/C011	XX (c)	Oceanography	40	60	03
SOES/GEG/C012	XX (d)	Population Geography	40	60	03
SOES/GEG/C013	XX (e)	Geography of Rural Settlements & Central Places	40	60	03
SOES/GEG/C014	XX (f)	Agriculture Geography	40	60	03
SOES/GEG/C015	XX (g)	Glacial Geomorphology	40	60	03
SOES/GEG/C016	XX (h)	Geography of Tourism and Recreation	40	60	03
		Total	120	180	09
Self Study Course					
SOES/GEG/SS03	III	Medical Geography (Qualifying)	40	60	03

SOES/GEG/C016 UTTARAKHAND – A REGIONAL ANALYSIS

Paper - XVII

Time: 2 Hrs Internal Assessment : 40 Marks

End Semester Exam : 60 Marks

Note: The paper consists of four units. Two questions will be set from each unit. The candidates will be required to answer one question from each unit. The candidate will be required to attempt 04 questions in all. Answer should be precise. All questions carry equal marks

UNIT I

Geo political setting, Historical outline, Geo physical setting, Geographical structure, Geographic characteristics, processes and features and physiographic region, Drainage-River system and basin, characteristics and water volume, climate, natural vegetation, soil, glacier and lakes.

UNIT II

Population growth and distribution, density, age, sex, structures, literacy and education, cultural appraisal, rural out migration, rural settlement type, patterns and urbanization, occupational structure Harsh nature of environment and its influence on socio-economic aspects of life, Tribes.

UNIT III

Land use, Agriculture, Constraints of agrarian economy, Money order economy and Role of Women in hill economy, important crops, animal husbandry, forestry, horticulture mixed farming system, poverty, transport, tourism and pilgrimage, important natural resources, industries, Hydropower project- Tehri Dam, Vishnuprayag and AHPP Srinagar.

UNIT IV

Environmental constraints in the framework of man-nature interaction, Disaster, Regional disparities in development, Hill development planning, problems and limitations of development, Movement of environmental conservation, Environments V/s Economic development, Waste land expansion and planning, recent social and economic changes and political awareness especially after the creation of Uttarakhand state, contemporary issues.

Books Recommended:

1. Lal, J.S. & Moddie: The Himalaya- Aspect of Change A.D. (ed).
2. Bhatt, H.P. & Bhatt Sangeeta: Environmental Dimension of Rural Settlements in the Himalaya in 1993.
3. Bhatt, H.P. & Bhatt Sangeeta (1992): Environment- Yesterday, Today and Tomorrow, Galgotia, Publication, New Delhi.
4. Bose, S.C.: Land and people of the Himalaya.
5. Kayastha, S.: The Himalaya Beas Basin.
6. Valdin, K.S. (ed): Kumaun- Land and People.
7. Singh, T.V. (ed): Mountain and Development.
8. Singh, O.P. (ed): The Himalay- Nature, Man & Culture.
9. Joshi, S.C. and Others: Kumaun Himalaya.
10. Nityanand & Kumar, K.: The Holy Himalaya- Geographical Interpretation of Garhwal Himalaya.
11. Kharakwal, S.C.: Uttarakhand Physico-culture Complex.
12. Maithani, D.D.: Central Himalaya: Ecology, Environmental Resources & Development.
13. Rawat, M.S.S. (ed): Central Himalaya- Environment Development Vol. I & II.
14. Valdia, K.S. (ed): Kumaun- Land and People (1988).
15. Maitani, D.D., Gayatri Prasad & Nautiyal Rajesh: Geography of Uttarakhand (2010), Sharda Pushtak Bhawan, Allahabad.
16. Misra, R.P.: Regional Planning and National Develoment, Vikas Publication, New Delhi.

SOES/GEG/C017 DISSERTATION

Paper – XVIII

Topic of dissertation will be assigned by HOD or Supervisor of the Dept. concerned. HOD will ensure no repetition of topic and area. Dissertation topic will be selected from any core/elective paper offered by the student in semester only. Area of study shall be the Himalaya region preferably.

Distribution of marks

Periodical presentation (Internal Assessment) - 20 Marks

Dissertation	-	60 Marks
Power Point/ Viva-voce	-	20 Marks

Objectives:

1. The paper is designed to acquaint the student with the importance of field work as one of the methodologies in Geography and especially in research work.
2. The student are to be sensitized about field work and data/information collection and writing of report.

