University of Rajasthan
Jaipur

SYLLABUS

M.SC.
(GEOGRAPHY)

2015-2016 (I & II SEMESTER)

2016-2017 (III & IV SEMESTER)
M.A./M.Sc. GEOGRAPHY
(Semester Scheme)

1. Eligibility:
A candidate who has secured 50% or CGPA of 3.0 in the UGC Seven Point scale [45% or
CGPA 2.5 in the UGC Seven Point Scale for SC/ST/Non-creamy layer OBC] or equivalent in
the Bachelor degree in Science or Engineering or Technology or Medicine or Pharmaceutical
Science shall be eligible for admission to First Semester of a Master of Science and Master of
Arts courses.

2. Scheme of Examination:

(1) Each theory paper EoSE shall carry 100 marks out of which internal assessment shall
carry 20 marks. The EoSE will be of 3 hours duration part ‘A’ of theory paper shall
contain 08 Short Answer Question of 16 mark based on knowledge, understanding
and application of the topics/texts covered in the syllabus. Each question will carry
two mark for correct answer.

(2) Part “B” of paper will consist of four questions with internal choice (except in cases
where a different scheme is specifically specified in the syllabus) each carrying 16
marks. The limit of answer will be five pages.

(3) Each Laboratory EoSE will be of four/six hour duration and involve laboratory
experiments/exercises, and viva-voce examination with weightage in ratio of 80:20

3. Course Structure
The details of the courses with code, title and the credits assigned are as given below:

Course Category
CCC: Compulsory Core Course
ECC: Elective Core Course
OEC: Open Elective Course
SC: Supportive Course
SSC: Self Study Core Course
SEM: Seminar
PRJ: Project Work
RP: Research Publication

Contact Hours
L: Lecture
T: Tutorial
P: Practical or Other
S: Self Study
Relative Weights
IA: Internal Assessment (Sessional Test, Assignment, Classroom Presentation,
regularity and discipline)
### First Semester

<table>
<thead>
<tr>
<th>S.NO.</th>
<th>Subject Code</th>
<th>Course Title</th>
<th>Course Category</th>
<th>Credit</th>
<th>Contact Hours Per Week</th>
<th>EOSE Duration (Hrs.)</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Geo 101</td>
<td>Evolution of Geographical Thoughts (upto 1800AD)</td>
<td>CCC</td>
<td>6</td>
<td>5 1 0</td>
<td>3 0</td>
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<tr>
<td>2.</td>
<td>Geo 102</td>
<td>Structural and Dynamic basis of Geomorphology</td>
<td>CCC</td>
<td>6</td>
<td>5 1 0</td>
<td>3 0</td>
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<tr>
<td>3.</td>
<td>Geo 103</td>
<td>Principles and Theory of Economic Geography</td>
<td>CCC</td>
<td>6</td>
<td>5 1 0</td>
<td>3 0</td>
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<tr>
<td>4.</td>
<td></td>
<td>Core Elective –I</td>
<td>ECC</td>
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<tr>
<td>5.</td>
<td>Geo 111</td>
<td>Practical</td>
<td>CCC</td>
<td>12</td>
<td>0 0 18</td>
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### Second Semester

<table>
<thead>
<tr>
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<th>Course Title</th>
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<th>Contact Hours Per Week</th>
<th>EOSE Duration (Hrs.)</th>
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<tbody>
<tr>
<td>1.</td>
<td>Geo 201</td>
<td>Modern and Contemporary Geographical Thought (19th century onwards)</td>
<td>CCC</td>
<td>6</td>
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<td>2.</td>
<td>Geo 202</td>
<td>Climatology and Oceanography</td>
<td>CCC</td>
<td>6</td>
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<td>3 0</td>
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<tr>
<td>3.</td>
<td>Geo 203</td>
<td>Principles and Theory of Economic Geography</td>
<td>CCC</td>
<td>6</td>
<td>5 1 0</td>
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<td>4.</td>
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<td>Core Elective –II</td>
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<td>Geo 211</td>
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<td>CCC</td>
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### Third Semester

<table>
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<th>Contact Hours Per Week</th>
<th>EOSE Duration (Hrs.)</th>
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<tr>
<td></td>
<td>Geo 301</td>
<td>Advanced Geography of India</td>
<td>CCC</td>
<td>6</td>
<td>5 1 0</td>
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<td>Core Elective –III</td>
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<td>Core Elective –IV</td>
<td>CCC</td>
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<td>3 0</td>
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<td>4.</td>
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<td>Core Elective –V</td>
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<td>5.</td>
<td>Geo 311</td>
<td>Practical</td>
<td>CCC</td>
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### Fourth Semester

