# Pt. Ravishankar Shukla University Raipur

**CURRICULUM & SYLLABI**

**(Based on CBCS & LOCF)**

# M.A./M.Sc. Geography

**Semester System**

**Session: 2024-25 & onwards**

# M.A./M.Sc. Geography

The Master of Geography program is a two-year, four-semester program designed to provic students with a comprehensive understanding of advanced Geographical and Cartographical, Remote sensing and Geographical Information System and their applications. Through a balanced curriculum covering diverse areas, students establish a strong foundational knowledge during the initial semesters. As the program progresses, students have the flexibility to tailor their learning by choosing specialized electives that align with their interests and career goals. Upon completion of the program, students will be well-prepared for diverse career paths, including academia, research, and technology sectors.

Geography is as old as man himself, but its academic age is limited to the last few centuries. In twentieth century, geography saw a transition from an exceptional, descriptive regional field of enquiry to an analytical discipline with wide interdisciplinary outlook; a multifaceted field of enquiry that encompasses not only a broad range of physical and life sciences, but also social sciences. For this integration geographers gain thorough knowledge of a broad range of subjects such as history, economics, politics, sociology, society, statistics, and so on. Geoinformatics has recently aided the transformation of geography into an applied discipline. As a result, geographers have evolved into problem-solvers that deal with social, fiscal, and environmental issues all around the world.

## Programme Outcomes:

Upon successful completion of the Master of Geography program, students will be able to:

| | |
|---|---|
| **PO-1** | **Knowledge:** Demonstrate a deep understanding of advanced Geographical Concepts, theories, and techniques in various subfields of Geography. |
| **PO-2** | **Critical Thinking and Reasoning:** Capable of analyzing the results critically and applying acquired knowledge to solve the problems. |
| **PO-3** | **Problem Solving:** Capable of Analyzing the results critically and applying acquired knowledge to solve the Geographical problem related to Environment and mankind. |
| **PO-4** | **Advanced Analytical and Computational Skills:** Possess advanced skills in Geographical analysis and computation, including proficiency in using Remote sensing and GIS software, computational tools for numerical simulations and data analysis. |
| **PO-5** | **Effective Communication:** Communicate complex Geographical ideas and results effectively to both technical and non-technical audiences, through written reports, presentations, and teaching. |
| **PO-6** | **Social/ Interdisciplinary Interaction:** Integrate Geographical concepts and techniques into interdisciplinary contexts, collaborating effectively with professionals from other fields to address complex problems. |
| **PO-7** | **Self directed and Lifelong Learning:** Ability to learn lifelong learning skills which are important to provide better opportunities and improve quality of life. Capable to establish independent startup/innovation center etc. |
| **PO-8** | **Effective Citizenship: Leadership and Innovation:** Lead and innovate in Various geographical contexts, contributing to advancements in the field and applying geographical insights to emerging challenges. |
| **PO-9** | **Ethics:** Demonstrate ethical and responsible conduct in geographical research, teaching, and collaboration, adhering to professional standards andbest practices. |
| **PO-10** | **Further Education or Employment:** Engage for further academic pursuits, Including Ph.D. programs in Geography or related fields. Get employmentin academia, research institutions, industry, government, and other sectors. |
| **PO-11** | **Global Perspective:** Recognize the global nature of geographical research And its impact, appreciating diverse cultural perspectives in geographicalpractices. |

**PROGRAMME SPECIFIC OUTCOMES (PSOs):** At the end of the program, the student will be able to:

| | |
|---|---|
| **PSO1** | Understand the nature and physical environmental phenomena using specialized knowledge pertaining to various sub field of Geography. |
| **PSO2** | Ability to use the state of art geospatial knowledge for resolving the social, economic, cultural and physical problems of the society |
| **PSO3** | Learning the techniques of data acquisition, data processing and interpretation of locational and spatial data. |
| **PSO4** | Ability to demonstrate and communicate the geographical knowledge and inculcate analytical ability, research aptitude and relevant skills |
| **PSO5** | Qualify national level tests like NET/GATE etc. |

## M.A./M.Sc. Geography

| **Specification of Course** | Semester | No. of Courses | Credits |
|---|---|---|---|
| Core | I-IV | 16 | 80 |
| Elective | III-IV | 04 | 20 |
| Total | | 20 | 100 |
| **Additional Courses** (Qualifying in nature, for Student admitted in School of Studies only) | | | |
| Generic Elective | II-III | 02 | 04 |
| Skill Enhancement (Value Added Courses) | IV | 01 | 02 |
| IKS(Indian Knowledge System) | I | 01 | 02 |

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# M.A. /M.Sc. Geography
# Programme Structure

| Sem. | Course Nature | Course Code | Course Title | Course Type (T/P) | Hrs/ Week | Credits | Marks | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | CIA | ESE | Total |
| Semester-I | Core | GEOG101 | Geomorphology | T | 6 | 5 | 30 | 70 | 100 |
| | Core | GEOG102 | Climatology | T | 6 | 5 | 30 | 70 | 100 |
| | Core | GEOG103 | Geographical Thought | T | 6 | 5 | 30 | 70 | 100 |
| | Core | GEOG104 | Geography of India | T | 6 | 5 | 30 | 70 | 100 |
| | Core | GEOG105 | **Practical-I:** Topo. Sheet Interpretation, Geological map, Map Projections and Surveying | P | 8 | 4 | - | 100* | 100 |
| Semester-II | Core | GEOG201 | Economic and Natural Resource Management | T | 6 | 5 | 30 | 70 | 100 |
| | Core | GEOG202 | Oceanography | T | 6 | 5 | 30 | 70 | 100 |
| | Core | GEOG203 | Regional Development and Planning | T | 6 | 5 | 30 | 70 | 100 |
| | Core | GEOG204 | Social Geography | T | 6 | 5 | 30 | 70 | 100 |
| | Core | GEOG205 | **Practical-II** : Advance Cartography | P | 8 | 4 | - | 100* | 100 |
| | Core | GEOG206 | **Internship** | - | | 2*** | - | 100 | 100 |
| Semester-III | Core | GEOG301 | Population Geography | T | 6 | 5 | 30 | 70 | 100 |
| | Core | GEOG302 | Research Methodology | T | 6 | 5 | 30 | 70 | 100 |
| | Core | GEOG303 | **Practical-III** Remote sensing and Quantitative Techniques | P | 10 | 5 | - | 100* | 100 |
| | Elective-1 (Select Any one) | GEOG304A | Settlement Geography | T | 6 | 5 | 30 | 70 | 100 |
| | | GEOG304B | Biogeography and Ecosystem | T | 6 | 5 | 30 | 70 | 100 |
| | Elective-2 (Select Any one) | GEOG305A | Remote Sensing Techniques | T | 6 | 5 | 30 | 70 | 100 |
| | | GEOG305B | Geography of Chhattisgarh | T | 6 | 5 | 30 | 70 | 100 |
| Semester-IV | Core | GEOG401 | Agriculture Geography | T | 6 | 5 | 30 | 70 | 100 |
| | Core | GEOG402 | Field Surveying (Physical and Socio Economic Survey) Report | T | 6 | 5 | - | 100** | 100 |
| | Core | GEOG403 | **Practical IV:** Geographical Information System & Quantitative Techniques | P | 10 | 5 | - | 100* | 100 |
| | Elective-4 (Selectany one) | GEOG404A | Geography of Health | T | 6 | 5 | 30 | 70 | 100 |
| | | GEOG404B | Political Geography | T | 6 | 5 | 30 | 70 | 100 |
| | Elective-5 (Select any one) | GEOG405A | Geographical information System | T | 6 | 5 | 30 | 70 | 100 |
| | | GEOG406B | Environmental Geography | T | 6 | 5 | 30 | 70 | 100 |

* 70+30 (Practical Record and Viva-Voce)
** 70+30 (Survey Report and Viva-Voce)
***Total 60 hours during summer vacation.

**Note:** Field Surveying and Report Writing

1. In place of Elective Course Student can choose paper(s) from MOOC Courses (Swayam Portal) subject to the following conditions:
   a. The chosen paper will be other than the papers offered in the current course structure.
   b. The paper will be PG level with a minimum of 12 weeks' duration.
   c. The list of courses on SWAYAM keeps changing; the departmentalcommittee will finalize the list of MOOC courses for each semester.
   d. The paper(s) may be chosen from Swayam Portal on the recommendationof Head of the Department.
2. The candidates who have joined the PG Programme in School of Studies (University Teaching Department), shall undergo Generic Elective Courses (only qualifying in nature) offered by other departments/SoS in Semester II and Semester III.
3. The candidates, who have joined the PG Programme in School of Studies (University Teaching Department), shall undergo Skill Enhancement Course/Value Added Course (only qualifying in nature) in Semester I and Semester II.

**Generic Elective Courses:** (Offered to PG students of other Departments/SoS only)

| Semester | Course Code | Course Title | Course Type (T/P) | Hrs/ Week | Credits | Marks | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | CIA | ESE | Total |
| II | GEOG501 | Physical Geography | T | 2 | 2 | 30 | 70 | 100 |
| III | GEOG502 | Regional Geography of India special reference to Chhattisgarh | T | 2 | 2 | 30 | 70 | 100 |

**Skill Enhancement/Value Added Courses:** (Offered to the PG students of SOS in Geography)

| Semester | Course Code | Course Title | Course Type (T/P) | Hrs/ Week | Credits | Marks | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | CIA | ESE | Total |
| IV | GEOG601 | Computer Cartography | P | 4 | 2 | 30 | 70 | 100 |

**IKS (Indian Knowledge System) Offer Course:** (Offered to the PG Students of SOS in Geography)

| Semester | Course Code | Course Title | Course Type (T/P) | Hrs/ Week | Credits | Marks | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | CIA | ESE | Total |
| I | GEOG602 | Indian Knowledge System | T | 2 | 2 | 30 | 70 | 100 |

## Programme Articulation Matrix:

Following matrix depicts the correlation between all the courses of the programme and Programme Outcomes

| Course Code | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| GEOG101 | √ | √ | √ | × | √ | √ | √ | √ | × | √ | √ | √ | √ | × | × | √ |
| GEOG102 | √ | √ | √ | × | √ | √ | √ | √ | × | √ | √ | √ | √ | √ | √ | √ |
| GEOG103 | √ | √ | × | × | √ | × | √ | × | √ | √ | × | √ | × | × | × | √ |
| GEOG104 | √ | √ | × | × | √ | × | √ | × | × | √ | × | √ | × | × | × | √ |
| GEOG105 | √ | √ | √ | √ | √ | √ | √ | × | √ | √ | √ | √ | √ | √ | √ | √ |
| GEOG201 | √ | √ | √ | × | √ | √ | √ | × | × | √ | √ | √ | √ | × | × | √ |
| GEOG202 | √ | √ | √ | × | √ | √ | √ | √ | × | √ | √ | √ | × | × | × | √ |
| GEOG203 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | × | √ |
| GEOG204 | √ | √ | √ | × | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| GEOG205 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| GEOG206 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | × | √ |
| GEOG301 | √ | √ | √ | × | √ | √ | √ | √ | × | √ | √ | √ | √ | √ | √ | √ |
| GEOG302 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | √ | √ | √ | √ | √ |
| GEOG303 | √ | √ | √ | √ | √ | √ | √ | √ | × | √ | √ | √ | √ | √ | √ | √ |
| GEOG304A | √ | √ | √ | × | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | × | √ |
| GEOG304B | √ | √ | √ | × | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | × | √ |
| GEOG305A | √ | √ | √ | × | √ | × | √ | √ | √ | √ | √ | √ | √ | × | √ | √ |
| GEOG305B | √ | √ | √ | × | √ | × | √ | × | √ | √ | × | √ | × | × | × | √ |
| GEOG401 | √ | √ | √ | × | √ | × | √ | √ | √ | √ | √ | √ | √ | × | × | √ |
| GEOG402 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | × | × | √ |
| GEOG403 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| GEOG404A | √ | √ | √ | × | √ | √ | √ | √ | × | √ | √ | √ | √ | × | × | √ |
| GEOG404B | √ | √ | √ | × | √ | √ | √ | √ | × | √ | × | × | × | × | √ | √ |
| GEOG405A | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| GEOG406B | √ | √ | √ | × | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | √ | √ |
| No. of courses mapping the PO/PSO | 25 | 25 | 23 | 09 | 25 | 21 | 25 | 20 | 16 | 25 | 20 | 24 | 19 | 09 | 12 | 25 |

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# M.A./M.Sc. (Geography) Semester-I

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG101 | **Geomorphology(I)** | | Core |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 5 | 1 | 0 |

| Maximum Marks | CIA | ESE |
|---|---|---|
| 100 | 30 | 70 |

## Learning Objective (LO):

Geomorphology is essentially a field of science, therefore students can be taken to the field for effective understanding of geomorphology forms and processes. Department must have good geomorphic lab equipped with photographs of landforms of various climatic regions and toposheets of Survey of India..

## Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Understand the nature, scope and significance of geomorphology and fundamental concepts in subject. | U |
| 2 | To examining the Origin and Evolution of the earth primary relief features by different theories in subject. | An |
| 3 | Understand about Exogenous Processes considering weathering and mass wasting and nature and types of the slope. | U |
| 4 | Evaluate the fundamental Model of Davisian Cycle of Erosion to learn the function of river and its landforms development process. | An |
| 5 | .Evaluate the impact of Climate change on Landforms and application of Geomorphological approaches on environment. | E |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate;**C**-Create).

## CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 3 | 3 | - | 1 | 2 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | - | - | 2 |
| CO2 | 3 | 3 | 3 | 2 | 1 | 2 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | 1 | 1 | 3 |
| CO3 | 3 | 3 | 3 | 1 | 1 | 2 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | 1 | 1 | 3 |
| CO4 | 3 | 3 | 3 | 1 | 1 | 2 | 3 | 1 | 1 | 2 | 2 | 3 | 2 | 1 | 1 | 3 |
| CO5 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | 2 | 1 | 2 | 3 | 3 | 2 | 1 | 1 | 3 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Nature and scope of Geomorphology; Fundamental concepts, Geological Structures and landforms, uniformitarians, multicylic and polygenetic evolution of landscapes. | 15 | 1 |
| II | Constitution of the Earth Interior, Theory of Isostasy, Earth Movement: Endogenetic forces; Diastrophic forces; Eperiogenic and Orogenic, Sudden Forces: Volcanicity, Earthquake, Plate tectonics, orogenic structures with reference to the evolution of the Himalaya. | 15 | 2 |
| III | Exogenic Processes: Concept of gradation, Agents and processes of gradation, causes, types of weathering, mass movement erosion, depositional processes and resultant landforms and soil formation. Slope evolution, down warping, parallel retreat and slope replacement models. | 15 | 3 |
| IV | Geomorphic processes; Normal Cycle of erosion: W.M. Davis, W. Penck, L. C. king. Dynamics of Fluvial, Glacial, Periglacial, Aeolian (Arid & Semi Arid), Marine and Karst processes and resulting landforms. Erosional surfaces. | 15 | 4 |
| V | Environmental change and climatic change; geochronological methods with evidences and artifacts, Applied Geomorphology; Urban Geomorphology, Environmental geomorphology, Geomorphic Hazards. | 15 | 5 |

**Books Recommended:**


1. Ahmed, E.: Coastal Geomorphology of India.
2. Chorley, R. J.: Spatial Analysis in Geomorphology, Methuen, London, 1972.
3. Dayal, P. : A Text book of Geomorphology, R.K. Books, New Delhi.
4. Dury, G.H.: The Face of the Earth, Penguin Hormondsworth 1959.
5. Fairbridge, R.W. Encyclopedia of Geomorphology, Reinholdts, New York, 1968.
6. Goudie, A.: The Nature of the Environment Oxford & Blackwell, London, 1993.
7. Gautam, Alka : Geomorphology, Sharda Pustak Bhawan, Allahabad.
8. Holmes, A.: Principles of Physical Geology, Thomas Nelson, London.
9. Jha, V.C. : Geomorphology, Vasundhara Publication, Gorakhpur.
10. Pitty, A.F.: Introduction to Geomorphology, Methuen, London, 1971.
11. Stoddart, D.R. (ed.) : Process and Form in Geomorphology, Roullcdge, New York, 1996.
12. Skinner, B.J. & Porter, S.C.: The Dynamic Earth John Wilely. New York, 1995.
13. Sparks, B.W. Geomorphology, Longman, London, 1960.
14. Sharma, H.S. (cd.): Perspective in Geomorphology, Concept, New Delhi, 1980.
15. Singh, S : Geomorphology, Prayag Publication, Allahabad, 1998.
16. Steers, J.A. : The Unstable Earth Methuen, London.
17. Thornbury, W.I.). Principles of Geomorphology, John Wiloy, New York, 1960.
18. कौशिक, एस.डी. : भू–आकृति विज्ञान के सरल सिद्धांत, आर.के. बुक्स, नई दिल्ली, 2012
19. दयाल, परमेश्वर : भू–आकृति विज्ञान, आर. के. बुक्स, नई दिल्ली, 2021
20. यादव, रामसुरेश : भू–आकृति विज्ञान, ग्रन्थम, रामबाग, कानपुर, 1976
21. सिंह, सविन्द्र : भू–आकृति विज्ञान, वसुन्धरा प्रकाशन, इलाहाबाद, 1969
22. गौतम, अलका : भू–आकृति विज्ञान, रस्तोगी पब्लिकेशन, मेरठ, 2007
23. शर्मा, एच.एस. एवं प्रमीला कुमार : भू–आकृति विज्ञान, पंचशील प्रकाशन, जयपुर, 2011
24. गुप्ता, एस.एल.: भू–आकृति विज्ञान, हिन्दी माध्यम कार्यान्वय निदेशालय, दिल्ली वि.वि. 1992


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## M.A./M.Sc. (Geography) Semester-I

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc. | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG102 | **Climatology(II)** | | Core |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 5 | 1 | 0 |
| Maximum Marks | CIA | | ESE |
| 100 | 30 | | 70 |

**Learning Objective (LO):**

Weather and climatic chart be made available to the students to explain weather conditions. Audio-visual aids are used for effective technique.

**Course Outcomes (CO):**

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Understand the difference between weather & climate, aims, nature and scope of Climatology. Understand the origin, composition and structure of atmosphere | U |
| 2 | Understand the concept of horizontal, vertical temperature and inversion of temperature. | U |
| 3 | Identify the Atmospheric pressure, winds, humidity and concept of precipitation and its types. | An |
| 4 | Understand the Climate Classification system and apply it in world climate. | U |
| 5 | Analyzing the climate change recent scenario and evaluate the extreme climate condition Global Warming, Acid Rain etc. | Ap |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate;**C**-Create).

**CO-PO/PSO Mapping for the course:**

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 3 | 3 | - | 1 | 3 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | - | 1 | 2 |
| CO2 | 3 | 3 | 3 | 1 | 1 | 2 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | - | 1 | 3 |
| CO3 | 3 | 3 | 3 | 1 | 1 | 2 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | - | 1 | 3 |
| CO4 | 3 | 3 | 3 | - | 1 | 2 | 3 | 1 | 1 | 2 | 2 | 3 | 2 | 1 | 1 | 3 |
| CO5 | 3 | 3 | 3 | 1 | 1 | 2 | 3 | 1 | 1 | 2 | 3 | 3 | 2 | 1 | 1 | 3 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Nature, scope and approaches of climatology and its relationship with meteorology, composition and structure of atmosphere. | 13 | 1 |
| II | Insolation, heat balance of the earth, stability and instability, vertical and horizontal distribution of temperature. | 13 | 2 |
| III | Jet stream, General circulation in the atmosphere: concept of air masses and Front, EL Nino and La Nina, Monsoon winds, cyclones, Clouds and Precipitation. | 15 | 3 |
| IV | The application of general principles of elementary: physical and synoptic meteorology to the study and classification of climate. Climate classification: Koppen, Thornthwaite and Trewartha. Major climates of the world: tropical, temperate, desert and mountain climate. | 18 | 4 |
| V | Climate changes during geological and historical times with evidences and possible causes, Greenhouse effect, Acid rain, Global warming, Applied climatology. | 16 | 5 |

**Books Recommended:**


1. Barry, R.G. and Chorley P..1.; Atmosphere, Weather and Climate, Roulledge, London and New York, 1998.
2. Critchfield, J.H. : General Climatology, Prentico Hall, India, New Delhi, 1993.
3. Das, P.K. : Monsoons 'National Book Trust, New Delhi, 1987.
4. Fein, J.S. and Stephens, P.N. : Monsons. Wiley Interscience, 1987.
5. India Met. Deptt : Climatologically Tables of Observatories in India, Govt. of India 1968.
6. Lal, D.S. : Climatology, Chaitanaya Publications, Allahabad, 1986.
7. Lydolph, P.H. : The Climate of the Earth, Rowiman, 1985.
8. Menon, P.A. : Our Weather, N.B.T.., New Delhi, 1989.
9. Peterson, S. : Introduction to Meteorology, Mc. Hill Book, London, 1969.
10. Robinson, P.J. and Henderson S. : Contemporary Climatology, Henlow, 1999.
11. सिंह, सविन्द्र : जलवायु विज्ञान, प्रयाग पुस्तक भवन, इलाहाबाद, 2011.
12. लाल, डी.एस. : जलवायु विज्ञान, शारदा पुस्तक भवन, 2012.
13. गौतम, अलका : जलवायु एवं समुद्र विज्ञान, रस्तोगी प्रकाशन, 2009.
14. शर्मा, बी.एल. एवं, अनिल कुमार तिवाड़ी : जलवायु विज्ञान के मूल तत्व, राजस्थान हिन्दी ग्रन्थ अकादमी, जयपुर 2008


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## M.A./M.Sc. (Geography) Semester-I

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc. | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG103 | **Geographical Thought (III)** | | Core |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 5 | 1 | 0 |

| Maximum Marks | CIA | ESE |
|---|---|---|
| 100 | 30 | 70 |

### Learning Objective (LO):

Weather and climatic chart be made available to the students to explain weather conditions. Audio-visual aids be used for effective technique.

### Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Apprehend the place of Geography in the field of science social science and Natural Science and interact with their counterparts from other disciplines and discuss the nature of their subject. | Ap |
| 2 | Recognize different types of dualism and find solution to terminate them by applying various types of scientific of Explanations. | An |
| 3 | Acquired knowledge about the historical development of the subject during different time scale. | U |
| 4 | Understand the Geographical thought of various thinkers from different school of different countries. | U |
| 5 | Understand the founding concepts of human geography in the nineteenth century academy; the authors examine the range of theoretical perspectives that have emerged within human geography over the last century from feminist and Marxist scholarship, through to post-colonial and non-representational theories. | U |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate;**C**-Create).

### CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 3 | 1 | - | 1 | 2 | 3 | 1 | - | 1 | 1 | 2 | 1 | - | 1 | 2 |
| CO2 | 3 | 3 | 1 | - | 2 | 1 | 3 | - | - | 1 | 1 | 1 | 2 | - | 1 | 2 |
| CO3 | 3 | 3 | 1 | - | 1 | 2 | 3 | - | - | 1 | 1 | 3 | 2 | - | 1 | 2 |
| CO4 | 3 | 1 | 1 | - | 1 | 1 | 3 | - | - | 1 | 2 | - | 2 | - | - | 2 |
| CO5 | 3 | 3 | 1 | 1 | 2 | 2 | 3 | 2 | - | 1 | 1 | 2 | 2 | 1 | 2 | 2 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Definition, scope and functions of Geography ; The Field of geography; its place in the classification of science, Geography as a social science and natural science, Geography as science of relationship, as science of areal differentiation, as spatial science. | 17 | 1 |
| II | Spatial Organization, Geography and environmentalism: forms of man-nature relationship and current view; Dualism in geography; Regional Concept. | 10 | 2 |
| III | The growth of Geographical knowledge from earliest times up to the 15th century. Contributions of Greek and Roman thinkers, Arab Geographers and their contributions. Geographical information in Ancient Indian literature, The Dark age in Geography, The Great Age of Maritime Discovery and Exploration. | 16 | 3 |
| IV | Contributions of various schools of thought in modern Geography:<br>(i) German School (ii) French School<br>(iii) British School (iv) American Schools<br>(v) Russian School (vi) Indian scholars | 15 | 4 |
| V | Scientific explanations: routes to scientific explanation (inductive/deductive); Type of explanation: cognitive description, cause and effect, temporal, functional/ecological and systems, Laws, theories and models in Geography. Quantitative revolution and philosophy of positivism. Behaviourlism, relevance movement and radical geography changing paradigms. | 17 | 5 |

**Books Recommended:**


1. Ali S.M. : The Geography of Puranas, Peoples Publishing House, Delhi, .1968.
2. Dikshit, R.D. (ed.): The Art & Science of Geography Rand Me Nally & Co., 1959.
3. Hartshorne, R.: Perspectives on Nature of Geography Rand Me Nally & Co., 1959.
4. Husain, M. : Evolution of Geographic Thought, Rawat Pub., Jaipur, 1984.
5. Johnston, R.J.: Philosophy and Human Geography, Edward Arnold, London, 1983.
6. Johnston, R.J.: The Future of Geography, Methuen, London, 1988.
7. Peet. Richard : Modern Geographical Thought Rawat publication, Jaipur 1998.
8. सिंह उजागर : भौगोलिक चिन्तन का विकास
9. त्रिपाठी एवं बिरले : भौगोलिक चिंतन का विकास एवं विधितंत्र
10. कौशिक , एस.डी. : भौगोलिक विचारधाराएं एवं विधितंत्र, आर.के. बुक्स, नई दिल्ली, 2010
11. सिंह , जगदीश : भौगोलिक चिंतन का क्रम विकास, आर.के.बुक्स, नई दिल्ली, 2010
12. हुसैन, माजिद : भौगोलिक चिंतन का इतिहास, रावत पब्लिकेशन, नई दिल्ली, 2004
13. सिंह, देवेन्द्र प्रसाद : भौगोलिक चिन्तन की समीक्षा, शारदा पुस्तक भवन, इलाहाबाद, 2013.
14. वंसल, सुरेश चन्द्र : भौगोलिक चिन्तन के मूल तत्व, आर.के. बुक्स, नई दिल्ली
15. श्रीवास्तव, वी.के. : भौगोलिक चिन्तन के आधार, वसुन्धरा प्रकाशन, गोरखपुर, 1988.
16. दीक्षित, रमेश दत्त : भौगोलिक चिन्तन का विकास : एक ऐतिहासिक समीक्षा, आर.के. बुक्स, नई दिल्ली 2013.
17. जाट, वी.सी. : भौगोलिक विचारधाराएँ तथा विधितंत्र, मलिक एण्ड कंपनी, जयपुर एवं दिल्ली, 2013
18. पण्डा, वी.पी., एल.एन.वर्मा : भौगोलिक विचारधाराओं का इतिहास, मध्यप्रदेश हिन्दी ग्रंथ अकादमी, भोपाल, 2009.


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## M.A./M.Sc. (Geography) Semester-I

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG104 | **Geography of India (IV)** | | Core |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 5 | 1 | 0 |
| Maximum Marks | CIA | | ESE |
| 100 | 30 | | 70 |

### Learning Objective (LO):

The students need to be known the Physiographical and biological scope and prosperity of India and state of Chhattisgarh understanding about natural resources of India and Chhattisgarh and development issues and policies and programmers' designed for regional development.

### Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br><br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Understand the about the physiographic division of India and the geography of Chhattisgarh State. | U |
| 2 | Understand the characteristics and problems of agriculture practices and to know the impact of infrastructural and institutional factors on agriculture. | U |
| 3 | To get comprehensive knowledge of world energy resourse, situation and Distribution. | R |
| 4 | Understand the variation in industrial development in India and Chhattisgarh State. | U |
| 5 | Understand the regional division and apply this concept of India on the basis of Prof. R.L. Sing and OHK Spate concept. | Ap |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

### CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 2 | 1 | - | 2 | 2 | 3 | 1 | 1 | 1 | 1 | 3 | 1 | - | 1 | 2 |
| CO2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 1 | 2 | 1 | 3 | 2 | 1 | 1 | 3 |
| CO3 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 |
| CO4 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 |
| CO5 | 3 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 3 | 2 | - | 1 | 3 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Physical and Biological elements in the Geography of India: Geological structure, relief, climate, drainage, vegetation and soils. | 15 | 1 |
| II | Agriculture: Major characteristics and problems, Impact of infrastructural and institutional factors on agriculture. Important crops; wheat, rice, cotton, sugarcane, oil-seeds, tea and coffee, Green revolution, Agro-climatic regions. | 15 | 2 |
| III | Sources of power: Coal, Petroleum, Natural gas. Hydroelectricity and Atomic energy. Mineral resources with special reference to iron ore, manganese and bauxite. | 15 | 3 |
| IV | Industrial development with special reference to iron and steel, cement, cotton, sugar and paper industries; Industrial regions. | 15 | 4 |
| V | Regional division of India: Purpose and Methodology. Major schemes of regions of India: O.H.K. Spate and R.L. Singh. | 15 | 5 |

**Books Recommended:**


1. Desphande C.D. India. : a Regional Interpretation ICSSR & Northern Book Centre 1992.
2. Dreza, Jean & AMartya. Sen (ed.) India Economic Development and Social opportunity Oxford University Person, New Delhi. 1996.
3. Gautam, Alka : Advanced Geography of India, Sharda Pustak Bhawan Allahabad,2019.
4. Khullar, D.R. : India : A Comprehensive Geography, Kalyani Publishers, New Delhi 2022.
5. Kundu A. Raza Moonis : Indian Economy : the Regional Dimension Speclaum Publishers, New Delhi, 1992.
6. Robinson, Francs : The Cambridge Encyclopedia of India, Pakistan, Bangladesh, SriLanka, Nepal, Bhutan & Maldives Cambridge University Press, London, 1989.
7. Singh R.L. (ed.) : India - A Regional Geography National Geographical Society, India Varanasi, 1971.
8. Spate OHK & ATA Learnont-India & Pakistan Methuen, London. 1967.
9. Tirtha R. & Gopal Krishna, Emerging India Reprinted by Rawat Publications, Jaipur 1996.
10. Sharma T.C. and O. Coutinho : Economic and Commercial Geography of India.
11. अग्रवाल पी.सी. भारत का भौतिक भूगोल, एशिया प्रकाशन कं.,रायपुर 2003
12. बंसल सुरेशचंन्द, भारत का भूगोल, मीनाक्षी प्रकाशन, मेरठ, 2018.
13. वर्मा रामविलास, : भारत : एक भौगोलिक विवेचन, भवदीय प्रकाशन श्रृंगारघाट, अयोध्या, फैजाबाद, 2007.
14. सक्सेना एच. एम., राहुल सक्सेना,: भारत का भूगोल, रावत पब्लिकेशन्स, जयपुर, 2017
15. चौहान, पी.आर., महातम प्रसाद : भारत का भूगोल, वसुन्धरा प्रकाशन, गोरखपुर, 2003.