Field Based (Dissertation):

The project report will involve statement of objectives and scope of field investigation, methods of field work for studies of different scales (Macro, Meso and Micro), Preparation of a questionnaire/schedule, sampling techniques, collection, processing, presentation, analysis and interpretation of data/information. The candidates are required to write a project report on assigned problem involving field investigations.

1. The candidates are required to submit their project reports one week before the commencement of examination to the concerned head of the department.
2. Assessment of report will be done by a Board of Examiners, consisting of external examiner and internal examiner.
3. Power point presentation is must, Separate external examiner will be appointed by the University, Supervisor of dissertation will act as an Internal examiner. In the absence of Supervisor, HOD will act as internal examiner.

SOES/GEG/C018 PRACTICAL IV

SURVEYING & WEATHER ANALYSIS

Paper - XIX

Time: 2 + 1 = 3 Hrs

Internal Assessment : 40 Marks

End Semester Exam : 60 Marks

The syllabi for practical is divided into two section: section A and B. A is related to field work. Candidate will have to attempt two exercise of surveying from section A of 2 hours duration and two exercises of section B of 1 hour duration.

Section A: Field Work:

(i) Plane Table Survey:

4. Two point and three point problem. Triangulation and determination of heights and contouring with clinometers.

(ii) Prismatic Compass Survey:

5. Closes Traverse error adjustment by Bowditch method and trigonometry.

(iii) Dumpy level survey: Contouring and profile drawing.

Section B: Laboratory Work

(i) GPS: Handling usages, GPS based data acquisition, GPS system and application.
(ii) Altimeter (Hi-tech with precision): Handling and use.
(iii) Interpretation of Indian daily weather maps through the study of thermal & cloud condition and pressure system. Weather forecasting method.

Distribution of Marks

(i)	Surveying (Two exercise)	15
(ii)	Lab work (Two exercise)	10
(iii)	Survey Camp	20
(iv)	Sessional Record (min)	10
(v)	Viva-voce	05

Note:

1. In all 20 exercise from both the parts A and B shall constitute the sessional record covering all sub section.
2. Candidate shall attend (compulsory) field training (survey camp) of at least seven days duration in a suitable area handling different instruments. They shall prepared minimum 05 exercise (survey camp) belonging to the original field survey.
3. Survey camp work will be evaluated at the time of the end semester practical exam.

NOTE: CANDITATE WILL HAVE TO SELECT ANY THREE OF THE FOLLOWING ELECTIVE (OPTIONAL COURSES)

SOES/GEG/E009 HUMAN ECOLOGY & SUSTAINABLE DEVELOPMENT

Paper – XX (a)

Time: 2 Hrs. Internal Assesment: 40 Marks

End Semester Exam: 60 Marks

Note: The paper consists of four units. Two questions will be set from each unit.The candidates will be required to answer one question from each unit. The candidate will be required to attempt 04 question in all. Answer should be precise. All question carry equal marks.

UNIT - 1

Human Ecology: Evolution & Development; Key Comcepts: Anthropocentricism, cultural lag, the commons and theories; Environmental ethics, Human ecological region. Sustainable Development-Definition, Concept and Historical development, reconcillation between poltical & theoretical discourses.

UNIT II

Humans and the Biosphere : Coevolution and coadaptation of human system and ecosystem; Resources, technologies, environment and consumerism; Problems and consequences; Geographies of wealth, hunger and health, Achieving sustainable development at local, regional, national and global scale/level.

UNIT III

Humans as persons and agents of large social system; Human population size, growth and biophysical carrying capacity of Earth , Positive and negative feedback of human numbers and quality of life; Denaturalization of country and city; Human activities and distruption of Ecosystem, ecoefficiency, sustainable farming and sustainable future.

UNIT IV

Environment crises and human reintegration. The end of duality: Adaptation and behavioral change; Environment Management(undoing misdeeds), Ecology restoration, climate change as threat to sustainable development. Sustainable development:consensus, contest and challenges, Contemporary issues.