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<th>S. NO.</th>
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<th>Contact Hours Per Week</th>
<th>EOSE Duration (Hrs.)</th>
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<tr>
<td>1.</td>
<td>Geo 401</td>
<td>Geography of Rajasthan</td>
<td>CCC</td>
<td>6</td>
<td>5 1 0</td>
<td>3 0</td>
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<tr>
<td>2.</td>
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<td>Core Elective –VI</td>
<td>CCC</td>
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<td>Specialization</td>
<td>Paper Title</td>
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<td>Semester</td>
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<tr>
<td>GEO A01</td>
<td></td>
<td>Man and Natural Environment</td>
<td></td>
<td>I Ele. 1</td>
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<td>GEO A02</td>
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<td>Cultural Geography</td>
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<td>Population Geography</td>
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<td>II Ele. 2</td>
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<tr>
<td>GEO B02</td>
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<td>Quantitative Techniques in Geography</td>
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<td>II Ele. 2</td>
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<td>GEO C01</td>
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<td>Research Methodology</td>
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<td>GEO C02</td>
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<td>Disaster Perception and Management in India</td>
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<td>III Ele. 3</td>
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<td>GEO D01</td>
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<td>Principles and Applications of Remote Sensing and Geographical Information System</td>
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<td>III Ele. 4</td>
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<td>GEO D02</td>
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<td>Urban Geography</td>
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<td>Applied Geography</td>
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<td>GEO F02</td>
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<td>Regional Planning and Development</td>
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<td>IV Ele. 6</td>
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<td>GEO G01</td>
<td></td>
<td>Geography of Water Resources</td>
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<td>IV Ele. 7</td>
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<td>GEO G02</td>
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<td>Agricultural Geography (Elements and Applied)</td>
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<td>IV Ele. 7</td>
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<td>IV Ele. 8</td>
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<td>GEO H02</td>
<td></td>
<td>Biogeography</td>
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<td>IV Ele. 8</td>
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</table>
Paper code: Geo101: Evolution of Geographical Thought (upto 1800AD)

Section A

Beginnings and geosaphical nature of geography: ancient Indian geographical thought (the puranic geography), Ancient classical period: contribution of Greek scholars (Herodotus and Eratosthenes), Greeko-Roman scholar (Posidonius), Roman scholars (Strabo and Ptolemy), and Chinese scholars.

Section B


Section C


Recommended Readings:


James, P.E.; All Possible Worlds 1972: A History of Geographical Ideas; Odessey Press, 622 pages.


Paper code: Geo 102: Structural and Dynamic Basis of Geomorphology

Section A

Interior structure of the earth, thermal state of the earth’s interior, Isostasy: views of Airy, Pratt, Hayford and Bowie, Joly and Holmes, Origin of the continents and oceans, earth movements: epeirogenic and orogenic- Mountain building theories of Jeffreys, Kober, Joly, Daly, Holmes and Plate Tectonics.

Section B

Definition, nature and scope of geomorphology, major concepts in geomorphology, Denudation: weathering, mass movements, erosion and sediment regimes, various models of landscape evolution: Davis, Penck, King, Hacks, Morisawa, Schumm.

Section C


Recommended Readings:

ग्राह, वी.सी. 2004: भू-आकृति विज्ञान। सावत पब्लिकेशन्स, जयपुर।
प्रसाद, गायत्री 2004: भू-आकृति विज्ञान। शारदा पुस्तक भवन, इलाहाबाद।

Paper code: Geo 103: Principles and Theory of Economic Geography

Section A

Changing nature of economic geography, approaches to economic geography, agricultural typology-with special reference to: subsistence plantation agriculture, mediterranean agriculture, mixed farming, commercial grain farming, livestock rearing.

Section B

Energy resources: detailed study of conventional and non-conventional energy resources, spatial patterns and supply problems, industries: iron & steel, alluminium industry, paper and pulp, cotton textile, chemical fertilizer and auto mobile.

Section C

Decision making process: location decision-behavioural view, international trade: major regional trade and economic integration block, major trends and patterns, economic region: concept and methods of delineation, need of economic regionalization for area development and planning-economic regions of India.

Recommended Readings:

Boesher, H.: A Geography of World Economy.
Prasad, Rama 2007: कृषि पारिस्थितिकी एवं नियोजन। राष्ट्र प्रकाशन, नई दिल्ली।

[Signature]

Registrar
Paper code: Geo A01: Man and Natural Environment

Section A

Definition and scope of environmental geography, its relation with other subjects, elements of the environment, man and environmental relationships: environmental determinism, possibilism and neo determinism, biosphere and its components, concept of ecology and ecological succession, types of ecosystems, energy flow in the ecosystem, soil system, geobiochemical cycles, major biomes of the world.

Section B

Environmental degradation and natural disasters, environmental crises: ozone depletion, green house gas effects, El-Nino, global warming and climate change, water scarcity, acid rain, sea level change, desertification, environmental pollutions: water, air, soil, noise and radioactive.

Section C

Environmental quality, sustainable development, environmental management, soil and forest resources management, water management, wildlife conservation, biodiversity and its conservation, environmental awareness and education, international efforts of environmental conservation.

Recommended Readings:


Paper code: Geo A02: Cultural Geography

Section A

Definition, nature and scope of cultural geography, the evolutionary approaches and conceptual framework, evolution of man and human society from Palaeolithic to Pleistocene period, rise and dominance of *homo-sapiens* and their spatial distribution over the continents, distribution and characteristics of primary races of the world, zone and stata theory.