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## M.A./M.Sc. (Geography) Semester-I

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG105 | **Practical- I: Map Projections, Toposheet interpretation and Surveying (V)** | | Core |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 4 | 0 | 0 | 8 |

| Maximum Marks | CIA | ESE |
|---|---|---|
| 100 | - | 70+30 (Practical Record and Viva-Voce) |

**Learning Objective (LO):**

The students need to be trained in the use of conventional vis-à-vis modern tools and techniques of cartographic analysis

**Course Outcomes (CO):**

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Understand the map projections definitions, method, techniques and the types of prospective and non prospective, conventional and classification of Map Projections. | U |
| 2 | Interpret geological maps and understand the under surface profiles of Rocks. | An |
| 3 | Understand the Principles and methods of different topographical surveying techniques. Brings direct interaction of different types of surveying instruments like Dumpy level and Theodolite with environment | U |
| 4 | Understand the topographical Information, indexing, classification and interpretation. | U |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

**CO-PO/PSO Mapping for the course:**

| CO \ PO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 1 | 3 | - | 3 | - | 3 | 1 | - | 2 | 2 | 1 | 2 | 2 | 1 | 3 |
| CO2 | 3 | 1 | 3 | 1 | 3 | - | 3 | - | - | 2 | 2 | 1 | 2 | 1 | 1 | 2 |
| CO3 | 3 | 1 | 3 | 1 | 3 | 2 | 3 | 1 | - | 2 | 2 | 1 | 2 | 2 | 1 | 3 |
| CO4 | 3 | 1 | 3 | 1 | 3 | - | 3 | 1 | - | 2 | 2 | 1 | 2 | 1 | 1 | 3 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Map Projections: Mathematical construction of world projections. | 15 | 1 |
| II | Interpretation of Maps: Geological Maps. | 15 | 2 |
| III | Principles and methods of topographical surveying, use of Dumpy level and Theodolite. Solution of problems in surveying. | 18 | 3 |
| IV | Topographical Information – International series, Southeast Asia Series, Indexing, Classification & Interpretation of topographical sheets. | 17 | 4 |

**Books Recommended:**


1. Davis, R. C. & E. S. Forte : Surveying : Theory and Practical.
2. Kanetkar, T.R. & S.V. Kulkarni: Surveying and leveling part I & IJ A.V.G. Prakashan, Poona.
3. Monkhouse F.J. & H.R. Wilkinson: Maps and Diagrams, Methuen, London.
4. मॉक हाउस तथा विलकौन्सन (अनु.प्रो.प्रेमचन्द अग्रवाल) : मानचित्र तथा आरेख, म.प्र. हिंदी ग्रंथ अकादमी.
5. हीरालाल : प्रयोगिक भूगोल, किताब घर, कानपुर
6. मिश्र, पी.एल. : प्रयोगात्मक भूगोल, विश्वभारती पब्लिकेशन, नई दिल्ली, 2013.

## M.A./M.Sc. (Geography) Semester-II

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG201 | **Economic and Natural Resource Management (VI)** | | Core |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 5 | 1 | 0 |

| Maximum Marks | CIA | ESE |
|---|---|---|
| 100 | 30 | 70 |

### Learning Objective (LO):

The students should be acquainted with the different branches of economic geography with examples. They should be motivated to interact with the teacher to identify economic activities of the people residing in different parts of the world.

### Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Students understand about the Nature and Scope, approaches of Economic Geography and recent trends of economic Geography. | U |
| 2 | Students understand about the Resource Geography and evaluate the relationship of Human want and social objectives. | E |
| 3 | Understand about the definition, types and Forms of energy and classified material based and process based energy resources. | U |
| 4 | To review on world distribution of some industries and selected countries and understand the global nature of industrialization and related problems, | E |
| 5 | Conservation and management of Resources. | Ap |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

### CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 2 | 3 | - | 1 | 2 | 3 | - | 1 | 2 | 2 | 3 | 1 | - | 1 | 3 |
| CO2 | 3 | 3 | 3 | - | 1 | 1 | 3 | 1 | 1 | 2 | 2 | 3 | 2 | - | 1 | 3 |
| CO3 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | 1 | 1 | 2 | 2 | 3 | 2 | 1 | 1 | 2 |
| CO4 | 3 | 3 | 3 | - | 1 | 2 | 3 | 1 | 1 | 2 | 2 | 3 | 2 | 1 | 1 | 3 |
| CO5 | 3 | 3 | 3 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 3 | 3 | 2 | 3 | - | 3 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Nature and scope of economic Geography; fundamental concepts in economic geography; classification of economies, Sectors of economy (primary, secondary, tertiary). | 15 | 1 |
| II | Meaning, nature and classification of resources, Resource appraisal: Human want and social objectives, technological status and resources. Resource adequacy and scarcity, limits to growth. | 15 | 2 |
| III | World pattern of major natural resources: land and soils, biotic resources, water resources mineral and energy resources, oceanic resources. | 15 | 3 |
| IV | Classification of Industries, Theories of industrial location: A. Weber, August Losch, E.M. Hoover. Case studies of selected industries: Iron and Steel, Aluminum, Chemical, Textile. Means of transport, International trade, trade blocks, Globalization and Indian economy. | 15 | 4 |
| V | Conservation and management of resources; evolution of the concept, principles, resource conservation and management methods. Policy making and resource management; sustainable development of resources. | 15 | 5 |

**Books Recommended:**


1. Ahemd, J: Natural Resources in Low Income countries, University of Pittsburg press, 1960
2. Bennet, II.II: Elements of Soil Conservation, McGraw Hill, 1947.
3. Ciriacy, Wantrup,S.V.& Natural resources: Quality &Quantity,University of California Press,1967
4. Persons (eds.) Betall,R.C. & R.O.Buehanan : Industrial Activity and Economic Geography,Hutchinson Publisher, 1972.
5. Freeman, T.W.: Geography and Planning.Lnd, Hutchinson Uni.Lib;1958.
6. Fryer, D.M.: World Economic Development, Mc Graw Hill Book Co. New York; 1965.
7. Isard, Walter :Method of Regional Analysis, the M.I.T press, Cambridge; 1960.
8. Mehta, M.M.: Human Resource Development Planning, SAGE publication , New Delhi;1976
9. Owen, O.S.: Natural Resource Conservation, pearson;1997.
10. Renner, G.T: Conservation of National Recourses, John Wile and Sons inc;New Yark;1992.
11. Stamp, L.D.: Land of Britain Its use and Misuse.Hassell street press;1948.
12. Smith, G.H.(ed.): Conservation. of Natural Recourses, New York:Wiley;1971.
13. Thomas W.L.(et.al.reds.) : Man's Role in Changing the face of the Earth university of Chicago press; 1956.
14. Estall, Robert C : Industrial activity and economic geography, Hutchinson Publisher, London,1980.
15. Wheeler, T.O. et al: Economic Geography, John Wiler New York 1995.
16. मौर्य, एस.डी. : संसाधन एवं पर्यावरण, प्रयाग पुस्तक भवन, इलाहाबाद, 2006
17. राव, बी.पी. : संसाधन और पर्यावरण, वसुंधरा प्रकाशन, गोरखपुर, 2010
18. हारून, मोहम्मद : आर्थिक भूगोल के मूल तत्व, वसुन्धरा प्रकाशन गोरखपुर, 2003.
19. हारून मोहम्मद : संसाधन भूगोल, वसुन्धरा प्रकाशन, गोरखपुर, 2006.
20. मौर्य,एस.डी. संसाधन भूगोल, प्रवालिका पब्लिकेशन, इलाहबाद, 2017.


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# M.A./M.Sc. (Geography) Semester-II

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG202 | **Oceanography (VII)** | | Core |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 5 | 1 | 0 |
| Maximum Marks | CIA | | ESE |
| 100 | 30 | | 70 |

## Learning Objective (LO):

Detailed charts and maps showing oceanic relief, currents and circulation of water be used for teaching. Audio visual aids be provided for teaching.

## Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Understand the meaning, nature and scope, modern trends in Oceanography.<br>Understand the properties like temperature, density, salinity of ocean water. | U |
| 2 | Understand the characteristics and properties of factors affecting on formation of sea Tide and waves | E |
| 3 | Understand the Bio-geochemical cycle and interlink with the Ocean environment. | U |
| 4 | Understand the ocean floor and relief of the ocean bottom. | E |
| 5 | Get knowledge about distribution of lithogenous, biogenous, and hydrogenous sediments on ocean floor. | Ap |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

## CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 3 | 3 | - | 1 | 2 | 3 | 1 | 1 | 1 | 2 | 3 | 1 | - | 1 | 2 |
| CO2 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | 1 | 1 | 2 | 2 | 3 | 2 | 1 | 1 | 3 |
| CO3 | 3 | 2 | 3 | 1 | 1 | 1 | 3 | 1 | 1 | 2 | 2 | 3 | 2 | 1 | 1 | 2 |
| CO4 | 3 | 3 | 3 | 1 | 1 | 2 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | - | 1 | 3 |
| CO5 | 3 | 3 | 3 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 3 | 2 | 3 | 1 | - |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Nature and scope of Oceanography; Distribution of land and water; Major features of ocean basins; Physical and chemical properties of ocean: temperature, salinity, density. | 15 | 1 |
| II | Interlink between atmospheric circulation and circulation pattern in the oceans, surface currents, waves and tides. | 15 | 2 |
| III | Marine biological environment: Bio-geochemical cycle in the ocean. biozones, types of organisms; plankton, nekton and benthos, food and mineral resources of the sea. | 15 | 3 |
| IV | Major marine environments; coastal: estuary, deltas, barrier island, rocky coasts. Relief of ocean: continental shelf, continental slope and deep sea plane. Bottom relief of ocean basin: Pacific, Atlantic and Indian. | 15 | 4 |
| V | Impact of Humans on the marine environment. Law of the sea; exclusive economic zone; Marine sediments and deposits, formation of coral-reefs. | 15 | 5 |

**Books Recommended:**


1. Davis Richard J.A.: "Oceanography-An Introduction to the Marine Environment". Wm. C. Brown Iowa, 1986.
2. Duxbury, C.A. and Duxbury B. : An Introduction to the world's Oceans-C. Brown. Iowa 2nd ed., 1986.
3. Garrison, T. : "Oceanography - An Introduction to Marine Science" Books/Cole, Pacific Grove, USA, 2001.
4. Gross, M. Grant : Oceanography, a View of the earth, prantice-Hall inc, New Delhi, 1987.
5. King C.A.M. Oceanography for Geographers 1962.
6. Lal, D.S. : Oceanography, Sharda Pustak Bhawan, Allahabad, 2002.
7. Sharma, R. C. "The Oceans" Rajesh N. Delhi, 1985.
8. Urnmerkutty, A.N.P. Science of the Eceans and Human life, NBT, New Delhi, 1985.
9. Ornmany, F.D. : The Ocean.
10. Sharma, R. C. & M. Vaital : Oceanography : A Brief Introduction kislaya Pub. New Delhi,2018.
11. Siddartha, K.. : Oceanography : A Brief Introduction, Kislya Pub. New Delhi,2018.
12. नेगी, बी.एस. : जलवायु तथा समुद्र विज्ञान, केदारनाथ, रामनाथ प्रकाशन, मेरठ, 1996
13. सिंह, सविन्द्र : समुद्र विज्ञान, प्रयाग पुस्तक भवन, इलाहाबाद, 2011.
14. लाल, डी.एस. : जलवायु विज्ञान, शारदा पुस्तक भवन, इलाहाबाद, 2011.


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## M.A./M.Sc. (Geography) Semester-II

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG203 | **Regional Development And Planning (VIII)** | | Core |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 5 | 1 | 0 |
| Maximum Marks | CIA | | ESE |
| 100 | 30 | | 70 |

### Learning Objective (LO):

The students should be made to do seasonal assignments based on diverse data to formulate region at the local, regional levels, and identify the regional differentiations. They should be made conversant with the trends in development of the regional concepts, using 'space' in the multi disciplinary approach to regional development.

### Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Analyzing the concept of regions and regionalization. | An |
| 2 | Appreciate the varied aspects of development and regional disparity, in order to formulate measures of balanced development. | E |
| 3 | Understand and identify regions as an integral part of geographical study. | U |
| 4 | Build an idea about theories and models for regional planning. Know about measuring development indicators. | C |
| 5 | To get a specialized knowledge of policies and experiences of regional planning in India. | Ap |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

### CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 2 | 3 | 2 | 1 | 1 | 3 | 1 | 1 | 2 | 1 | 3 | 1 | 1 | 1 | 2 |
| CO2 | 3 | 3 | 3 | 1 | 2 | 1 | 3 | - | 1 | 2 | 1 | 3 | 2 | - | 1 | 3 |
| CO3 | 3 | 2 | 3 | 2 | 1 | 1 | 3 | - | 1 | 2 | 1 | 3 | 2 | - | 1 | 2 |
| CO4 | 3 | 3 | 3 | 1 | 2 | 2 | 3 | 1 | - | 2 | 1 | 3 | 2 | 1 | 1 | 3 |
| CO5 | 3 | 3 | 3 | 2 | 1 | 1 | 2 | - | 1 | 2 | 2 | 3 | 2 | 1 | 1 | 2 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Regional Planning: Definition, Scope, evolution and Objectives. Region and Regionalism, Planning Regions: Concept and Delineation. Type of Regions. Central Place Theory, Concept of core and periphery Friedman's Model of Spatial Organization and Economic Growth. | 15 | 1 |
| II | Regional Development Theories: Development Theories of Myrdal and Hirschman, Economic and Export Base model, Frank's Theory of Under development. | 15 | 2 |
| III | Approaches and Strategies of Regional Development: Growth Pole Theory Ag،opolitan Development, Community Development, River Basin Planning, Metropolitan Planning (with reference to India) | 15 | 3 |
| IV | Regional Planning in India. Regional Imbalances and Inequalities, Indicators of Regional Development; Regional Policies in Five Year Plans. | 15 | 4 |
| V | Centre State Relations and Multilevel Planning, Planning for special problem Regions: Hill area, Tribal areas, Drought prone areas and Command areas. Regional development and planning in India, NITI Aayog. | 15 | 5 |

**Books Recommended:**


1. Deckinsonm R.E. : City Region and Regionalism, Rutledge library Editions, 1947 .
2. Freeman, E.W. : Geography arid Planning, Hutchinson Publications Parsia 1974.
3. Keeble, L. : Principle and Practice of Town and Country Planning Estater Gazette Ltd, 1969.
4. Sdasyuk. Gatina and Sengupta, P. : Economic Regionalization of India problems and Approaches Census commission of india,1968.
5. Prakash, Rao V.L. & S.P. : Regional Planning,Asian, Publication house 1964.
6. Friedmann J. & Alonsow : Regional Development and Planning, M.I.T. Press,1964.
7. Mishra R.P. (ed.) : Regional Planning : Concept; Techniques, Policies and case studies Mysore, Concept publishing company, New Delhi 1969.
8. Bhatt LS : Regional Planning in India, Statistical Publishing Society, Calcutta, 1973.
9. Gosal G.S., and G. Krishanan : Regional Disparities in levels of Socio-economic Development in Punjab, Vishal Publications Kurukshetra, 1984.
10. Chandna, R.C. : Regional Planning : A comprehensive 'Text-Kajyani Publishers.
    a. Chand, Puri; Regional Planning in India, RK Books, New Delhi 2009.
    b. Chandna, RG. Regional development and Planning, RK Books, New Delhi, 2009.
11. Raza, Meomis (ed) Regional Development, Hefitage Publishiers, Delhi, 1988.
12. Mishra R.P. et al : Multilevel Planning, Heritage Phulishers Delhi,1980
13. Chatterjee, kanan : Regional Planning : concept, Theory and practice, concept publishing company, New Delhi, 2017
14. ओझा, रघुनाथ : प्रादेशिक नियोजन का भूगोल, किताब घर, कानपुर, 1986
15. शर्मा, राजीवलोचन : प्रादेशिक एवं नगरीय नियोजन, किताब घर, कानपुर, 2005
16. चाँदनी, आर.सी. : प्रादेशिक नियोजन तथा विकास, आर.के. बुक्स, नई दिल्ली, 2010.
17. सिंह एवं दुबे, प्रादेशिक विकास नियोजन, आर.के. बुक्स, नई दिल्ली, 2009.
18. देहरे, टी.आर. क्षेत्रीय नियोजन एवं समान्वित विकास, वसुन्धरा प्रकाशन, गोरखपुर 2006.
19. गुप्ता, हरिशंकरः प्रादेशिक विकास एवं नियोजन, कल्याणी प्रकाशन, नोयडा, 2019
20. श्रीवास्तव, हरिओम : क्षेत्रीय भूगोल, वसुन्धरा प्रकाशन, गोरखपुर, 2001