Books Recommended:

1. Dieter Steiner and Marcus Nauser (eds,): Human Ecology; New York; Routiedge, 1993.
2. Bhatt H.P.&Bhatt Sangeeta (1992): Environment- Yesterday , Today and Tomorrrow, Galgotia Publication, New Delhi.
3. Ehriish, P.R. ,A.H. Ehrlich and J.P. Holdren; Human Ecology , San Francisco: W.H. Freeman & Co; 1973.
4. George A. Theodorson (ed.): Studies in Human Ecology , New York: Harper& Row, 1961.
5. Quinn, J.A.; Human Ecolgy (2 nd edition), New York : Hamden conn, 1971

SOES/GEG/E010 REGIONAL PLANNING AND DEVELOPMENT

Paper - XX(b)

Time: 2 Hrs. Internal Assesment: 40 Marks

End Semester Exam: 60 Marks

Note: The paper consists of four units. Two questions will be set from each unit.The candidates will be required to answer one question from each unit. The candidate will be required to attempt 04 question in all. Answer should be precise. All question carry equal marks.

UNIT I

Concept, scope and typology of Planning, Regional Planning- its Philosophy and purpose, Theoretical and operational frame work of Regional Planning; Approaches to regional planning, Historical development of regional planning, Geography and its role in regional planning and development.

UNIT II

Methodology and techniques of regional Planning; Analytical techniques and procedural techniques; Principles of rationalization, Planning Processess- sectoral and spatial planning, short–term and long term perspective planning; Mull regional, multi level and decentralize planning.

UNIT III

Regional development strategies: Identification of planning region; Regional Planning strategies for background area Hill area, tribal area case studies of planning program, achievements, problems and prospects from Japan and China.

UNIT IV

Spatial inequalities and regional imbalances in India; Problems of regional planning, indicators and level of regional development, Dilema of development of problem areas, Regional Planning & development in India; region planning and development strategies in the 21st century.

Books Recommended:

1. Johnson, E.A.J.: The organization of space in Development Countries, Harward University Press Cambridge, 1972.
2. Kuhlinski A.R. (ed.): Growth Poles and Growth Centers in Regional Planning, Mouton, The Hague , 1972.
3. Misra, R.P. et al: Regional Planning Concepts, Techniques and Policies, University of Mysore, Mysore, 1969.
4. Misra, R.P. et. At: Multi Level Planning, Heritage Publishers, Delhi, 1930.
5. Hall, Peter: Urban and Regional Planning, Penguin Books ins. New York.
6. Shorts, J.G.M. Hill.: Regional Planning, University Press, Rotterdam.
7. Glasson John: Regional Planning , Hutchison, London.
8. Misra, R.P.: Development Issues of Our Time, Concepts Pub. Co., New Delhi.
9. Aiden, J. and Morgan, R.: Regional Planning; A Conprehensive View, Leonard Hill Books, Beds, 1974.
10. Glasson, J.: An Introduction to Regional Planning, Hutchison Educational, London.
11. Hall, Peter; Cities of Tomorrow, Updated Edition, Blackwell Publishers Ltd. Oxford 1996.

SOES/GEG/E011 OCEANOGRAPHY

Paper - XX (C)

Time: 2 Hrs. Internal Assesment: 40 Marks

End Semester Exam: 60 Marks

Note: The paper consists of four units. Two questions will be set from each unit.The candidates will be required to answer one question from each unit. The candidate will be required to attempt 04 question in all. Answer should be precise. All question carry equal marks

Unit I

Meaning, Objective, scope and significance of oceanography, submarine topography, configuration of pacific, Indian and Atlantic Ocean floors, Sea floor spreading.

UNIT II

Ocean Salinity, temperature, currents, tides, ocean deposits and Coral reefs.

UNIT III

Marine resource: mineral, biotic and energy and their conservation, marine pollution and ocean dumping.

UNIT IV

Ocean routes and world economics, laws of the seas, Global warming and transgression of seas. Tsunamies and Elnino, Seal level change, Contemporary issues.

Books Recommended:

1. Davis, R. J.A., 1986 Oceanography-An Introduction of the Marine Environment, Win C. Brown, Lowa.
2. Griffith. J.F., 1976 Applied climatology, oxford press,New York.
3. Huntington , E. and S.S. Visher, 1922 Climatic Changes, Yale University Press.
4. Hussain T.and Tahir, M. 2003 Oceanography, Jawahar, New York.
5. Kings,C.A.M., 1963 An Introduction to Ocanography, McGraw, New York.
6. Lamb.H.H., 1972 Climate : Present , Past and Future, Methuen London.
7. Siddhartha, k. 1999 Oceanography- A Brief Introduction, kisalya Pub., New Delhi.
8. Singh, S. 2002 Physical Geography, Prayag Pub., Allahabad.
9. Trewartha, G,T., 1968 An Introduction to Climate, McGraw, New York.
10. Thumman, H.V. 1978 Introduction to Oceanography, Charles E. Merrill Pub. London.
11. Weyl, P.K., 1970 Oceanography- An Introduction of the Marine Environment, John W and Sons, London.