Section B

Beginning of plant domestication, animal domestication and their regions, evolution of civilization: Mesopotamian, Nile, Indus and Hwang Ho Valley with respect to racial, ethnic, religious, linguistic, demographic, and organizational characteristics. School of cultural determinism, cultural adaptation, assimilation, integration diffusion and Environmental
perception. Major cultural hearths, realms and regions of the world, basic similarities and differences.

Section C

Major linguistic families and their distribution in the world, bases of cultural diversity: race, religion, language and nationalism, culture and environment, human settlements-origin, types, pattern and distribution, westernization, sanskritization and cultural urbanization.

Readings Recommended:

प्रथम, गायत्री 1991: सांस्कृतिक धरोहर। वर्तमान पुस्तक भण्डार, इलाहाबाद।
क्षेत्रीय,मुलुकवादी 2001: सांस्कृतिक धरोहर। राजस्थान हिन्दी भाषा अकादमी, जयपुर।
Paper code: Geo 111: Practical

<table>
<thead>
<tr>
<th>Minimum Marks: 36</th>
<th>Bifurcation of marks</th>
<th>Max. Marks: 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written Test on Lab. Work (4 Questions)</td>
<td>48</td>
<td>4 hours</td>
</tr>
<tr>
<td>Record Work &amp; Viva-Voce.</td>
<td>20+12</td>
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<tr>
<td>Internal Assessment</td>
<td>20</td>
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<tr>
<td>Total</td>
<td>100</td>
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</tr>
</tbody>
</table>

N.B. In written test there shall be 2 questions from each section. Candidates have to answer 4 questions selecting at least one question from each section. All questions carry equal marks. Examination be conducted in batches of not more than 20 candidates in any case. 12 hours for teaching practicals be provided for a batch of 20 students per week.

SYLLABUS

Section A

History of cartography, types of maps, enlargement and reduction and finding of area on map using planimeter, study of geological maps and preparation of their cross sections and interpretation, interpretation of weather maps and weather forecast, elementary trigonometry, classification of map projections and their specific uses.

Section B

Mathematical constriction of projections: cylindrical (equal area, Mercator's and Gall's stereographic); conical (with one standard parallel two standard parallels, Bönne's, polyconic and modified polyconic (international).

Section C

Mathematical constriction of projections: zenithal (equidistant- polar and equatorial case, equal area - polar and equatorial case, gnomonic- polar and equatorial case, stereographic-polar and equatorial case and orthographic- polar and equatorial case), and conventional: Sinusoidal and Mollweide, map policy of India and projections used for map output in India.

Recommended Readings:

- चीहान, पी.आर. 2005: प्रमोगात्मक नूरगोल। वसुकुर्म प्रकाशन, गोरखपुर।
Rampal, K.K. 1993: Mapping and Compilation: Methods and Techniques. Concept
Sharma, J.P. 2010–11: प्रयोगात्मक भूगोल की रुपरेखा। रस्तोगी पब्लिकेशन्स, मेरठ।
Delhi.
विवाही, आर.सी. एवं संवादक, त्रिपाठी 2009: प्रयोगात्मक भूगोल। प्रयाग पुस्तक सदन, इलाहाबाद।

**Paper code: Geo 201: Modern and Contemporary Geographical Thought**

**(19th century onwards)**

**Section A**

Definition, scope, purpose and philosophy of geography, themes and basic concepts in
geography; impact of Darwinism on Geographical thoughts, Foundations of modern
geography: German school (Humboldt, Ritter, Ratze, Richthofen, Hettnner, Schluter), French
school (Blache, Brunhes) British school (Mackinder) and Russian scholars during the 19th
century, focus on geography as a science of chorology and landscape morphology.

**Section B**

Rise of Anglo American School of geography: (Semple and Hartshorne) implications of
geography as spatial science, relationship between geography, economics and planning
(regional science) paradigms and revolutions: quantitative revolution, behaviouralism, radical
geography, approaches of integrated geography and modern synthesis.

**Section C**

Philosophical pluralism: empiricism, positivism, humanistic geography (idealism,
phenomenologism and existentialism) and structuralism, post-modernism and various
paradigms/ schools of geographical thought during post-modern period, dualism in
geography: physical and human geography, systematic and regional geography
environmentalism and positibilism, qualitative and quantitative, idiothetic and nomothetic,
Indian geography: development, emerging trends and professional challenges.

**Recommended Readings:**

India Private Limited, New Delhi.
Book House (Pvt.) Ltd., Jaipur.
Hall of India Private Limited, New Delhi.
Gold, John R. 1980: An Introduction to Behavioral Geography. Oxford University Press,
Oxford.

[Signature] (12) [Signature]
Paper code: Geo 202: Climatology & Oceanography

Section A

The basis of modern climatology, composition and layered structure of atmosphere, atmospheric energy: air temperature, the energy balance, atmospheric pressure and pressure belts, wind circulation: the planetary wind system, monsoon winds and local winds, adiabatic non-adiabatic processes, stability and instability, evaporation, factors affecting evaporation, humidity and its expression, clouds: types and characteristics, precipitation: types and world precipitation pattern.