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## M.A./M.Sc. (Geography) Semester-II

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG204 | **Social Geography (IX)** | | Core |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 5 | 1 | 0 |
| Maximum Marks | CIA | | ESE |
| 100 | 30 | | 70 |

### Learning Objective (LO):

The students should familiarize themselves with different areas to understand the patterns of socio-economic differentiation/ segregation and social and cultural habitants. They should also interact with other disciplines like sociology/ psychology and demography for understanding the social issues

### Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Understand the nature, scope and concept, relationship between culture and social Environment and right of information act. | U |
| 2 | To understand the Geographic bases of Social Formation, Social Stratification, class and class. | U |
| 3 | To understand the social justice and social wellbeing of society to find out the level of wellbeing of India. | U |
| 4 | To Examine the public policy and Social planning in India with the review of Five year planning. | E |
| 5 | Evolution to civilization and various cultural development and cultural system according to religion, language and geography and global cultural changes. | Ap |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

### CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 2 | 1 | - | 1 | 2 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | - | - | 2 |
| CO2 | 3 | 3 | 1 | 1 | 1 | 1 | 3 | - | 1 | 2 | 1 | 3 | 2 | 1 | 1 | 3 |
| CO3 | 3 | 3 | 1 | - | 1 | 2 | 3 | - | 1 | 2 | 1 | 3 | 2 | - | - | 2 |
| CO4 | 3 | 2 | 1 | 1 | - | 2 | 2 | 1 | - | 2 | 1 | 3 | 2 | 1 | 1 | 2 |
| CO5 | 3 | 3 | 1 | - | 1 | 2 | 3 | - | 1 | 2 | 2 | 3 | 2 | - | 1 | 3 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Definition, meaning and scope of Social geography and it's Nature and relationship with other Social sciences. Development of Social Geography, Approaches to the study of Social Geography. | 15 | 1 |
| II | Concept of Society – Social Environment, Geographic bases of Social Formation. Social Geography of India - Social Stratification, Caste and Class. Social organization and groups, Social transformation and change in India. | 15 | 2 |
| III | Social well being: meaning and indicators of Social well being. Quality of life, Factor, Pattern and bases of rural and urban society. Deprivation and discrimination issues relating to women and under privileged groups. | 15 | 3 |
| IV | Social development planning – meaning and importance. Public policy and Social planning in India: Review of Five year Plans strategies to improve Social well being. | 15 | 4 |
| V | Religion and linguistic group of India. Evolution of Socio-Cultural Regions of India. Cultural Realms and Cultural Region of the World. | 15 | 5 |

**Books Recommended:**


1. Ahmad Aijazuddin, Social Geography, Rawat Publication, New Delhi, 1999.
2. Dreze Jean, Amariya Sen,Economic Development and Social opportunity. Oxford University Press. New Delhi. 1996
3. Dubey. S.C : lndian Society. National Book Trust, New Delhi, 1991.
4. Gregory. D . and J. Larry (Eds.) Social. relations and spatial structures. MCMillan. 1985.
5. Haq. Mahbubul : Reflections on Human Development. Oxford University Press, New Delh6.
6. Jones, Emrys and John Eyles, An Introduction to Social Geography, Oxford University Press, London,1977.
7. Maioney. Clarence: People of South Asia, Winston, New York, 1974.
8. Planning Commission, Government of India: Report on Development of Tribal areas, 1981.
9. Rao, M.S.A.. Urban Sociology in India, Orient Iongman, 1970.
10. Schwartzberg Joseph : An Historical Atlas of South Asia, University of Chicago Press, (Chicago, 1978.
11. Sen, Amartya & Dreze Jean. Indian Development : Selected Regional Perspectives. Oxford University Pres-s, 1996
12. Sharma, K.L.: Indian Social Structure and Change, Rawat Publication, Jaipur, 2011
13. Smith, David: Geography : A welfare Approach, Edward Arnold, London, 1977.
14. Sopher, David. An Expoloration of Inda, Cornell University Press, 1980.
15. Subba. Rao. Personality of India : Pre and Proto Historic foundation of India and Pakistan, M.S. University Baroda. Vadodai'a, 1958
16. मौर्य,एस.डी., सामाजिक भूगोल शारदा पुस्तक भवन,11,युनिवर्सिटी रोड, इलाहाबाद–2 , 2004.
17. आहूजा, राम, भारतीय समाज, आर.के. बुक्स, नई दिल्ली, 2004.
18. शर्मा, के.एल. : सामाजिक स्तरीकरण, रावत पब्लिकेशन, जयपुर, 2011


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# M.A./M.Sc. (Geography) Semester-II

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG205 | **Practical II - Advanced Cartography (X)** | | Core |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 4 | 0 | 0 | 8 |

| Maximum Marks | CIA | ESE |
|---|---|---|
| 100 | 30 | 70+30 (Practical Record and Viva-Voce) |

## Learning Objective (LO):

The students need to be trained in the use of conventional vis-à-vis modern tools and techniques of cartographic analysis.

## Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Use data representation by various techniques of maps and Diagrams | Ap |
| 2 | Develop an idea about different types of thematic mapping techniques. | E |
| 3 | Understand various morphometric techniques and use to represent physical data representation. | U |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

## CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 3 | 3 | 1 | 1 | - | 3 | 1 | 1 | 2 | 1 | 3 | 1 | 2 | 1 | 2 |
| CO2 | 3 | 3 | 3 | 1 | 1 | - | 3 | - | 1 | 2 | 1 | 3 | 2 | 2 | 2 | 2 |
| CO3 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | - | 1 | 2 | 1 | 3 | 2 | 2 | 1 | 2 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | **Graphs and Diagrams:** Triangular graph. Scatter graphs, Climatograph, Logarithmic and semi logarithmic graphs, Proportional circles, spheres and cubes. | 15 | 1 |
| II | **Thematic maps:** Class intervals, Choropleth maps, Dot map, Isolines, Flow and Routed map. | 15 | 2 |
| III | **Morphometric Analysis**: Profiles, Slope Analysis; G.H. Smith, C. K. Wentworth, Raize and Henry, Hypsometric, Altimetric and Clinographic curves. Block Diagrams and River analysis: Stream ordering. | 18 | 3 |

**Books Recommended:**


1. Monk house F.J. & H.R. Wilkinson: Maps and Diagrams, Methuen, London.
2. मॉक हाउस तथा विल्किन्सन (अनु.प्रो.प्रेमचन्द अग्रवाल) : मानचित्र तथा आरेख, म.प्र. हिंदी ग्रंथ अकादमी.
3. हीरालाल : प्रायोगिक भूगोल, किताब घर, कानपुर
4. चौहान, पी.आर. एवं वी.के. श्रीवास्तव : प्रयोगात्मक भूगोल, वसुन्धरा प्रकाशन, गोरखपुर
5. सिन्हा, एम.पी. : कार्टोग्राफी, शारदा पुस्तक भवन, इलाहाबाद
6. चौहान, पी.आर. : प्रयोगात्मक भूगोल, वसुन्धरा प्रकाशन, गोरखपुर, 2009
7. मिश्रा आर. एन. एवं पवन शर्मा : प्रयोगात्मक भूगोल, पारेख पब्लिकेशन 2022


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## M.A./M.Sc. (Geography) Semester-II

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG206 | **Internship (XI)** | | Core |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | Total 60 hour during summer vacation | | |

| Maximum Marks | CIA | ESE |
|---|---|---|
| 100 | - | 70+30 (Report and Viva-Voce) |

**Course Details:**

Internships are a great way to obtain real-world work experience and make personal contacts in your field of interest before you Post graduate.

Internships are an encouraged, but optional, part of the undergraduate curriculum in the Geography Department. Most internship is completed by juniors and seniors because students at that level have a solid background of geography coursework.

Course code GEOG206 **Internship** of 02 credits conducted in II semester, total 60 hours during summer vacation. The number of credit hours to be earned and whether the internship will receive a letter grade (A-F) or be taken for credit (CR) are determined in consultation with the Head of the Department.

**Examples of Internship Locations**

1. Pt. Ravishankar Shukla university —Departmental projects.
2. Chhattisgarh council of science and Technology (CCOST) Raipur.
3. CHIPS, Govt. of Chhattisgarh
4. NGO like Ajim Premji Foundation
5. Planning agencies and offices—various cities.
6. Economic development agencies and offices.
7. Forest Survey of India with state Department.
8. Watershed Department.
9. State and national forests, parks, monuments, etc.
10. State soil and water offices.
11. GIS, air photo, GPS, and mapping companies (several in Raipur city)
12. Environmental engineering and consulting companies
13. Energy companies
14. Construction, development, architecture firms.
15. Horticulture Firms.

## Learning Objective (LO):

Our internship program provides students with the tools, resources, and experiences necessary to excel both in the classroom and as an emerging professional. Other benefits include:

- Real-world experiential learning opportunities
- Opportunity to Develop their professional network
- Build and develop their resume and personality

## M.A./M.Sc. (Geography) Semester-III

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG301 | **Population Geography (XII)** | | Core |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 5 | 1 | 0 |

| Maximum Marks | CIA | ESE |
|---|---|---|
| 100 | 30 | 70 |

### Learning Objective (LO):

Classroom discussion may focus on population and development linkage. Students may also be encouraged to consider various quantitative attributes of population from census 2011, India. Discussion may be arranged on the implication of population policies announced from time to time.

### Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Understand the nature, scope and significance of population geography and fundamental concepts in subject. | U |
| 2 | To review the demographic pattern of national and international level. | E |
| 3 | To understand the composition in terms of age and sex, rural, urban residence, educational status and occupational structure of population. | U |
| 4 | To examine the Fertility and Mortality of population. | E |
| 5 | Understand the concept and methods, population regions of India, population policies of India. | Ap |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

### CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 3 | 3 | - | 1 | 2 | 2 | 1 | 2 | - | 2 | 3 | 2 | 2 | 2 | 3 |
| CO2 | 3 | 3 | 3 | 1 | 2 | 2 | 3 | 1 | - | 2 | 2 | 2 | 2 | 3 | 2 | 3 |
| CO3 | 3 | 3 | 3 | - | 1 | 3 | 2 | 2 | 3 | 2 | - | 3 | 2 | 3 | 2 | 3 |
| CO4 | 3 | 3 | 3 | 1 | - | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 3 | 2 |
| CO5 | 3 | 3 | 3 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 3 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Definition and scope of Population Geography. Relation of Population Geography with other subjects of social sciences. Historical development of Population Geography in western countries and in India. | 15 | 1 |
| II | Distribution of Population: The concept of population density and its types. Factors affecting population distribution. Distribution & Density of population in the world with special reference to Asia and India. Growth of population: Measure of decennial and annual rates of population growth, Prehistoric and modern trends of population growth in the world. Regional aspect of population growth in India. | 15 | 2 |
| III | Population composition in terms of age and sex, rural, urban residence, educational status and occupational structure. Significance of these elements in population analysis, factors affecting their composition in population, broad world patterns and detailed spatial patterns in India. Fertility and Mortality of population: Significance and factor. Indices and rates. World pattern and pattern in India. | 15 | 3 |
| IV | Migration of population: Causes, characteristics and types. Methods of estimating value of internal migration. Important international migrations of the world, internal migration in India: Population and Resources: Population-Resource regions. Population Regions: Concept and methods, population regions of India, population policies of India. | 15 | 4 |
| V | Population theories. Demographic transition. Sources of population data, Census and its history, Human Development Index and its Components. | 15 | 5 |

**Books Recommended:**


1. Census of India, India : A State Profile, 1991.
2. Chandna, R. C. Geography of Population, Determinants and Patterns. Kalyani Publishers, 2000
3. Clarke, John 1. Population Geography, Pergamon Press, Oxford, 1973.
4. Garnicr, B.J. Geography of population Longrrian, London. 1970.
5. Mamoria, C.B. India's Population Problem, Kitab Mahal New Delhi, 1981.
6. Mitra, Ashok India's Population: Aspects of Quality and Abhiman Publications, New Delhi, 1978.
7. Premi, M.K. India's Population: Heading Towards a Billion, B.R.., Publishing Corporation 1991.
8. UNDP: Human Development Report, Oxford University Press, Oxford, 2000.
9. Woods R. Population Amalysis' in Geography Longman, London, 1979.
10. Zeiinsky Wilbur, A Prologue to Population Geography, Prentic Hall, 1966.
11. बघेल, अनुसुइया : अनुसूचित जातियों एवं अनुसूचित जनजातियों में प्रजननता प्रतिरूप : छत्तीसगढ़ राज्य के रायपुर संभाग के विशेष संदर्भ में', पं. रविशंकर शुक्ल विश्वविद्यालय, रायपुर, 2002.
12. बघेल, अनुसुइया : शिशु मर्त्यता : सिंघई पब्लिशर्स एण्ड डिस्ट्रीब्यूटर, रायपुर, 2004.
13. शर्मा, सरला : औद्योगिक नगरों में जनसंख्या आप्रवास (भिलाई एवं कोरबा नगर के विशेष संदर्भ में), पं. रविशंकर शुक्ल विश्वविद्यालय, रायपुर, 2002.
14. शर्मा, सरला : छत्तीसगढ़ बेसिन में ग्रामीण शिशु मर्त्यता प्रतिरूप, पं. रविशंकर शुक्ल वि.वि., रायपुर, 2007
15. पंडा, बी.पी. : जनसंख्या भूगोल, मध्यप्रदेश हिन्दी : ग्रंथ अकादमी, भोपाल, 2007
16. ओझा, रघुनाथ : जनसंख्या भूगोल, प्रतिभा प्रकाशन, कानपुर, 1992
17. हीरालाल : जनसंख्या भूगोल, वसुन्धरा प्रकाशन, गोरखपुर, 1996
18. चन्दना, आर.सी. : जनसंख्या भूगोल, आर.के. बुक्स, नई दिल्ली, 2009
19. त्रिपाठी, रामदेव : जनांकिकी और जनसंख्या अध्ययन, आर.के. बुक्स, नई दिल्ली, 2008
20. शर्मा, सरला : नगरीय शिशु मर्त्यता. होरीजन बुक्स, नई दिल्ली, 2015.
21. त्रिपाठी, रामदेव : जनसंख्या भगोल, वसुन्धरा प्रकाशन, गोरखपुर, 2006
22.


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## M.A./M.Sc. (Geography) Semester-III

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG302 | **Research Methodology (XIII)** | | Core |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 5 | 1 | 0 |
| Maximum Marks | CIA | | ESE |
| 100 | 30 | | 70 |

### Learning Objective (LO):

Classroom discussion may focus on population and development linkage. Students may also be encouraged to consider various quantitative attributes of population from census 2011, India.

### Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Examining the introduction of research, motivation in research, types of research significance of research, research process and criteria of good research. | E |
| 2 | Understand the research problems, selecting research problems, literature review and to study the hypothesis, its types, sources, formation of hypothesis and utility of hypothesis in scientific research. | U |
| 3 | Understand the research design, need, features basic principal and developing of research plan, and sampling design and its basic types, steps, characteristics of sampling design. | U |
| 4 | Study about types of data, methods of data collection and study the processing and analysis of data using different statistical methods. | E |
| 5 | Understand the interpretation and report writing, techniques, precaution of interpretation, layout of research report, types of reports and oral presentation mechanics of writing a research report. | An |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

### CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 3 | 2 | - | 1 | 2 | 3 | 1 | 3 | - | 1 | 2 | 2 | 2 | - | 2 |
| CO2 | 3 | 3 | 3 | - | 1 | 2 | 3 | 2 | 2 | 1 | 1 | 2 | 3 | - | 2 | 3 |
| CO3 | 3 | 3 | 3 | - | 1 | 1 | 2 | - | 2 | - | 2 | 2 | 2 | 1 | 2 | 2 |
| CO4 | 3 | 2 | 2 | 2 | - | - | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 |
| CO5 | 3 | 3 | 3 | 1 | 2 | 3 | 2 | 1 | 2 | 1 | 1 | 3 | 2 | 2 | 3 | 1 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Research Methodology-An Overview; Procedure of scientific Research, Defining Research Problem; Formulating Hypothesis; Research Design. | 15 | 1 |
| II | Methods of Data Collection: Observation, Questionnaire, Schedule and Interview; Sampling: Sampling Methods, Size of Sample; | 15 | 2 |
| III | Processing and Analysis of Data: Processing- Editing, Coding, Classification and Tabulation, Analysis; Measurement of Central Tendency, Dispersion, Correlation. | 15 | 3 |
| IV | Preparation of Research Reports: Steps, Layout and Types of Reports. | 15 | 4 |
| V | Plagiarism, Reference, Bibliography, Formulating Research Paper, Citations. | 15 | 5 |

**Books Recommended:**


1. Selltiz, C.M. Jahoda, M. Deutsch and others, Research Methods in Social Relations, Holt, . New York, 1961.
2. Goode, W and P.K, Hatt, Methods in Social Research, Mc Graw Hill,.Tokyo, 1962
3. Harvey, David, Explanation in Geography, Edward Arnold, London, 1971
4. London, 1967.
5. Minshull, R. Introduction to Models in Geography. Longman London, 1975.
6. Sheskin, I.M. Survey Research for Geographers Scientific Publisher, Jodhpur, 1987.
7. Kothari, C. R. Research Methodo!ogy: Methods and Techniques, Wishwa Prakashan, 1994.
8. Misra H.N. and V.P. Singh Research Methodology in Geography: Social, Spatial and Policy Dimensions, Rawat Publications New Delhi, 1998.
9. Har Prasad, Research Methods and Techniques in Geography, Rawat Publications, New Delhi. 1992.
10. आहूजा रामा : सामाजिक अनुसंधान, रावत पब्लिकेशन, जयपुर, 2015
11. शुक्ला, संतोष, संपादक : शोध विधितंत्र एवं भौगोलिक विश्लेषण, वर्धमान महावीर खुला विश्वविद्यालय, कोटा (राजस्थान) 2009
12. शर्मा, वीरेन्द्र प्रकाश : रिसर्च मेथेडोलाजी, पंचशील प्रकाशन, जयपुर, 2008
13. यादव, हीरालाल, शोध प्रविधि एवं मात्रात्मक भूगोल,, राधा पब्लिकेशन, दिल्ली, 2008
14. त्रिवेदी, आर.एन. एवं डी.पी. शुक्ला : रिसर्च मेथेडोलाजी, कालेज बुक डिपो, जयपरु, 2013
15. जैन, बी.एम. : रिसर्च मेथेडोलॉजी, रिसर्च पब्लिकेशन, जयपुर, 2012


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## M.A./M.Sc. (Geography) Semester-III

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG303 | Practical –III: Remote Sensing and Quantitative Techniques (XIV) | | Core |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 0 | 0 | 10 |

| Maximum Marks | CIA | ESE |
|---|---|---|
| 100 | - | 70+30 (Practical Record and Viva-Voce) |

### Learning Objective (LO):

To introduce to the students the basic principles of Photogrammetery and remote sensing and uses the various Remote sensing software to analyze remote sensing data products and also get knowledge about some basic statistical procedures to the students to be applied to various themes in geography.

### Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Understand the modern techniques in geography under this course such as remote sensing and aerial photography. | U |
| 2 | Understand and get the knowledge about fundamental concept, types of aerial photography characteristics of aerial photographs and aerial camera. | U |
| 3 | Review on development of Indian remote sensing and functions of IRS. | E |
| 4 | To get an knowledge about satellite sensor and types of sensors, and their functions and characteristics. | Ap |
| 5 | Students are able to known the Product moment and Rank Correlation Coefficients of sample data. | Ap |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

### CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 1 | - | 2 | 1 | 3 | 1 | 1 | 1 | 3 |
| CO2 | 3 | 3 | 3 | 3 | 2 | 1 | 3 | 1 | 1 | 2 | 2 | 3 | 2 | 2 | 1 | 3 |
| CO3 | 3 | 3 | 3 | 2 | 1 | 1 | 3 | 1 | - | 2 | 3 | 3 | 2 | 2 | 1 | 2 |
| CO4 | 3 | 3 | 3 | 1 | 1 | 2 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | 1 | 1 | 3 |
| CO5 | 3 | 3 | 3 | 2 | 2 | 1 | 2 | 1 | - | 2 | 2 | 3 | 2 | 2 | 1 | 3 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | **Principles of Photogrammetery:** - Air Photo- Stereo test, Orientation of stereo model under mirror stereoscope, Preparation of photo/line index and determination of photo scale, Use of parallax bar and determination of heights, Identification of features on aerial photo graph, Tracing of details from stereo pair, Interpretation of physical and cultural details, Preparation of Land use map pre field interpretation, Field visit for ground truthing. | 20 | 1 |
| II | **Remote Sensing:–** Study of satellite Image – Annotation Identification of features on FCC imageries, Tracing of details from satellite imageries, Basic Principles of Image interpretation, Interpretation of Physical and Cultural details and preparation of land use and land cover map using IRS Images. Pre field visit. | 20 | 2 |
| III | **Digital Image Processing System:-** Familiarization and startup procedure, Visualization of satellite image data, importing data, Creating a subset image, Identification of object on video display, Display of Histogram and image information, Image rectification and registration, Image to image registration, Image Enhancement techniques, Filtering techniques, Band Rationing, Principal component Analysis, Image classification. | 15 | 3 |
| IV | **Statistical Techniques:** Product moment and Rank Correlation Coefficients, Linear Regression. Hypothesis Testing: Chi-Square test, 't'-test & 'F' test, Sampling Techniques, Point, Line and Area Sampling, Functional classification of Towns, Sex-Age snail diagram. | 20 | 4 |

**Books Recommended:**


1. American Society of Photogrammetry : Manual of Remote Sensing. ASP, Falls Church V.A. 1983.
2. Barren E.C. and I...F. Clirtis : Fundamentals of Remote Sensing and Air Photo Interpretation 'on, Memillan, New York, 1992.
3. Conipbell .1. : Introduction to Remote Sension, Glinford, "New York, 1989.
4. Clirran, Paul J. : Principles of Remote Sensing. Longman, London, 1985.
5. Hord R.M. : Digital Image Processing of Remotely Sensed Date, Academic, New York,1983
6. Pratt W.K. Digital Image Processing. Wiley, New York, 1978.
7. Thomas M. Lollesand and Ralph W. Keler, Remote Sensing and Image, Interpretation, Wiley & sons. New York, 1994.
8. Fraser Taylor D.R. Geographic information Systems. Pergamor Press, Oxford 1990.
9. Maquire D.J.M.F. Goodchiln and D.W. Rhind (eds.). Geographic information System Principles and Application. Taylor& Francis, Washingron, 1991.
10. Peuquer D.J. and D.F. Marble, Introductory Reading in Geographic Information System Taylor & Francis, Washington, 1990.
11. Star J. and J. Estes, Geographic Information Systems; An Introduction, Prentice Eaglewood Cliff, New Jersey. 19
12. चौनियाल, देवी दत्त : सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली, शारदा पुस्तक भवन, इलाहाबाद, 2016.
13. शर्मा, राजकुमार : वायु फोटो निर्वचन ,सुदूर संवेदन एवं भौगोलिक सूचना तंत्र, हिमांशु पब्लिकेशंस, उदयपुर, 2020
14. खत्री, हरीश कुमार : सुदुर संवेदन तकनीकी, कैलाश पुस्तक सदन, भोपाल, 2019


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# M.A./M.Sc. (Geography) Semester-III

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG304A | **Settlement geography (XV)** | | Elective 1 (Select any one) |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 5 | 1 | 0 |

| Maximum Marks | CIA | ESE |
|---|---|---|
| 100 | 30 | 70 |

## Learning Objective (LO):

To familiarize the students with the conceptual theoretical and empirical development in settlement studies in geography, and the current settlement scenario in India.

## Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | The students should be trained in the interpretation of settlement pattern from the topographical sheets. | U |
| 2 | They should be encourage to use census and allied data sources to understand hierarchy/ centrally/ functional organization of settlements in space. | U |
| 3 | The students should be taken for the field visits to identify the exact from of relationship between population growths. Changes in morphological structure and environmental degradation and the settlement and should be encourage to write field report based on their observation. | Ap |
| 4 | Understand the Nature and Scope of Settlement Geography and their evolution, significance and approaches for the study. | U |
| 5 | Understand the settlement types, pattern and nature and process of urban settlement And some basic concept related to settlement geography. | U |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

## CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 2 | 2 | 2 | 1 | - | 2 | 1 | 1 | - | 1 | 3 | 1 | - | 1 | 2 |
| CO2 | 3 | 2 | 2 | 1 | 1 | 2 | 3 | 1 | 1 | - | 1 | 3 | 2 | - | - | 3 |
| CO3 | 3 | 3 | 3 | - | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 2 | 3 | - | - | 2 |
| CO4 | 3 | 2 | 2 | 1 | 1 | 3 | 2 | 1 | 1 | 1 | 1 | 3 | 3 | - | - | 1 |
| CO5 | 3 | 3 | 3 | 1 | - | 2 | 2 | 1 | 1 | - | 1 | 3 | 2 | 2 | - | 2 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Meaning, Objectives and Scope of Settlement Geography; Evolution, Distribution, Types and Patterns of Rural Settlements; Rural House Types; Rural Service Centers. Definition, objective and scope of urban geography. | 15 | 1 |
| II | Evolution and growth of urban settlements; The Geographical setting of Urban Centers: Site, Situation and Location. Rank-size relationship; City-Country Relationship: Umland, Rural-Urban Fringe. | 15 | 2 |
| III | Internal structure morphology and land use. Theory of Urban structure. General Name of city structure: the Concentric zone Theory, The Sector Theory, the Multiple Nuclei Theory. Commercial Structure of Cities; The Central Business District (CBD). Centrifugal and Centripetal forces in Geography, Economic Base of Towns; Basic, Non-basic concept. | 15 | 3 |
| IV | Cities as Central Places, Central Place Theory, Growth Pole Theory. Urban Functions; Functional Classification of Towns: Webb, Harris, and Nelson | 15 | 4 |
| V | Contemporary Urban Planning; Types and elements, Urban problems; Blight and Renewal, Landuse Planning, Urban and Metropolitan Planning in India. | 15 | 5 |

**Books Recommended:**


1. Alam, Shah Manzoor : Hyderabad Secundrabad (Twin Cities) : A. Study in Urban Geography, 1965
2. Alam, S.M. & V.V. Pokshishevesky : Urbanization in Developing Countries Osmania university Hyderabad, 1976.
3. Berry Brain J. L. : Geographic Prospective on Urban Systems,Prentice-Hall, Michigon 1970.
4. Dickinson, R.E, : City, Religion and Regionalism,1947.
9. Mayor, H.M. & C.F. Kohn : Readings in Urban Geography, university of Chicago, 1959.
11 Mumford L. : Culture of cities, Harcount Brace Jovanovich publishers London 1938 .
12. Robson, W.A. : Great cities of world, Routledge, 2013.
14. Carter, Harold : Study of Urban Geography, London, Edward Arnold, 1972.
15. Singh R.L. & K.N. Singh : Readings in Rural Settlement Geography, NGSI Varanasi, 1975.
16. सिंह, उजागिर : नगरीय भूगोल, उत्तरप्रदेश हिन्दी ग्रन्थ अकादमी, लखनऊ, 1974
17. सिंह, ओ.पी., नगरीय भूगोल, तारा पब्लिकेशन, वाराणसी, 1979
18. तिवारी, आर.सी., अधिवास भूगोल, आर.के. बुक्स, नई दिल्ली, 2009
20. करण एवं यादव, अधिवास भूगोल, किताब घर, कानपुर, 2002
21. मौर्या, एस.डी. अधिवास भूगोल, शारदा पुस्तक भवन, इलाहाबाद, 2009
22. त्रिपाठी, आर.डी. : जनसंख्या भूगोल, वसुन्धरा प्रकाशन, दाउदपुर, गोरखपुर, 2011
23. वर्मा, लक्ष्मीनारायण : अधिवास भूगोल, राजस्थान हिन्दी ग्रंथ अकादमी, जयपुर, 2008
24. राव, बी.पी.,नरेन्द्र शर्मा : नगरीय भूगोल, वसुन्धरा प्रकाशन, गोरखपुर, 2001
25. बंसल, सुरेश चन्द्र : नगरीय भूगोल, मीनाक्षी प्रकाशन, मेरठ, 2018.
26. बसंल, सुरेश चन्द्र : ग्रामीण बस्ती भूगोल, मीनाक्षी प्रकाशन, मेरठ, 2009.
27. सिंह, कटार : ग्रामीण विकास, सिद्धांत, नीतियां एवं प्रबंध, सेज प्रकाशन, मुंबई, 2011.


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## M.A./M.Sc. (Geography) Semester-III

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG304B | **Geography of Chhattisgarh (XV)** | | Elective I (Select any one) |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 5 | 1 | 0 |
| Maximum Marks | CIA | | ESE |
| 100 | 30 | | 70 |

### Learning Objective (LO):

Classroom discussion may focus on population and development of Chhattisgarh. Students may also be encouraged to consider various attributes of population and regional development of Chhattisgarh, India.

### Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Understand the about the physiographic division of Chhattisgarh State | U |
| 2 | Understand the India Drainage system of Chhattisgarh Rivers. | U |
| 3 | Understand the climatic variation in Chhattisgarh State. | U |
| 4 | Examine and understand the types of vegetation of Chhattisgarh. | E |
| 5 | Examine and understand the developed and underdeveloped States in Chhattisgarh. | E |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

### CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 3 | 2 | - | 1 | - | 2 | 1 | 1 | 1 | 1 | 2 | 1 | - | - | 1 |
| CO2 | 3 | 2 | 3 | 1 | 1 | 1 | 3 | - | 1 | - | - | 3 | 2 | - | - | 2 |
| CO3 | 3 | 2 | 3 | - | - | 1 | 3 | - | - | 2 | - | 3 | 2 | - | - | 2 |
| CO4 | 3 | 3 | 3 | - | - | - | 2 | 1 | 1 | 2 | 1 | 3 | 2 | - | - | 1 |
| CO5 | 3 | 2 | 3 | 1 | 1 | - | 2 | - | - | 2 | 2 | 3 | 2 | 1 | - | 1 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | **Physical Features :** Geological Structure, Relief and Physiographic Regions, Drainage system, Climate | 15 | 1 |
| II | **Natural Resources:** Soils – Types, characteristics and their Distribution. Water Resources (Major Irrigation and Hydel Power Projects), Forests-types, Distribution, and Conservation of Forest. Mineral Resources: Iron-ore, Coal, Lime stone, Bauxite, Tin. | 15 | 2 |
| III | **Agriculture and Populations** – Agriculture: Cereals, Pulses and Millets. **Population**: Growth, Distribution, and Density; Tribal Populations; and Urban and Rural Population. | 15 | 3 |
| IV | **Industries** - Iron and Steel, Cement, Sugar, Aluminum; Industrial Regions of Chhattisgarh | 15 | 4 |
| V | **Trade and Transport**, Tourism, Socio-Economic Development of Chhattisgarh. | 15 | 5 |

### Books Recommended:


1. Jha, Vibhash Kumar and Saumya Naiyyar Chhattisgarh Samagra, Chhattisgarh Rajya Hindi Granth Akadmi, Raipur, 2013.
2. Kumar, Pramila : Chhattisgarh Ek Bhugolik Addhyayan. Madhya Pradesh Hindi Granth Akadmi, Bhopal, 2003.
3. Nagesh Jitendra and at all : Chhattisgarh Sandarbh 2014 Jansanmpark Vibhag, C.G. Govt., Raipur,2014.
4. Tiwari, Vijay Kumar : Geography of Chhattisgarh, Himalya Publishing House, Pvt. Ltd. 2004
5. Tripathi, Kaushlendra and Pursottam Chandrakar : Geography of Chhattisgarh, Shardaprakashan, Aazad Nagar , Bilaspur, 2001.
6. कुमार, प्रमिला : छत्तीसगढ़ का भूगोल, मध्यप्रदेश ग्रन्थ अकादमी, 2011
7. वर्मा, एल. एन. : छत्तीसगढ़ भौगोलिक अध्ययन, पुस्तक सदन, बिलासपुर, 2017.