SOES/GEG/E012 POPULATION GEOGRAPHY

Paper – XX (d)

Time: 2 Hrs. Internal Assesment: 40 Marks

End Semester Exam: 60 Marks

Note: The paper consists of four units. Two questions will be set from each unit.The candidates will be required to answer one question from each unit. The candidate will be required to attempt 04 question in all. Answer should be precise. All question carry equal marks.

UNIT I

Nature, Scope and significance of Population Geography, its relation with demography, Relevance of Population studies in Geography: Nature and Sources of Population data and maps: Methods and approaches to Population study: Recent Development in Population Geography. Population and development Planning.

UNIT II

Population growth distribution and density; World Patterns and their determinants; concepts of Under, over and optimum Population; Population composition. Age , Sex, literacy, occupational structure and gender issues. Population growth in the context of manpower and employment.

UNIT III

Population Dynamics – Measurement of fertility and mortality; Migration- causes, types, national and International Pattern, Push and Pull factors, Mobility Transition; Rural and Urban dimensions. Globalization and labour mobility, Demographic regions of india; attributes, structure and characteristics

UNIT IV

Concept of Human resource and Management; Population resource regions; Population Planning and Policies in Under-developed and developed countries with special reference to Japan and India; Population as social capital; Human development index; National Population Policy.

Books Recommended:

1. Chandna, R.C.: A Geography of Population; Concept, Determinants and Patterns, Kalyani Pub. New Delhi, 2000.
2. Clarke, John I.: Population Ecology, Pergamon Press, Oxford 1973.
3. Crook, Nigael: Principles of Population and Development, Pergamon Press New York 1997,
4. Garnle,R.B.J.; Geography of Population, Longman, London 1970.
5. Srinivasan,K.& Vlassoff M. ; Population Development Nexus in India: Challenges for the Millennium, Tata Mc Graw Hill, New Delhi,2001.
6. Srinivasan, k.: Demographic Techniques and Applications, Sage Pub. New Delhi, 1998.
7. Sundaram, K.V. and Nangia , Sudesh (ed.): Population Geography, Heritage Pub. Delhi, 1986.
8. Woods, R.; Population Analysis in Geography, London 1979.
9. Zelinsky, Wilbur: A Prologue to Population Geography, Prentice Hall, 16966.
10. Clarke, J.I.; Population Geograhy, Pergamon. Oxford, 1972.

SOES/GEG/E013 GEOGRAPHY OF RURAL SETTLEMENTS & CENTRAL PLACES

Paper - XX (e)

Time: 2 Hrs. Internal Assesment: 40 Marks

End Semester Exam: 60 Marks

Note: The paper consists of four units. Two questions will be set from each unit. The candidates will be required to answer one question from each unit. The candidate will be required to attempt 04 questions in all. Answer should be precise. All question carry equal marks.

UNIT I

Rural Settlement Studies: Concepts, approaches and contents; definitions and characterstics of Rural Settlements. Histogenesis of Rural Settlements, Sequence of occupance; Site, situations, size, type, pattern and spacing of rural settlements.

UNIT II

Spatio-temporal dimensions of Rural Settlements; Morphology of Rural settlement with special reference to India, House types and field patterns, their categories and related factors, Rural houses in different Geographical environs, folk housing and folk architecture.

UNIT III

Concept of Central places, attributes and principles of central places, process of formation of central places, Geographical foundation of central place-location, spacing and clustering; central place functions.

UNIT IV

Measurement of centrality and hierarchy like central score, central tendency, population threshold and graph theoretical techniques, Ranking of settlements based on centrality and hierarchy; delimitation of central place region; form of interaction and analysis of gradient.