Section B

Air masses, fronts: cyclones (tropical and extra tropical) and anticyclones. Koppen and Thonthwaite classification of world climates; major climatic types: Equatorial, savanna, monsoon, Mediterranean and West European.

Section C

Scope of oceanography, horizontal and vertical distribution of temperature, salinity, factors and distribution patterns, dynamics of oceanic water: currents, sea waves, tides and tidal theories currents of Atlantic ocean, Pacific ocean, Indian ocean and other seas, oceanic bottom relief, (Atlantic, Pacific and Indian oceans) oceanic deposits, coral reef formation, atolls and coral islands, theories of coral reef formations, Man and oceans, marine resources, biotic and abiotic, (mineral and energy resources) and their utilization.

8/12

Sumit
Recommended Readings:

गौतम, अक्षाकला 2010: जलवायु एवं समुद्र विज्ञान। रस्तोगी प्रकाशनस्, बेंगलूरु, दक्षिणी संस्करण।
गुप्ता, एस.एल. 2000: जलवायु विज्ञान। हिंदी माध्यम कार्यालय निदेशालय, दिल्ली विश्वविद्यालय, दिल्ली।
सिंह, एस. 2006: जलवायु विज्ञान। प्रयाग पुस्तक भवन, हैदराबाद।

Paper code: Geo 203: Principles and Theory of Economic Geography

Section A

Simple model of economy, environmental relations of the economy, spatial structure of economy, geographical basis of economic activities, evolution of world economic system.

Section B


Section C

Spatial organisation of land use: laws of return, concept of rent, Vonthunen's general theory of landuse, dynamic agricultural location theory, Thunian location theory in the late 20th century world, classical central place theory: range of good, threshold, central place system and hierarchy, Christaller's hexagonal trade areas, loss and uniform plain, modification of Christaller's model.
Recommended Readings:

भौतिक अवसर: आर्थिक भूगोल। रत्नागिरि प्रकाशन, गोरखपुर।
हार्ले, ए.म. 2006: संसाधन भूगोल। वसुध्वर प्रकाशन, गोरखपुर।
जणकी, वी.सी. 2014: आर्थिक भूगोल। पंचशील प्रकाशन, जयपुर।
काशीनाथ सिंह, जगदीश सिंह: आर्थिक भूगोल के मूल तत्त्व। वसुध्वर, गोरखपुर।
प्रसाद, रामा 2007: कृषि परिस्थितिकी एवं नियोजन। राधा प्रकाशन, नई दिल्ली।
प्रसाद, रामा एवं यादव, सतवीर 2007: कृषि परिस्थितिकी एवं नियोजन। राधा प्रकाशन, नई दिल्ली।
श्रीवास्तव, योगेश, एवं राम, योगेश. 2002: आर्थिक भूगोल। वसुध्वर प्रकाशन।

Paper code: Geo B01: Population Geography

Section A


Section B

Migration: history, theories, trends and patterns of international and internal migration, population dynamics: fertility and mortality- measurement, determinants and distribution, world population composition and characteristics, world population urbanization, trend pattern and challenges.
Section C

India-population characteristics and relationship with development; population control movement and policies; urbanization and population explosion; post independence development—reproductive and child health programme, contemporary issues – ageing of population; declining sex ratio; hiv/aids.

Recommended Readings:

www.who.int/ageing/en/

Paper code: Geo B02: Quantitative Techniques in Geography

Section A

Probability: theory of probabilities- law of addition and multiplication probabilities of distribution: normal, bionomial, poisson-sampling: basic concepts, sample units and design, sampling frame and procedures, standard error and sample size, testing the adequacy of samples, hypothesis testing: needs and types of hypotheses-goodness of fit and significance and confidence levels-parametric and non-parametric procedures; contingency tables, chi-square test, bionmial test, t-test, mann-whitney u test,
Section B

Bivariate analysis; forms of relation and measuring the strength of association and relation-construction and meanings of scatter diagram simple linear and regression analyses-spearman's rank and product moment correlation coefficients-the ordinary least square method of fitting a regression line-construction of regression line: interpolation, prediction, explanation and residual-statistical tests of significance of the estimates; residuals and their mapping.

Section C

Multivariate analysis; basics of multiple regression-partial correlation coefficient regression analysis, analysis of variance and anova-testing the overall significance of a regression auto correlation-multicolliniarity- basis principles and elements of factor analysis and principal component analysis, surface and models: gravity potential; model-spatial interpolation and trend surface analysis-simulation models: random walk and diffusion models-markov chain model similarity indices and region building-construction of thiessen polygons.

Recommended Readings:


Paper code: Geo 211: Practical

<table>
<thead>
<tr>
<th>Minimum Marks: 36</th>
<th>Bifurcation of marks</th>
<th>Max. Marks: 100</th>
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<tr>
<td>Project Report &amp; Viva-Voce.</td>
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<tr>
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<td>20</td>
<td></td>
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N.B. In written test there shall be 2 questions from each section. Candidates have to answer 4 questions selecting at least one question from each section. All questions carry equal marks. Examination be conducted in batches of not more than 20 candidates in any case. 12 hours of teaching practicals be provided for a batch of 20 students per week.