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# M.A./M.Sc. (Geography) Semester-III

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc. | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG305A | **Remote Sensing Techniques (XVI)** | | Elective 2 (Select any one) |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 5 | 1 | 0 |

| Maximum Marks | CIA | ESE |
|---|---|---|
| 100 | 30 | 70 |

## Learning Objective (LO):

The basic objectives of the course are to appraise the students about basic principles of Photogrammetery, Remote Sensing and method of visual and digital interpretation of aerial photography and satellite imageries. How to apply the techniques of remote sensing.

## Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Understand the modern techniques in geography under this course such as remote sensing and aerial photography. | U |
| 2 | Examining the history, basic theories of EMR, and other concepts | E |
| 3 | Understand and get the knowledge about fundamental concept, types of aerial photography characteristics of aerial photographs and aerial camera. | U |
| 4 | Understand the data product, types of data product and its applications and uses in remote Sensing. | Ap |
| 5 | Students may be asked to look into weather satellite photographs being published in the daily news papers and to prepare some quick report of weather. | E |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

## CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 2 | 2 | 2 | 2 | 1 | 3 | - | 1 | 3 | 3 | 3 | 2 | 3 | 1 | 2 |
| CO2 | 3 | 3 | 3 | 2 | 2 | 1 | 3 | 1 | - | 3 | 2 | 3 | 2 | 3 | 2 | 3 |
| CO3 | 3 | 3 | 3 | 2 | 2 | 1 | 3 | 1 | 1 | 2 | 3 | 3 | 2 | 3 | 2 | 2 |
| CO4 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 1 | 1 | 3 | 2 | 3 | 3 | 3 | 1 | 3 |
| CO5 | 3 | 3 | 3 | 2 | 3 | 1 | 2 | 1 | - | 3 | 2 | 3 | 2 | 3 | 2 | 3 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Historical development of remote sensing as a technology - Relevance of remote sensing in Geography - Concepts and basics: Energy source, energy and radiation principles, energy interactions in the atmosphere and earth surface features, remote sensing systems: platform sensors and radiation records. Microwave sensing interpretation of SLAR imageries, thermal imageries. Data Products. | 15 | 1 |
| II | Aerial Photography: Definition, Concept, History and Development. Types of Aerial Photography, Applications of Air Photographs. | 15 | 2 |
| III | Remote Sensing Satellite: platforms LANDSAT, SPOT, NOAA, RADARSAT, IRS, INSAT: principles and geometry of scanners, orbital characteristics and data products - MSS, TM, LISS, SLAR. Recent trends in Satellite (World & India), IKONOS and Quick Bird. | 15 | 3 |
| IV | Image Processing: Types of imagery, techniques of visual interpretation, ground verification transfer of interpreted thematic information to base maps, Digital image processing: rectification and restoration, image enhancement - contrast manipulation, Digital Image Classification: Supervised and Unsupervised, post-classification analysis and accuracy assessment. Selection of appropriate data for different applications. | 15 | 4 |
| V | Image interpretations: mapping land use and land cover, land evaluation, urban land use, landform and its processes, weather studies and studies of water resources: integration of Remote Sensing and GIS. Remote sensing and hazard management, Remote sensing and environmental management. | 15 | 5 |

**Books Recommended:**


1. American Society of Photogrammetry: Manual of Remote Sensing. ASP, Falls Church V.A., 1983.
2. Compbell J.: Introduction to Remote Sension, Guilford, New York, 1989.
3. Curran, Paul J.: Principles of Remote Sensing. Longman, London, 1985.
4. Hord R.M : Digital Image Processing of Remotely Sensed Date, Academic, New York, 1983.
5. Pratt W.K. Digital Image Processing. Wiley, New York, 1978.
6. Rao D. P. (eds.): Remote Sensing for Earth Resources, Association of Exploration Geophysicist, Hederabad, 1998.
7. Thomas M. Lollesand and Ralph W. Kefer, Remote Sensing and Image Interpretation, Wiley & sons, New York, 1994.
8. Burrough P.A. Principles of Geographic Information Systems for Land Reson Assessment Oxford University Press, New York, 1986.
9. Fraser Taylor D.R. Geographic information Systems. Pergamor Press, Oxford 1990.
10. Maquire D.J.M.F. Goodchild and D.W. Rhind (eds.). Geographic information System 'Principles arid Application. Taylor & Francis, Washingron, 1991.
11. Star J. and J. Estes, Geographic Information Systems : An Introduction, Prentice Englewood Cliff, New Jersey, 1994.
12. चौनियाल, देवी दत्त : सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली, शारदा पुस्तक भवन, इलाहाबाद
13. शर्मा, राजकुमार : वायु फोटो निर्वचन ,सुदूर संवेदन एवं भौगोलिक सूचना तंत्र, हिमांशु पब्लिकेशंस, उदयपुर, 2020
14. खत्री, हरीश कुमार : सुदुर संवेदन तकनीकी, कैलाश पुस्तक सदन, भोपाल, 2019


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# M.A./M.Sc. (Geography) Semester-III

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc. | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG305B | **Biogeography and Ecosystem (XVI)** | | Elective 2 (Select any one) |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 5 | 1 | 0 |
| Maximum Marks | CIA | | ESE |
| 100 | 30 | | 70 |

## Learning Objective (LO):

Classroom discussion may focus on the concept of biology and its, interpretation, information and their application; interaction between living organisms with climate and physical environment, with special reference to India.

## Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | The students should be taken on field visit to the local floral fauna zones; they should be acquainted with the local biogeography of the areas. | Ap |
| 2 | To get comprehensive knowledge about plant and animal community and Succession. | U |
| 3 | There must be more interaction between teacher and students on different aspects of ecology with the help of models, charts and pictures. | An |
| 4 | Understand the basic fact about Biodiversity and protect the plant and animal community from global warming and dynamic human interference. | U |
| 5 | Understand the various environmental issues, policies and act. | U |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

## CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 2 | 2 | 1 | - | - | 2 | 1 | 1 | 1 | 2 | 3 | 1 | 1 | - | 2 |
| CO2 | 3 | 3 | 2 | 1 | - | 2 | 3 | 1 | .1 | - | 3 | 3 | 2 | - | 2 | 3 |
| CO3 | 3 | 2 | 3 | 2 | 2 | 1 | 3 | - | - | 1 | - | 3 | 2 | - | - | 2 |
| CO4 | 3 | 3 | 2 | 1 | 1 | - | 2 | 1 | 1 | 2 | 1 | 3 | 1 | 1 | - | 1 |
| CO5 | 3 | 2 | 1 | 1 | 1 | - | 2 | - | - | 2 | 1 | 3 | 2 | 3 | - | 1 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Definition and scope of Biogeography Environment, Habitat and Plant-animal association, Biome Types. | 15 | 1 |
| II | Elements of plant geography, distribution of forests and major communities. Plant successions in newly formed land forms. Zoogeography and its Environmental Relationship. Pale botanical and Palaeo climatological records of environmental change. | 15 | 2 |
| III | Ecosystems: concept and components, Ecosystem-form and function: tropic level, ecological pyramids, ecological niche, energy and nutrients in the ecosystem, hydrological cycle, food chains and food webs. Major terrestrial ecosystems of the world: agriculture, forests, grassland and desert. Population growth and environment. | 15 | 3 |
| IV | Biodiversity and its Conservation. Preservation and conservation of the ecosystem through resource management, Environment legislation. | 15 | 4 |
| V | The Stockholm conference, the Earth summit, Environmental laws in India (the Wild Life Act, Water Act, Forest Act, Environment Protection Act and National Environment Tribunal Act). | 15 | 5 |

**Books Recommended:**


1. Agrawal D.P. : Man and Environment in India through Ages, Book & Books, 1992.
2. Bradshaw, M.J. : Earth and Living Planet, ELBS. London, 1979.
3. Hoyt, J.B. Man and the Earth, Prentice Hall, U.S.A. 1992.
4. Huggett. R.J. : Fundamentals of Biogeography, Routledge, U.S. A. 1998.
5. Illes, J. : Introduction to Zoogeography, Mcmillan, London, 1974.
6. Lapedes, D.N.(ed) : Encyclopedia of Environmental Science, McGraw Hill, 1974.
7. Mathur H.S. : Essentials of Biogeography, Anuj Printers, Jaipur, 1998.
8. Pears, N. : Basic Biogeography, 2nd edn. Longman, London, 1985.
9. Simmons, I.G. Biogeography, Natural and Cultural, Longman, London, 1974.
10. Chandana, R.C. : Environmental Awareness, Kalyani Publishers, New Delhi, 1958.
11. Odum, E.P.: Fundamentals of Ecology, W.B. Saunders, Philadelphia, 1971.
12. Simmons, I.G. : Ecology of Natural Resources, Edward Arnold, London, 1981.
13. Singh S. : Environmental Geography, Prayag Publications, Allahabad, 1991.
14. Smith, R.L. : Man and his Environment : An Ecosystem Approach, Harper & Row, London, 1992.
15. U.N.E.P. : Global Environmental Outlook, U.N. Pub. , New ork, 1998.
16. World Resources Institute : World Resoources, (Latest Report) Washington.
17. कुलश्रेष्ठ, कामता प्रसाद : जैव भूगोल, किताब घर, कानपुर 1964
18. होता, जीतेन्द्र कुमार : जैव भूगोल एवं पारिस्थितिक तंत्र, शताक्षी प्रकाशन, समता कालोनी, रायपुर द्वितीय संस्करण 2014,
19. सिंह, सविन्द्र : पर्यावरण भूगोल, प्रयाग पुस्तक भवन, इलाहाबाद, 2015
20. सिंह, सविन्द्र : जैव भूगोल, प्रवालिका पब्लिकेशन्स, इलाहाबाद, 2020
21. पाठक, गणेश कुमार : आपदा प्रबंधन, राजेश पब्लिकेशन्स, नई दिल्ली, 2021
22. गुर्जर, रामकुमार, बी.सी. जाटः पर्यावरण भूगोल, पंचशील प्रकाशन, जयपुर, 2018.
23. होता, जितेन्द्र कुमार : जैव भूगोल एवं पारिस्थितिक तंत्र, तिवारी सदन, रायपुर, 2005.


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# M.A./M.Sc. (Geography) Semester-IV

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc. | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG401 | **Agriculture Geography (XVII)** | | Core |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 5 | 1 | 0 |
| Maximum Marks | CIA | | ESE |
| 100 | 30 | | 70 |

## Learning Objective (LO):

To familiarize the students with the concept, origin, and development of agriculture; to examine the role of agricultural determinants towards changing cropping pattern, intensity, productivity, diversification and specialization. The course further aims to familiarize the students with the application of varies theories, models and classification schemes of cropping pattern and productivity

## Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Understand about the introduction to agriculture, nature, scope, significance and Development of agriculture geography, study approaches applied in agriculture. | U |
| 2 | Understand and analyze the influence of physical, Economic and Technological factors on agriculture patterns. | An |
| 3 | Understand the Von Thunen's theory of agricultural location, whittlesey's classification of agricultural system and its application, types of agricultural in respect of area, salient features and their problems. | Ap |
| 4 | Understand the agricultural regionalization and modes in agricultural geography and their classification of agricultural models and some theories. | U |
| 5 | Understand definition and characteristics of arid and semi-arid regions and study about droughts and famines, role of irrigation and dry farming. | U |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

## CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 3 | 3 | - | 1 | 1 | 3 | 1 | 1 | 2 | 1 | 3 | 1 | - | - | 3 |
| CO2 | 3 | 3 | 3 | - | 1 | 1 | 3 | - | 1 | 2 | 1 | 3 | 2 | 1 | 1 | 3 |
| CO3 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | - | 1 | 2 | 2 | 3 | 2 | 1 | - | 2 |
| CO4 | 3 | 3 | 3 | - | 1 | 2 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | 1 | 1 | 2 |
| CO5 | 3 | 3 | 3 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 3 | 2 | 1 | 1 | 3 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Nature, scope, significance and development of agricultural geography. Approaches to the study of agricultural geography: Commodity, systematic and regional systems. Origin and dispersal of agriculture. | 15 | 1 |
| II | Determinants of agricultural land use - Physical, economic, social, and technological Land holding and land tenure systems, Land reforms, land use Agriculture policy and planning. Selected agricultural concepts and their measurements; cropping pattern, crop concentration, intensity of cropping, diversification and specialization, agricultural productivity, agricultural development. | 15 | 2 |
| III | Theories of agricultural location based on several multi-dimensioned factors:-Von Thunen's theory of agricultural location and its recent modifications; Whittlesey's classification of agricultural regions; Agro-climatic & Agriculture Ecological region. | 15 | 3 |
| IV | Sources of agricultural data: land use and land capability. Employment in the agricultural sector: landless labourers, woman, And children: occupational and agricultural activities. | 15 | 4 |
| V | Contemporary Issues: Food, nutrition and hunger. Food aid Programmers; role of irrigation, fertilizers, insecticides and pesticides, technological know-how. | 15 | 5 |

**Books Recommended:**


1. Bayliss Smith, IP.: The Ecology of Agricultural Systems. Cambridge University London, 1987.
2. Berry, BJ.L et. al. : The Geography of economic Systems. Prentice Hall, New York, 1976.
3. Brown, L.R. : The Changing World Food Prospects - The Nineties and Beyond, World Watch Institute, Washington D.C., 1990.
4. Dyson, T. : Population and Food - Global Trends and Furure Prospects. Routledgle. London, 1996.
5. Gregor, H.P. : Geography of Agriculture. Prentice Hall, New York, 1970.
6. Grigg, D.B. : The Agricultural Systems of the World. Cambridge University Press, New York 1974.
7. Hartshorn, T.N. and Alexander, J.W. : Economic Geography. Prentice Hall, New Delhi, 1988
8. Mannion, A.M. : Agriculture and Environment Change, John Wiley, London, 1995.
9. Mitra, Manju : Agriculture Geography of Chhattisgarh Basin, Sahitya Ratnalaya Kanpur,
10. 1980
11. Morgan W.B. and Norton , R.J.C. : Agricultural Geography. Mathuen, London, 1971.
12. Morgan, W.B.:Agriculture in the Third World - A Spatial Analysis. Westview Boulder, 1978.
13. Sauer, C.O. : Agricultural Origins and Dispersals,. M.I.T. Press, Mass, U.S.A., 1988.
14. Singh, J. and Dhillon, S.S. : Agricultural Geography. Tata McGraw Hill' Pub.; Delhi, 1988.
15. Tarrant, J.R. : Agricultural Geography. Wiley, New York, 1974.
16. बघेल, अनुसुइया : कृषि भूगोल, होरीजन्स बुक्स, नई दिल्ली, 2015
17. जोशी, वाय.जी. : नर्मदा बेसिन का कृषि भूगोल, मध्यप्रदेश हिन्दी ग्रंथ अकादमी, भोपाल, 1972
18. कुमार, प्रमिला : कृषि भूगोल, मध्यप्रदेश हिन्दी ग्रंथ अकादमी, भोपाल, 2008
19. हुसैन, माजिद : कृषि भूगोल, रावत पब्लिकेशन, जयपुर, 2000
20. कुमार, प्रमीला एवं श्री कमल शर्मा : कृषि भूगोल, मध्यप्रदेश हिन्दी ग्रंथ अकादमी, भोपाल, 1985
21. गौतम, अलका: कृषि भूगोल, शारदा पुस्तक भवन, इलाहाबाद, 2020


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## M.A./M.Sc. (Geography) Semester-IV

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc. | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG402 | **Field Surveying (Physical and Socio Economic Survey) Report (XVII)** | | Core |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 6 | - | - |
| Maximum Marks | CIA | | ESE |
| 100 | - | | 70+30 (Survey Report and Viva-Voce) |

### Learning Objective (LO):

The main objective of the field work is to conducted an extensive survey of a contiguous wider region and identify salient landforms; their generous and their impact on human life, flora and fauna.

### Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | The practical exercises should aim at identification of micro-geomorphic features on the ground and their relationship to land-use/ settlement pattern. | U |
| 2 | The exercise should familiarize the students with basic-economic characteristics of the chosen area/ settlements through lab experiments. Followed by field visit and conducting enquiry at the village/town/household level. | R |
| 3 | Have expertise in identification of area of study, methodology, quantitative and quantitative analysis, and conclusions to be drawn about the area – fundamental to geographical research. | E |
| 4 | This is also training report writing for the students. | Ap |
| 5 | Evaluate the student's knowledge about physical and socio economic survey and report writing. | E |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

### CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 3 | 3 | 1 | 1 | 2 | 3 | 1 | 1 | 2 | 1 | 3 | 1 | 1 | 2 | 1 |
| CO2 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | 1 | 2 | 1 |
| CO3 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | 1 | 2 | 1 |
| CO4 | 3 | 3 | 3 | 1 | 1 | 2 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | - | - | - |
| CO5 | 3 | 3 | 3 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 3 | 2 | 1 | 2 | - |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Trace the prominent features of area to be surveyed. Identify salient landform features of selected area on a topographical sheet, Identify the landforms on the surface, while in the field. Also note the agents of erosion, transportation and deposition associated with the landforms. | 15 | 1 |
| II | Identity and classify the Bio-diversity in the area (Flora & fauna). Observe the relationship of various landforms, flora and fauna with land-use, settlement structure and life style of people. | 15 | 2 |
| III | Procure a cadastral map of the village/town for field mapping of the features of land-use and land quality. Procure/prepare the settlement –site map through rapid survey to map the residential, commercial, recreational (parks, playground), educational, religious and other prominent features. Conduct a socio-economic survey of the households with a structured questionnaire. Supplement the information by personal observations and perceptions. | 20 | 3 |
| IV | Based on observations of the land-use and results of the socio-economic enquiry of the households, prepare a critical field-survey report. Photographs and sketches, in addition to maps and diagrams, may supplement the report. | 15 | 4 |
| V | Viva-Voce | 10 | 5 |

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## M.A./M.Sc. (Geography) Semester-IV

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc. | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG403 | **Practical IV: Geographical Information System & Quantitative Techniques (XVIII)** | | Core |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 0 | 0 | 10 |
| Maximum Marks | CIA | | ESE |
| 100 | - | | 70+30 (Practical Record and Viva-Voce) |

### Learning Objective (LO):

Classroom discussion may focus on the concept of Geographical Information System and its, interpretation, information and their application; Quantitative Techniques and their application.

### Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | To examine and understand the spatial and non spatial data models and all its functions components and applications in geography through computerized GIS. | E |
| 2 | Expertise of GPS for Ground truthing. Checking and updating of existing map and Check/update the existing topographical map. | Ap |
| 3 | Understand the concept Central tendency, Nearest Neighbor Analysis, Lorenz Curve. | U |
| 4 | To get Knowledge about different statistical technique likes Normal distribution curve, probability, Crop combination region, Agricultural efficiency | U |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

### CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 3 | 3 | - | 1 | 1 | 3 | 1 | 1 | 2 | 2 | 3 | 1 | 1 | 1 | 3 |
| CO2 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | 1 | 1 | 2 | 2 | 3 | 2 | 2 | 1 | 3 |
| CO3 | 3 | 3 | 3 | 2 | 1 | - | 3 | 1 | - | 2 | 1 | 3 | 2 | 2 | 2 | 3 |
| CO4 | 3 | 3 | 3 | 2 | 1 | - | 3 | 1 | - | 2 | 1 | 3 | 2 | 2 | 2 | 3 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | An overview of GIS software, Elements of GIS: Data capture-verification and preprocessing-data storage and maintenance of databases-Database Management Systems: Spatial data creation, Editing the layers and table creation, Creation of non Spatial data, data manipulation, analysis (integrated analysis of spatial and attribute data, overlay analysis, neighborhood operations and connectivity functions) and spatial modeling-output format and generation. Buffer analysis, Network Analysis, Creation of DEM & TIN Generation of thematic map. | 20 | 1 |
| II | GPS – Demonstration and handling of Hand held GPS receivers. Ground truthing. Checking and updating of existing map, Use of GPS to Check/update the existing topographical map. | 20 | 2 |
| III | Central Tendency, Mean Centre, Grouped Mean, Running mean, Nearest Neighbor Analysis, Lorenz Curve. | 20 | 3 |
| IV | Normal distribution curve, Probability, Crop combination region, Agricultural efficiency. | 15 | 4 |

**Books Recommended:**


1. Singh, R.L. & P.K. Dutt : Elements of Practical Geography Students trends,2015.
2. Monkhouse, F.J. & H.R. Wilkinson; Maps and Diagrams Mathuen, London,1971.
3. Mahmood, Aslam : Statistical Methods in Geographical studies Rajesh Pub., New Delhi,1977.
4. Gregory, S. : Statistical Methods and The Geographer,1963.
5. Hammond & Mccullah : Quantitative Techniques in Geography, Clarendon Press,Oxford,1977.
6. Yeaters, M. : An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York, 1973.
7. मॉक हाउस तथा विल्किन्सन : मानचित्र तथा आरेख, म.प्र. केदारनाथ , रामनाथ, मेरठ, 1976.
8. हीरालाल : प्रायोगिक भूगोल, किताबघर, कानपुर,2009.
9. आर.सी. तिवारी एवं सुधाकर त्रिपाठी : अभिनव प्रयोगात्मक भूगोल, प्रयाग पुस्तक भवन, इलाहाबाद,2018.
10. श्रीवास्तव, वी.के. : भूगोल की सांख्यिकीय विधियाँ, वसुन्धरा प्रकाशन, गोरखपुर, 2007


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# M.A./M.Sc. (Geography) Semester-IV

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc. | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG404A | Geography of Health (XVIV) | | Elective- 4 (Select any one) |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 5 | 1 | 0 |

| Maximum Marks | CIA | ESE |
|---|---|---|
| 100 | 30 | 70 |

## Learning Objective (LO):

Students get knowledge about the nature and concept of Health Geography, known about the nutrition, Diseases, Govt. programmes for eradication of Disease, national and International Organization. The teacher should cite examples from neighboring localities. Day trips to health centers may be of interest to the students.

## Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Understand fundamental concepts, approaches, development and challenges of health care in India. | E |
| 2 | Get the knowledge of genetic, communicable, non-communicable and occupational diseases. | Ap |
| 3 | Understand diffusion of diseases and causes major diseases. | U |
| 4 | Understand rural environment and health and health problems of tribes in India. | Ap |
| 5 | Get the knowledge about urban environment and health; pollution. | Ap |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

## CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 3 | 3 | - | 1 | - | 3 | 1 | 1 | 2 | 1 | 3 | 1 | 1 | 1 | 1 |
| CO2 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | - | 1 | 2 | 1 | 3 | 2 | 1 | 1 | 2 |
| CO3 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | - | 1 | 2 | 1 | 3 | 2 | 1 | 1 | 2 |
| CO4 | 3 | 3 | 3 | 1 | 1 | 2 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | 1 | 1 | 1 |
| CO5 | 3 | 3 | 3 | 1 | 1 | - | 2 | - | 1 | 2 | 2 | 3 | 2 | 3 | 1 | 2 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Nature, scope and significance of Health Geography, Development, specialization and relation with other science. Geographical factors effecting human health and diseases; Physical factors, Social factors, Economics factors and Environmental factors. | 15 | 1 |
| II | Disease Ecology and epidemiology, Basis of Classification of disease; genetic, biological, occupational and deficiency diseases, International Classification of diseases (ICD); Communicable and non-communicable diseases, WHO Classification of diseases, pattern of world distribution of major diseases. | 15 | 2 |
| III | Transmission of major diseases: cholera, malaria, tuberculosis, hepatitis, leprosy, cardiovascular, Asthma, fever, jaundice, arthritis, diabetic, BP, eye disease, anemia, Mental Disease, Cancer, AIDS and STDS. Diffusion and Causes of diseases. Disease differential by seasons. | 15 | 3 |
| IV | Nutrition and deficiency disease: Food stuffs and their nutritional contents and human requirements, concept of balanced Diet, hunger and malnutrition. Deficiency disorders and problems of malnutrition in India, Changing pattern of food habits in India and originates new health problem, regional distribution of food habits in India. | 15 | 4 |
| V | Health Care Planning: Role of Health Programmes in the eradication of various diseases, their preventive and promotive aspects. International level; WHO, UNICEF, Red Cross, National Level; Government and NGOs, Health care planning and polices; availability, accessibility and utilization of health care services, Primary Health Care (PHC); spatial inequalities in health care services in India. | 15 | 5 |

**Books Recommended:**


1. Banerjee, B. and Hazra J. : Geo-Ecology of Cholera in West Bengal, University Calcutta, Calcutta 1980.
2. Cliff, A and Haggett, P.: Atlas of Disease Distribution. Basil Blackwell, Oxford, 1989.
3. Digby, A, and Stewart. L. (eds.) : Gender, Health and Welfare. Routledge, NewYork 1996.
4. May, J.M. Studies in disease Ecology. Hafner Pub., New York, 1961.
5. May. J.M. Ecology of Human Disease. M.D. Pub. New York 1959.
6. May, J.M. : The World Atlas of Diseases, Nat. Book Trust, New Delhi, 1970.
7. Mc. Glashan, N.D. : Medical Geography, Methuen, London. 1972.
8. Phillps, D.R. : Health and Health Care in the Third world. Longman, London, 1990.
9. Pyle, G. : Applied Medical Geography. Winston Halsted Press, Silver Springs, Md, U.S.A.1979.
10. Shannon, G.M. et. al : The Geography of AIDS, Guilford Press. New York. 1987.
11. Smith, D. : Human Geography - A Welfare Approach, Arnold Heinemann, London 1997.
12. Stamp, L.D.: The Geography of Life and Death. Cornell University, Ithaca, 1964.
13. Mishra, R.P. : Geography of Health, concept publishing company, new delhi, 2007
14. Sharma, omprakash : Rural Health and Medical Care in india, Manak Publication, New Delhi, 2000
15. सिंघई, जी.सी.: चिकित्सा भूगोल, वसुन्धरा प्रकाशन, गोरखपुर, 2010
16. चौहान, धर्मेन्द्र सिंह एवं मुकेश कुमार शर्मा : साहित्यागार, जयपुर, 2011
17. खत्री, हरीश कुमार: स्वास्थ्य भूगोल, कैलाश पुस्तक सदन, भोपाल, 2018
18. नारायणन् , सुधा : आहार विज्ञान, रिसर्च पब्लिकेशन्स, त्रिपोलिया, 2011


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# M.A./M.Sc. (Geography) Semester-IV

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc. | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG404B | **Political Geography (XVIV)** | | Elective- 4 (Select any one) |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 5 | 1 | 0 |
| Maximum Marks | CIA | | ESE |
| 100 | 30 | | 70 |

## Learning Objective (LO):

There should be interactions between the teacher and students about the Nature and Scope of Political Geography, Frontiers, Boundaries, Shape, Size, Sovereignty, Concept of Nation State; Theories (Heartland and Rimland. Students should known about then Resource Conflicts – Water Sharing Disputes and special Economic Zones.

## Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Learn the concept of nation and state and geopolitical theories | R |
| 2 | Get the knowledge about political Boundary, Frontier. | U |
| 3 | To get Familiar with the Electoral system in India. | R |
| 4 | To Evaluate intrastate and interstate conflicts and disputes of India. | Ap |
| 5 | Have sound knowledge of politics of displacement | U |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

## CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 3 | 3 | - | 1 | 1 | 3 | 1 | 1 | 3 | 1 | 3 | 2 | - | 1 | 3 |
| CO2 | 3 | 3 | 3 | 1 | 1 | 2 | 3 | - | 1 | 3 | 1 | 3 | 2 | - | - | 3 |
| CO3 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | - | 1 | 3 | 2 | 3 | 2 | 1 | 1 | 3 |
| CO4 | 3 | 3 | 3 | 1 | 1 | 2 | 3 | 1 | 1 | 3 | 1 | 3 | 2 | - | - | 3 |
| CO5 | 3 | 3 | 3 | 1 | 1 | 2 | 2 | - | 1 | 2 | 2 | 3 | 1 | 1 | 1 | 3 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Introduction: Concepts, Nature and Scope of Political Geography. | 15 | 1 |
| II | State, Nation and Nation State – Concept of Nation and State, Attributes of State – Frontiers, Boundaries, Shape, Size, Territory and Sovereignty, Concept of Nation State; Geopolitics; Theories (Heartland and Rimland) | 15 | 2 |
| III | Electoral Geography – Geography of Voting, Geographic Influences on Voting pattern, Geography of Representation, Gerrymandering. | 15 | 3 |
| IV | Political Geography of Resource Conflicts – Water Sharing Disputes, Disputes and Conflicts Related to Forest Rights and Minerals. | 15 | 4 |
| V | Politics of Displacement: Issues of relief, compensation and rehabilitation: with reference to Dams, Highways and Special Economic Zones | 15 | 5 |

### Books Recommended:


1. Adhikari, S.: Political Geography, Rawat Publication, NewDelhi,2007.
2. Adhikari, S. : Political Geography of India –Sharda Pustak Bhawan, Allahabad, 2013.
3. Agnew, J., : Making Political Geography, Arnold, 2002.
4. Agnew, J., Mitchell K. and Total G., : A Companion to Political Geography, Blackwell, 2003.
5. Cox, K. R., Low M. and Robinson J., : The Sage Handbook of Political Geography, Sage Publications,2008.
6. Cox, K.,: Political Geography: Territory, State and Society, Wiley-Blackwell, 2002
7. Gallaher, C., et al, : Key Concepts in Political Geography, Sage Publications, 2009.
8. Glassner, M., : Political Geography, Wiley, 1993.
9. Hodder, Dick, Sarah, J, Llyod and Keith, S, McLachlan., : Land Locked States of Africa and Asia (vo.2), Frank Cass, 1998.
10. Jones, M., : An Introduction to Political Geography: Space, Place and Politics, Routledg , 2004.
11. Painter, J. and Jeffrey, A., : Political Geography, Sage Publications 2009.
12. Taylor, P. and Flint, C., : Political Geography, Pearson Education, 2000.
13. Verma, M. K., : Development, Displacement and Resettlement, Rawat Publications, Delhi, 2004.