Books Recommended:

1. Bhatt H.P. & Bhatt Sangeeta: Environmental Dimensions of Rural Settlements in the Himalaya in 1993.
2. Davis, S.: Computer Data Displays.
3. Bhatt Sangeeta91984): Economic Transformation- A case study of district Uttarkashi (Unpublished.D.Phil. Thesis)
4. Davis P. ; Data Description & Presentation.
5. Mishra, R.P.: Research Methodolgy.
6. Kanetkar, T.P.: Surveying & Levelling.
7. **Punmia, B.C.: Surveying & Levelling.**

8. Singh, R.L.: Elements of Practical Geography.

9. Hord. R.M. ; Digital Image Processing of Remotely Sensed Data, New York, 1989.

10. Pratt.W.K. : Digital Image Precessing, John Wiley, New York, 1978.

SOES/GEG/E014 AGRICULTURE GEOGRAPHY

Paper – XX (f)

Time: 2 Hrs. Internal Assesment: 40 Marks

End Semester Exam: 60 Marks

Note: The paper consists of four units. Two questions will be set from each unit.The candidates will be required to answer one question from each unit. The candidate will be required to attempt 04 question in all. Answer should be precise. All question carry equal marks.

UNIT I

Nature, Scope, significance and development of agricultural geography; Origin and dispersal of agriculture-major agricultural hearths; Diffusion of agricultural innovations; Recent trends in agriculture.

UNIT II

Determinants of agriculture-Physical, economic, Political, technological, socio-cultural, land reforms, cropping Pattern, cropping intensity, diversification and specialization, efficiency and productivity; crop combination regions.

UNIT III

Theories of agricultural location: Von Thunen's model and its modification-sinclair's approach; concept of agricultural region; Whittlesey's classification of agricultural regions; Agricultural typology Mix cropping, Crop- rotation and eco-farming.

UNIT IV

Agricultural in India: Land use and shifting cropping Pattern; New trends in Indian agriculture-Green revolution, White revolution; Nutritional index; Problems of Indian agriculture; agricultural Policy in India; Food security.

Books Recommended:

1. Symons, L: Agricultural Geography, G. Bells, London, 1967.
2. Grigg, D.: An introduction to Agricultural Geography, Hutchinson Publication, London.
3. Grigg, D. B.: The Agriculture System of the Word, Cambridge University press, New York.1974
4. Mannion, A. M.: Agriculture And Environment change, john Willey, London, 1995.
5. Sauer, Carl: Agriculture Origen and Dispersals Americn Geographical society, New York.1952
6. Brown, L. R.: The Changing Word Food Prospect: The Nineties and Beyond, Word Watch Institute, Washington D.C.,1990.
7. Dyson, T.: Population And Food Global Trends And Future Prospect, Routledg, London, 1997.
8. Morgan, W. B.: Agriculture in the Third Word - A Spatial analysis, West view Press, Boulder, 1997

9. Singh B.B.: Krishi Bhoogol, Gyanoday Prakashan, Gorakhpur.
10. Kumar, Pramila evm Sharma, S. K.: Krishi Bhoogol, Hindi Granth Academy, Bhopal.
11. Tiwari R.C. and Singh, B.N.: Prayag Pustak Bhawan, Allahabad.

SOES/GEG/E015 GLACIAL GEOMORPHOLOGY

Paper – XX (g)

Time: 2 Hrs. Internal Assessment: 40 marks

End Semester Exam: 60 marks

Note: The Paper consists of four units. Two Questions will be set from each unit. The candidates will be required to answer one question from each unit. The candidate will be required to attempt 04 questions in all. Answer should be precise. All questions carry equal marks.

Unit I

Definition, scope and significance of glacial geomorphology, approaches and relationship with climatology, geology and glaciology, identification system of glaciers, ice age climatic changes and glaciers.

Unit II

Type of glaciers, important glacier of the word, movement of glaciers, glacial morphology, glacial process,erosion land forms and their development, sediments transportation system.

Unit III

Glacial depositional processes and land forms stratified and non stratified forms of moraines. Glacio-fluvial and glacial lacustrine environment.

Unit IV

Glaciations, concept of glacial cycle, peri-glacial process and land forms, Morphometry of glaciated basin, Techniques of glacial studies- Remote sensing, advanced surveying techniques and GPS etc.

Inventory of Himalayan glaciers with special reference to Uttarakhand Glaciers. Problems of retreating glaciers, case study of Gangotri Glacier, Contemporary issues.