SYLLABUS

Section A

Preparation of frequency table, graphical representation of data: histogram, frequency polygon, frequency curve and cumulative frequency curve or ogive, finding skewness, computation of mean, median and mode, dispersions: mean and standard deviation and computation of correlations: Karl Pearson's and Spearman's rank, coefficient of variability, theoretical basis of nearest neighbour analysis and exercises.

Section B

Locational analysis of urban centres, measurement of disparities, using latest data base: state, district, tehsil and development block level, preparation of choropleth, isopleths and isochrone map, population potential surface map, population pyramids map and cartograms.

Section C

Three dimensional diagrams: spherical and block pile, drawing of polygraphs, semi-log and log graphs, network analysis, trilinear chart, circular graph, climatograph, annual water budget graphs (surplus and deficiency).

Project Report: A candidate is to prepare project report of a village area for one week away from the Headquarter of the institution. The marking on the project report will be awarded by the external examiner in consultation with the internal examiner concerned. The project should be based on primary data obtained by the candidate. The data should be represented by suitable cartographic methods.

Books recommended


शाम्म, जे.पी. 2010–11: प्रयोगात्मक भूगोल की उपरेखा। रस्तोगी पत्रिकेश्षन्स, नेपाल।

लिखितार, जरसी. एवं सुधाकर, जिपाली 2009: प्रयोगात्मक भूगोल। प्रयाय पुस्तक भवन, इलाहाबाद।
Section A
Geological structure and its relation with distribution of minerals, physiographic divisions; climate:- various seasons and weather associated with these seasons, mechanism of Indian monsoon, major climatic regions; soil:- characteristics, distribution and major soil regions; drainage system and watersheds.

Section B
Resource potential and evaluation, water resources & Multi-purpose irrigational projects, vegetational resources, agriculture: typology, major crops, changing pattern of crops and green revolution, animal resources, mineral resources, human resources & population policies.

Section C
Resources development and utilization: power, industries and transport, river basins of India, riverine problems of sharing water and their planning, industrial regions and economic regions of India, regional problems.

Recommended Readings:

Bansil, B.C. 1975: Agricultural Problems in India, Delhi.
India 2004, Ministry of Information and Broad Casting. Govt. of India, New Delhi.
Kurdue, A. & Raza, Moonis: Indian Economy the Regional Dimension.
मोरिया, सी. 1999: आँध्रप्रदेश भारत का नृत्यत भूगोल। साहित्य भवन पब्लिकेशन्स, आगरा।
Mahesh Chand and V.V. Puri, Regional Planning in India.
Paper code: Geo C01: Research Methodology

Section A

Research: meaning, objectives, significance, types of research, research approaches, problems of geographical research, relevant and applied research, hypothesis and its basic concepts, testing of hypothesis, models and paradigm, formulation of research proposal and research design, types of research projects and report writing.

Section B

Sources of data, methods of data collection, processing, analysis and results, observation and interview questionnaire and field schedule, sampling theory, sample size, sampling techniques, selected techniques of spatial analysis, concentration and dispersal of economic activities, interaction theories, scaling techniques, measurements of disparities and inequalities, methods of delimitation of economic, industrial, agricultural and planning regions.

Section C

Regional population analysis, population projections, network analysis, delimiting sphere of city influence, core and marginal area, morphometric analysis, drainage basin analysis and slope analysis, biogeochemical cycles, integrated, area development planning, use of software for quantitative geographical analysis, introduction to remote sensing and geographical information system in land use analysis.

Recommended Readings:

Mitra, A. 1967: Levels of Regional Development India Census of India. Vol. I, Part I-A (i) and (ii), New Delhi.

Paul Claval, An Introductions to Regional Geography.


Singh, G 1998: A Geography of India. Atma Ram & sons, Delhi, Sixth Edition


Paper code: Geo C02: Disaster Perception and Management in India

Section A

Concept of disaster management, institutional framework of disaster management in India, stakeholders in disaster management, hazards, risks, vulnerability and disasters, types of hazards and disasters: manmade and natural, livelihoods and climate change.

Section B

Floods, drought, earthquakes, landslides, cyclones, forest fires and Tsunamis, forest degradation, construction of dams, diversion of river channels, mining and quarrying, haphazard urban growth and unplanned industrial development, coping with manmade disaster.

Section C

Management authorities and community participation: pre disaster phase, emergency phase and post disaster management, disaster preparedness, mitigation and response. disaster management and risk reduction mechanism in India: public awareness, agencies, resources, early warning system, policies, action plans and training in disaster management.

Recommended Readings:

प्रार, जे. 2006: सूनामी का विज्ञान। नाना प्रकाशन. नई दिल्ली।

Paper code: Geo D01: Principles and Applications of Remote Sensing and Geographical Information System

Section A

Remote sensing: definition and scope of remote sensing, elements of remote sensing: electromagnetic radiation and interaction with earth surface features, data products and users, atmospheric windows, remote sensing systems: platforms, sensors, resolution and radiometric characteristics, elements of image interpretation and keys, types of aerial photographs, aerial cameras types of mosaics, relief displacement and parallax, Satellites: landsat- Mss & Tm, Spot, Noaa-Avhhhr, Iris, Modis, Radarsat, Ikonos, Quickbird & Cartosat.

Section B

Digital image processing and classification: pre-processing and image enhancement techniques- rectification and restoration, contrast manipulation, density slicing, spatial filtering and band ratio, classification- supervised and unsupervised, post-classification analysis and accuracy assessment, microwave remote sensing, advantages over optical, unique capabilities of microwave, SAR & SLAR.

Section C

RS applications: mapping and monitoring of land use and land cover, forestry and desertification, soil and water resources, remote sensing and hazard mapping and environmental monitoring, introduction to GIS, fundamentals of GIS- geospatial databases,
data structure and formats, projections and coordinate system, raster and vector data infrastructure and analysis, integration of remote sensing and GIS.

Recommended Readings:

American society of Photogrammetry1983: Manual of Remote sensing. ASP, Falls Church,V.a..
चुंगिलाल, ई.ई. 2004: दूरस्थिति तथा भौगोलिक सूचना प्रणाली। शारदा पुस्तक प्रकाशन, इलाहाबाद।

Paper code: Geo D02: Urban Geography

Section A

Meaning, aims, importance and scope of urban geography, factors affecting recent trends the growth of town cities different historical periods during neolithic period, greek and roman period, dark ages, medieval period renaissance period, industrial revolution, and modern times, chief characteristics of the towns, trends of urbanisation in the world, urbanisation in india since 1901 and its problems, definitions of urban centres, chief characteristics of modern town, city conurbation metropolitan and megalopolis, spatial pattern and distribution of urban centres origin and evolution of urban settlement, types of cities-central placed, urban transportation.

Section B

Functions and functional classification of towns, urban rank-size relationship, concept of urban economic functions and its urban hierarchy based on functions law of promate city, urban morphology, unplanned growth of towns, urban master plans, morphology of indian cities, functional structure of towns, characteristics of C.B.C. residential area, and other functional areas central place theory (christaller and losch) and models of urban structure theori of urban structure (burgess, hoyt, harris & ullahman, mann, white).
Section C

Centrifugal and centripetal forces in urban geography: development of suburbs, rural, urban fringe, satellite towns, ring towns, sphere of urban influence (umland) and its delimitation control of urban problems: environmental, urban poverty, slums, transportation, housing, crime, principles of town planning, preparation of a master plan, study of master plan of Jaipur city, principles of regional planning.

Recommended Readings:

कसल, एस.सी. 2010: नगरीय भूगोल, मीनाशी प्रकाशन, मेरठ।
Dickinson, R.E.: City Region and Regionalism. Routleged and Kegon Paul London.
Herrold M. Mayer: Readings in Urban Geography, Central Book Depot, Allahabad.
N.V. Sovani: Urbanization and Urban India. Asia publishing House, Bombay.
P.C. Malhotra: Survey of Bhopal City and Bairagarh (Asia publishing Bombay)
Shah Manzoor Alam: Hyderabad and Secunderabad, Twin City Studies in Urban Geography. Allied Published, Delhi.

Paper code: Geo E01: Political Geography

Section A

Definition, scope nature and importance of political geography: its relation with other social sciences, history and development of political geography: pre-modern phase (before 19th Century), geopolitics and German school of thought. Global strategic views: views of Mackinder, Spykman, Meining, Hooson, De Seversky, World's geostrategic regions, types of approaches, trends of politics in the world modern phase (19th to 2000 AD).

Section B

State and nation, idea of state: elements of the state: territory, population, organization and power, concept of nation, nationalism, heart of the state: core areas, the focus: capital city, frontiers and boundaries: definitions, classification and concepts, boundaries as economic barriers, Indias, borders and their problems, buffer zones, the concept of territorial sea and maritime boundaries ,landlocked states: problem of access, growth of nations and...
disintegration of empires: unitary and federal states, the dying colonialism and resurgent nationalism, supernationalism: form state of blocks.

Section C

Extending dimensions of political geography, politics and transportation, geography of foreign aid & economic development, emergence of third world block, politico-geographical study of India, political geography of administration, politico-geographical implications of space research. function, methods and trends of electrol geography: voter’s participation before voting prededence, conceptual model of the voting decision, operationalisation of conceptual decision, garrymendering in relation to India.

Recommended Readings:


Paper code: Geo E02: Advanced Geomorphology

Section A

Fundamental concepts of geomorphology; schools in geomorphology, recent trends in geomorphology, earth movements: epireogenic, orogenetic types and classification of weathering, mass movement erosion, plate tectonics, seismicity, vulcanicity, orogenic structures with reference to the evolution of Himalaya, various models of landscape evolution (Davis, Penck, King, Hacks, Morisawa, Schumm, poly cyclic evolution of landscapes.