Books recommended :

1. Bloom A. L.: Geomorphology Prentice Hall, New Jersey USA, 1979.

2. Goudie, A: Geomorphological Techniques, George Allen and Unvin, London, 1981.

3. Washborn, A.L.: Peri-glacial Process and Environment, Edward Arnold London , 1973.

4. Young, A.: Slopes, Olivar and Boyd London, 1972.

5. King, C.A.M.: Techniques in Geomorphology Edward Arnold London, 1968.

6. Embleton, C. and Theories, J.: Process in geomorphology, Arnold Hienmann, London, 1979.

7. Phodes, D.D. and William, G.P.: Adjustment of fluvial processes, George Allen and Unvin, Bostan, 1982.

8. Tricart, I. and Calliam : Introduction to climate Geomorphology, Longmans London, 1972.

SOES/GEG/E016 GEOGRAPHY OF TOURISM AND RECREATION

Paper- XX (h)

Time: 2 Hrs. Internal assessment: 40 Marks

End Semester Exam: 60 Marks

Note: The Paper consists of four units. Two Questions will be set from each unit. The candidates will be required to answer one question from each unit. The candidate will be required to attempt 04 questions in all. Answer should be precise. All questions carry equal marks.

UNIT I

Tourism and Recreation meaning and Definitions; Development of Geography of Tourism and Recreation, Approaches to the study and Models of Tourism, Present Tourism Trends, Its relation with other branches of geography.

UNIT II

Tourism types: Cultural, Eco tourism- Coastal and Adventure tourism, National and International tourism, Globalisation and tourism, Tourism as an industry Structural component and characteristic, International Tourism and Political fallouts.

UNIT III

Development of tourism in Himalaya; potentials and promotion of tourism- Pilgrimage combine, tourism as a process of development and change in hill region; Futuristic tourism in the Himalaya. Impact of tourism-environmental, economic and socio-cultural, Case study of Mussoorie and Nainital.

UNIT IV

Planning of tourism-conflicting issues of development, concept of green tourism, eco-tourism, sustainable tourism; community participation; Role of foreign capital and Impact of Globalisation on tourism, Contemporary issues.

Books Recommended:

1. Hall, C.M. and Page, S.J.: The Geography of Tourism and Recreation, Environment, Place and Space, Routledge, London, 1999.
2. Shaw, G. and Williams, A.M.: Critical Issues in Tourism, A Geographical Perspective, Blackwell, Oxford, 1994.
3. Kaul, R.K.: Dynamics of Tourism and Recreation, Inter India, New Delhi, 1985.
4. Pearce, D.: Tourism Today- A Geographical Analysis. Long man Scientific and Technical, New York, 1987.
5. Bhatla, A.K.: Tourism Development, Principles and Practices, Sterling, Bangalore, 1989.
6. Cris, Ryan: Recreationl Tourism, A Social Science Perspective, Routledge, London, 1991.
7. Hall,C.M: and Page, S.J.: Tourism in South and South East Asia; Issues and Cases, Butterworth Heinemann, Oxford,2001.
8. Garg, N.K.: Tourism and Economics Development, Avishkar, Jaipur, 1996.
9. Sinha, p.c.: International encyclopaedia of tourism management, Vols,1-12, Anmol New Delhi.
10. Bhardwaj, D.S. Chaudhary, M.: Contemporary issues in Tourism, Himalaya, Mumbai, 1997.

SEOS/GEG/SS03 Self Study Paper - III

Medical Geography

Time: 2 Hrs. Internal assessment: 40 Marks

End Semester Exams: 60 Marks

Note: The Paper consists of four units. Two Questions will be set from each unit. The candidates will be required to answer one question from each unit. The candidate will be required to attempt 04 questions in all. Answer should be precise. All questions carry equal marks.

UNIT I

Medical Geography- Definition, Significance, Meaning and Study Methods, Approaches and Conceptual Origin, Its relation with other Branches of geography.

UNIT II

Spatial Distribution of Endemic areas and Pandemic areas, Environmental factors, physical, Biotic And Cultural- its role in the Causes of diseases as well as in the solution, common Disease in Uttarakhand.

UNIT III

Classification of density, Poverty and Disease, Geo-pathology regions of Uttarakhand, regional distribution of incidence and doctor, incidence ratio.

UNIT IV

Medical facilities, Health centers and it's their problems, Medical facilities and population Ratio, Govt. health schemes and programs in Uttarakhand, Case study of Bhuvali health centre, contemporary issues.

Books Recommended:

1. Melinda Meade, Michael Ench: Medical Geography, The Guilford Press; Third Edition.

2. Nilofar Izhar: Geography and Helth- A study in Medical geography (2001), APH Publishing Corporation.

3. Rais Akhtar: Environmental and Health- Terms in Medical Geography, Ashish pub. House, 1991.