Section B

Geomorphic processes, dynamics of fluvial, glacial, Aeolian, marine, and karst processes and resultant landforms, poly cyclic landforms, various models of slope development (Wood,
Davis, Penck, King, R. Savigear, Strahler, Fisher-Lehmann, Young), concept of morphogenetic region, Systems in geomorphology; Models in geomorphology, erosion surfaces-techniques of identification and correlation.

Section C

Terrain evaluation, geomorphic mapping, geomorphic hazards and mitigation measures; Digital Elevation Model (DEM) and Triangulated Irregular Network (TIN) unit, land capability and land suitability classification, hydro-geomorphology, urban geomorphology, environmental geomorphology, geomorphic hazards.

Recommended Readings:


Paper code: Geo 311: Geography Practicals

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SYLLABUS

Section A

Methods and techniques of representation of relief: methods and techniques of depicting relief Profile, gradients and calculation of slope, Block diagrams, field sketching, hypsographic curves, altimetric frequency graphs.

Section B

Interpretation of topographical maps: a brief history of topographical maps of the world with special reference to India and their interpretation, detailed study of such topographical sheets which depict typical geomorphological and cultural landscapes, scanning and digitization of maps (Raster- Vector Image).

Section C

Calculation of scale, number of runs/strips and aerial photographs in a strip, knowledge of stereoscopic vision and use of stereoscope, Air photo interpretation and exercise on the determination of height on Air photo using Parallax Bar.

Recommended Readings:


Paper code: Geo 401: Geography of Rajasthan

Section-A

Physical aspects of rajasthan: geological structure, relief, climate, drainage, natural vegetation, environmental pollution-causes and types, drought, desertification, soils, soil erosion and conservation, availability, problems and conservation of water resources.
Section B

Economics aspects: irrigation, sources, types, irrigation intensity, crop wise irrigation, quality of irrigation water, problems, irrigation projects: detailed study of Indira Gandhi canal project, Chambal valley project, Mahi bajaj sagar project on physical and socio-economic aspects.

Agriculture: development under five year plans, problems of agriculture development. general land use: live-stock and dairy development, minerals, industries: textile, sugar, cement, marble and granite, fertilizer, zinc and copper smelting, power & energy: hydro-electricity, coal, petroleum, solar energy, bio-energy. transport & trade, development of tourism. desert development programme, tribal areas development programme, Aravali hill development programme.

Section C

Cultural and development aspects: population-number, growth, distribution and density, rural and urban, male and female population, literacy status, occupational structure, schedule castes and schedule tribes, population problems, study of Bhil, Meena and Garasia, settlement: types, building materials and house types and factors affecting settlements in Rajasthan.

Recommended Readings:

Govt. of Rajasthan Techno-Economics Survey Of Rajasthan. Govt. of Rajasthan Publication.
Jat, B.C.2014, Rajasthan Manchitravalri, RBD Publication, Jaipur.
Maheswari, D. 2008: Geography of Rajasthan. Shahitya Bhawan Publication, Hospital Road, Agra.
Sharma B.L. 1984: Agricultural Typology of Rajasthan.
Sing, R.L. 1977: Regional Geography of India.

Paper code: Geo F01: Applied Geography

Section A

Meaning, nature and scope, principles and approaches, application of geographical methods of survey and geospatial tools in analysis of resource base, its appraisal, micro, regional, planning and demographic attributes.
Section B

Delineation of resource regions, regional divisions according to variations in levels of socio-economic development, special purpose regions-river valley regions, national capital region, problem regions- hilly regions, tribal regions, regions of drought and floods.

Section C

Planning for a region’s development, state capital region (Jaipur), indicators of development and their data sources, measuring levels of regional development and disparities-case study of Rajasthan, land use policy implications in India with special reference to India, review of policies related to decentralized planning formulation at national, state, district, block and grass root level.

Recommended Readings:

श्रीवास्तव, दी.के. 1997: प्रदेशिक नियोजन और समाजसेवाता प्रकाशन, गोरखपुर।
Paper code: Geo F02: Regional Planning and Development

Section A

Conceptual and theoretical framework of regional planning, principles and determination of regional planning, multi-level planning and inter-regional stresses, regional hierarchy, role of geography in preparation of a regional plan, significance of the term integration (political, economic and spatial) for regional planning.

Section B

The process of regional development: indicators of development; levels of regional development and disparities, strategies for development, regional planning in India: concept and indicators of development; regional imbalances; type of regions and methods of regionalization, growth pole and growth centers, environmental issues in regional planning for sustainable development, demarcation and planning regions of India.

Section C

Role of remote sensing, global positioning systems (GPS) and geographic information system (GIS) in modern regional planning, case studies from selected countries: regional planning in USA (TVA), regional planning in India (DVC and NCR) regional planning in Netherlands, Principles of town and country planning.

Recommended Readings:

श्रीवास्तव, शर्मा एवं चौहान 2008: प्रादेशिक नियोजन और संसदिति विकास। वसुदव संस्कार, गोरखपुर।
www.academia.edu/Papers/in/Economic_Geography
www.jstor.org/stable/143805
Paper code: Geo G01: Geography of Water Resources

Section A

Definition and scope of water resource geography, inventory and distribution of world's water resources, water resources of India, groundwater, hydrological cycle, demand and use of water, irrigation methods.

Section B

Salinity, alkalinity, overexploitation of groundwater and arsenic problem. water pollution, river water pollution, demand and water supply in industries, flood management, drought and dry land farming.

Section C

Water conservation/participatory approach, traditional methods of water conservation in India and Rajasthan, integrated basin planning, watershed management, river water disputes, water management by remote sensing technology, environmental disasters and water crisis.

Recommended Readings:

भारती, राधाकांत, 1998: भारत की नदियाँ। नेशनल बुक इंटरटेंशनल, नई दिल्ली।
गुर्जर, आर.के. एवं जाट, बी.सी. 2012: जल संरक्षण भूगोल। समस्त पवित्रकेश, जयपुर।
गुर्जर, आर.के. एवं जाट, बी.सी., 2001: जल प्रबंध विज्ञान। पोइंटर पब्लिशर्स, जयपुर।
जाट, बी.सी. 2007: जलप्रबंध प्रबंधन पोइंटर पब्लिशर्स। जयपुर।

Paper code: Geo G02: Agricultural Geography (Elements & Applied)

Section A

Agriculture geography: nature and development, origin dispersal and development of agriculture, field survey and mapping in agriculture geography, geographical determinants of agricultural land use: relief and climate, soils, human determinants of agriculture.

Section B

Models in agricultural geography, diffusion of agriculture innovations, land use and land capability classification, agricultural efficiency productivity, agricultural evaluation, techniques: crop ranking intensity, crop diversification and crop combination regions.

Section C

Agricultural regionalization, agricultural typology, green revolution, agricultural scenario in India, agro-climatic zones: India and Rajasthan, agricultural policy in India.

Recommended Readings:

ICAR : Soil Conservation of India.
Paper code: Geo H01: Industrial Geography

Section A

Evolution of industrialization (India and World), location factors of industries, theories: least cost school, transport cost school, market areas school, marginal location school and behavioural school, new trends in industrial geography, concept of entrepreneur, significance of enterprise and firm, significance of cost and price.

Section B

Formation and delineation of industrial regions, industrial complexes, industrial regionalization, industrial regions in India: Hooghly side industrial regions, Damodar valley industrial regions, Delhi-Mumbai industrial corridor, industrial policies of India, liberalization, privatization and globalization (special reference of India); special economic zones, industrial regions of World: Ruhr basin industrial region, Great lakes industrial region.

Section C

Industries: cotton, jute, textile, iron and steel, aluminium, fertilizer, paper and pulp, copper, chemical and pharmaceutical, ship building, automobile, cottage and agro-based industries, tourism industry, concept of optimum location, geographical inertia, multi-location industries, market oriented industries, foot loose industries, raw material oriented industries, manufacturing industries, processing industries.

Recommended Readings:
Lloyd and Dicken: Location in Space: A theoretical Approach to Economic Geography.
M.C. Cart and Lindberg Hodder and Lee Economic Geography: A preface to Economic Geography.
Alexanderson Gnmar: Geography of Manufacturing. Englewood Cliffs, N.J.
Saxena, Economic Geography,

**Paper Geo H02: Biogeography**

**Section A**

Definition, scope and significance nature, approaches, history, recent trends and developments, plant and animal ecology forms and functions of eco system, ecosystem with special reference to mountain and desert factors influencing distribution of flora, taxonomical and ecological classification of plant, ecological succession, ecotone and community, patterns of distribution of world vegetation.

**Section B**

Nature and classification of animals, dispersal and migration of animals: type and causes – case studies, geographical isolation. the zoo-geographical region, biogeography of the seas: island biogeography.

**Section C**

Conservation and management of forest and wild life with reference to India, process of desertification, its consequences and management principals, projecting into the future: climate change: biogeographical consequences of global change: changing communities and biomes, effect of climate change on biological diversity, environmental hazards and problems of pollutions.

**Recommended Readings:**

Paper code: Geo 411: Practical

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<tr>
<td>Field Survey and Viva-Voce. 2 hours</td>
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SYLLABUS

Section A

The art of surveying, history of surveying, scope and utility, problems and classification of surveying, use of plane table survey, types of traversing, resectioning in plane table survey: two and three point problems, use of Indian pattern clinometer.

Section B

Use of dumpy level, practical contouring cross sectioning, use and application of abney level, theodolite: its parts and their functions, use, traverse and traverse computation, independent coordinates.
Section C

Use of total station and GPS, interpretation and identification of cultural and physical features on aerial photographs, photo interpretation of land use and settlements in the field.

Camp Work: A topographical survey of about 100 hectares in a settlement for one week away from the headquarter of the institution. Survey reports of the same will be prepared with the help of computer technology (word programme & AutoCAD). The marking on the survey report will be awarded by the external examiner in consultation with the internal examiner concerned.

Recommended Reading:

Gautam, N.C.: Urban Land use studies through Airphoto Interpretation.