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# M.A./M.Sc. (Geography) Semester-IV

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc. | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG405A | Geographical Information System (XVV) | | Elective- 5 (Select any one) |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 5 | 1 | 0 |

| Maximum Marks | CIA | ESE |
|---|---|---|
| 100 | 30 | 70 |

## Learning Objective (LO):

To introduce GIS (Geographical Information System) as a techniques of spatial science. To indicate the basic elements of GIS and mythology of GIS. To outline the steps and areas of application of GIS.

## Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Understand the all fundamental concept of GIS, potential of GIS, concept of space & time, objectives of GIS, elements of GIS, GIS tasks, history of GIS and GIS applications in different field. | R |
| 2 | To examine and understand the spatial and non spatial data models and all its functions components and applications in geography. | U |
| 3 | Extract the knowledge and information about geospatial analysis and database query and GIS data analysis the various concept and problems in analyzed in GIS environment. | R |
| 4 | Understand the concept of map, projections, and coordinate systems and basic of the same for different purposes in geography. | Ap |
| 5 | GIS applied in the various kinds of fields, agriculture, populations, watershed planning and land use planning. | |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

## CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 3 | 3 | - | 1 | 1 | 3 | 1 | 1 | 3 | 1 | 3 | 1 | 1 | 1 | 3 |
| CO2 | 3 | 3 | 3 | 1 | 1 | 2 | 3 | - | 1 | 3 | 1 | 3 | 2 | 2 | 1 | 3 |
| CO3 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | - | 1 | 3 | 2 | 3 | 1 | 1 | 2 | 2 |
| CO4 | 3 | 3 | 3 | 1 | 1 | 2 | 3 | 1 | 1 | 3 | 1 | 3 | 2 | 2 | 1 | 3 |
| CO5 | 3 | 3 | 3 | 1 | 1 | 2 | 2 | - | 1 | 2 | 2 | 3 | 1 | 1 | 1 | 3 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Spatial Science : Geography as a spatial science, maps and spatial information dynamics of spatial information, elements of information technology, Geographic objects and their relations definition and development of GIS, computer environment for GIS. | 15 | 1 |
| II | Spatial Data: Elements of spatial data: data sources: Primary and secondary census and sample data, quality and error variations Raster and vector data structures, data conversion comparison of raster and vector data bases, methods of spatial interpolation – GIS data formats for the computer environment. | 15 | 2 |
| III | GIS Technology: Coordinate system-basic principles of cartography and computer assisted cartography for GIS – remote sensing data as a data source for GIS integration of GIS and remote Sensing-GPS and GIS: technology, data generation and limitations – visualization in GIS-Digital Elevation Models (DEM and TINS). | 15 | 3 |
| IV | GIS Application: GIS as a Decision Support System –expert system for GIS-basic flow chart for GIS application – GIS standard legal system. | 15 | 4 |
| V | National GIS policy application of GIS in Land Information System, Urban Management, Environmental Management and Emergency Response System. | 15 | 5 |

**Books Recommended:**


1. American Society of Photogrammetry : Manual of Remote Sensing. ASP, Falls Church V.A., 1983.
2. Barrett E.C. and L.F. Curtis : Fundamentals of Remote Sensing and Air Photo Interpretation on, Memillan, New York, 1992.
3. Compbell J. : Introduction to Remote Sension, Guilford, New York, 1989.
4. Curran, Paul J. : Principles of Remote Sensing. Longman, London, 1985.
5. Hord R.M.:Digital Image Processing of Remotely Sensed Date, Academic, New York, 1983.
6. Pratt W.K. Digital Image Processing. Wiley, New York, 1978.
7. Rao D. P. (eds.) : Remote Sensing for Earth Resources, Association of Exploration Geophysicist, Hederabad, 1998.
8. Thomas M. Lollesand and Ralph W. Kefer, Remote Sensing and Image Interpretation, Wiley & sons, New York, 1994.
9. Aronoff S.Geographic Information Systems: A. Management Perspective, Publication Offiawa, 1989.
10. Fraser Taylor D.R. Geographic information Systems. Pergamor Press, Oxford 1990.
11. Mark S. Monmonier. Computer-assisted Cartography,Prentice-Hall, Englewood Cliff, Jersey, 1982.
12. चौनियाल, देवी दत्त, : सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली, शारदा पुस्तक भवन, इलाहबाद,2016.
13. शर्मा, राजकुमार : वायु फोटो निर्वचन ,सुदूर संवेदन एवं भौगोलिक सूचना तंत्र, हिमांशु पब्लिकेशंस, उदयपुर, 2020
14. खत्री, हरीश कुमार : सुदुर संवेदन तकनीकी, कैलाश पुस्तक सदन, भोपाल, 2019
15. जैन, जे. एल. : कार्टोग्राफी एवं भू सूचना विज्ञान के आधार, अटलांटिक पब्लिकेशन, 2022


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# M.A./M.Sc. (Geography) Semester-IV

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc. | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG405B | **Environmental Geography (XVI)** | | Elective- 5 (Select any one) |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 5 | 5 | 1 | 0 |
| Maximum Marks | CIA | | ESE |
| 100 | 30 | | 70 |

## Learning Objective (LO):

There should be interactions between concept, characteristics, classification and interrelation between man and environment.

## Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | To get knowledge about the Environmental Geography and different aspects of ecology with the help of models, charts and pictures. | R |
| 2 | To Understand Ecosystem and its concepts and types. | U |
| 3 | To get knowledge about the Natural Hazard and management. | R |
| 4 | Students are able to known the different environmental policy which has been taken by national and international level. | U |
| 5 | Students are able to known about the Environmental Actions like earth summit, Climate summits and its importance. | U |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

## CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 3 | 3 | 1 | 1 | - | 3 | 1 | 1 | 2 | 1 | 3 | 1 | 1 | 1 | - |
| CO2 | 3 | 2 | 3 | 1 | 1 | 1 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | - | - | 3 |
| CO3 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | 1 | - | 2 |
| CO4 | 3 | 2 | 3 | 1 | 1 | 2 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | - | 1 | 3 |
| CO5 | 3 | 3 | 3 | 1 | 1 | - | 2 | - | 1 | 2 | 2 | 3 | 2 | 1 | 1 | 2 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Environment: Meaning, definition, concepts and theories related to environment. Environment and its components: Classification, Characteristics and their interdependent relationship, Development of the environmental studies and their approaches: Development of environmentalism in Geography. | 15 | 1 |
| II | Environment and development. Ecological concepts; Geography as human ecology; Ecosystem: meaning definition, Concept and components. Main terrestrial ecosystems of the world-forests and agriculture. | 15 | 2 |
| III | Environmental hazards- natural and human made, environmental pollution: meaning definition, nature and types-air, water, noise and others. Ecological impacts of pollution. Resource use and ecological imbalance with special reference to soil, forests and water resources. | 15 | 3 |
| IV | Environmental Management: meaning, importance and approaches, need for environmental policy and laws. Preservation and conservation of environment through resource management (Green revolution, Chipko movement, National Parks). | 15 | 4 |
| V | Environmental Actions: Concept, need and importance Stockholm Conference, Earth Summit, E.I.A. definition and methods and need for EM Environmental education and People's participation. | 15 | 5 |

**Books Recommended:**


1. Agrawal, Anil and Sunita Narain. Dying Wisdom : The Fourth citizen Report. Centre for Science and Environment, New Delhi, 1998.
2. Chandna, R.C. Environmental Awareness Kalyani Punlishers, New Delhi, 1998.
3. Detwyler, J.R.: Man,s impact on Environment. Pelican, 1970.
4. Mukherji, A and V. K. Agnihotri : Environment and Development. Concept Pu. Co. New Delhi, 1993.
5. Rudig Wolfgeng. Environmental Policy Edward Elger Publishing Ltd. UK. 1998.
6. Saxena, H.M. Environmental Management. Rawat Punlications, Jaipur, 2000
7. Singh, S. Environmental Geography. Prayag Pustak Sadan, Allahabad, 2000.
8. Smith, R.L. : Man and his Environment: An Ecosystem Aproach. Harper & Row. London, 1992.
9. अवस्थी एन. एम. एवं आर.पी. तिवारी पर्यावरण भूगोल, मध्यप्रदेश ग्रथ अकादमीए भोपाल ।
10. नेगी, पी. एस. : परिस्थितिकीय विकास एवं पर्यावरण भूगोल, रस्तोगी एन्ड कम्पनी, मेरठ, 1995।
11. सविन्द्र सिंह : पर्यावरण भूगोल, प्रयाग पुस्तक सदन इलाहाबाद, 1993 ।
12. शर्मा, वी एल : पर्यावरण : साहिन्य भवन, आगरा, 1992।
13. तिवारी, विजय कुमार : पर्यावरण और परिस्थितिकी, हिमालय पब्लिशिंग हाउस, दिल्ली 1998 ।
14. तिवारी, विजय कुमार, : पर्यावरण अध्ययन, हिमालय पब्लिशिंग हाउस, दिल्ली, 1998 ।
15. रामकुमार गुर्जर एवं जाट वी.सी., पर्यावरण अध्ययन, पंचशील प्रकाशन, जयपुर, 2018
16. व्यास, हरिशचन्द्र : पारिस्थतिकी एवं पर्यावरण, पंचशील प्रकाशन, जयपुर
17. आसरे, राम, पर्यावरण भूगोल, आर. के. पब्लिकेशन, नई दिल्ली, 2009.
18. मौर्य, एस.डी. : संसाधन एवं पर्यावरण, प्रयाग पुस्तक भवन, इलाहाबाद, 2006.
19. राव, वी.पी. : संसाधन एवं पर्यावरण, वसुन्धरा प्रकाशन, गोरखपुर, 2010.
20. पाठक, गणेश कुमार : आपदा प्रबंधन, राजेश पब्लिकेशन, नई दिल्ली, 2021.


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# M.A./M.Sc. (Geography) Semester-II

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc. | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG501 | Physical Geography | | Generic Elective |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 2 | 2 | 0 | 0 |
| Maximum Marks | CIA | | ESE |
| 100 | 30 | | 70 |

## Learning Objective (LO):

The students need to be trained in the use of conventional vis-à-vis modern tools and techniques of cartographic analysis.

## Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | To get knowledge about basics of Physical Geography. To develop the basic concept about the earth and Human activities | U |
| 2 | Understand the landforms associated with Fluvial, Glacial, Aeolian, Coastal and Karst. | E |
| 3 | Understand and analyze the structure of atmosphere, Insolation, Monsoon and Cyclones. | U |
| 4 | Understand the bottom relief of Ocean and the composition and salinity of ocean water. | E |
| 5 | Understand and evaluate the recent climate phenomena like Green House, Global Warming. | Ap |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

## CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 3 | 3 | - | 1 | 2 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | - | - | 2 |
| CO2 | 3 | 3 | 3 | 2 | 1 | 2 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | 1 | 1 | 3 |
| CO3 | 3 | 3 | 3 | 1 | 1 | 2 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | 1 | 1 | 3 |
| CO4 | 3 | 3 | 3 | 1 | 1 | 2 | 3 | 1 | 1 | 2 | 2 | 3 | 2 | 1 | 1 | 3 |
| CO5 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | 2 | 1 | 2 | 3 | 3 | 2 | 1 | 1 | 3 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | Nature and Scope of Physical Geography, Solar System, Origin of earth, interior of the Earth, movement of earth, Plate Tectonics, Rocks, Earthquake and Volcano. | 10 | 1 |
| II | Denudation Process, land form associated with Fluvial, Glacial, Aeolian, Coastal and Karst. | 10 | 2 |
| III | Composition and Structure of the atmosphere, Insolation, Monsoon and Cyclones. | 10 | 3 |
| IV | Major features of ocean basin, Temperature and Salinity, Waves, Tides and Oceanic currents. | 10 | 4 |
| V | Green House, Global Warming and Koppen Climate Classification | 10 | 5 |

**Books Recommended:**


1. Singh, S : Physical Geography, Pravalika Publication, Allahabad, 2018
2. Dayal, P : Physical Geography, R.K. Books, New Delhi, 2008
3. Lal, D. S. : Physical Geography, Sharda Pustak Bhawan, Allahabad,2020.
4. दयाल परमेश्वर : भौतिक भूगोल, राजेश पब्लिकेशन, नई दिल्ली, 2012
5. लाल, डी. एस. भौतिक भूगोल, शारदा पुस्तक भवन इलाहाबाद, 2023.
6. सिंह, सविन्द्र भौतिक भूगोल, प्रयाग प्रकाशन इलाहाबाद, 2021.


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# M.A./M.Sc. (Geography) Semester-III

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG502 | **Regional Geography of India special reference to Chhattisgarh** | | Generic Elective |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 2 | 2 | 0 | 0 |
| Maximum Marks | CIA | | ESE |
| 100 | 30 | | 70 |

## Learning Objective (LO):

The students need to be trained in the use of conventional vis-à-vis modern tools and techniques of cartographic analysis.

## Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Understand the basic knowledge about physiographic features, Soil, Drainage, and Vegetation in India. | U |
| 2 | Understand and Mineral distribution along with Major Industries and Industrial region. | U |
| 3 | Understand the basic knowledge about physiographic features, Soil, Drainage, and Vegetation in Chhattisgarh | U |
| 4 | Understand and Mineral distribution along with Major Industries and Industrial region in Chhattisgarh | U |
| 5 | Understand the basic Demographic structure of Chhattisgarh as well as India. | An |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

## CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 2 | 1 | - | 2 | 2 | 3 | 1 | 1 | 1 | 1 | 3 | 1 | - | 1 | 2 |
| CO2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 1 | 2 | 1 | 3 | 2 | 1 | 1 | 3 |
| CO3 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 |
| CO4 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 |
| CO5 | 3 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 3 | 2 | - | 1 | 3 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | **Geography of India**: Location and extent Physiographic divisions, Drainage System, Climate, Vegetation, Soil. | 10 | 1 |
| II | **Geography of India**: Mineral and Power resources, Agriculture and Irrigation, Major Industries and Industrial region. Trade and transport. | 10 | 2 |
| III | **Geography of Chhattisgarh:** Location and extent, Physiographic divisions, Drainage System, Climate, Vegetation, Soil, | 10 | 3 |
| IV | **Geography of Chhattisgarh:** Mineral and Power resources, Agriculture and Growth, Distribution and Density. | 10 | 4 |
| V | Population Growth, Distribution and Density of India and Chhattisgarh | 10 | 5 |

### Books Recommended:


1. Husain, M. : Geography of India, 2012
2. Singh R. L. : Geography of India, 1999
3. Tiwari, Vijay : Geography of Chhattisgarh,2010
4. Tiwari R.C. : Geography of India, 2003
5. Khullar D.R: Geography of India, 2000
6. Chouhan P.R. Geography of India in reference of Chhattisgarh, 2000
7. Spate OHK & ATA Learnont-India & Pakistan Methuen, London. 1967.
8. Tirtha R. & Gopal Krishna, Emerging India Reprinted by Rawat Publications, Jaipur 1996.
9. अग्रवाल पी.सी. भारत का भौतिक भूगोल, एशिया प्रकाशन कं.,रायपुर 2003
10. बंसल सुरेशचंन्द, भारत का भूगोल, मीनाक्षी प्रकाशन, मेरठ, 2018.
11. वर्मा रामविलास, : भारत : एक भौगोलिक विवेचन, भवदीय प्रकाशन श्रृंगारघाट, अयोध्या, फैजावाद, 2007.
12. सक्सेना एच. एम., राहुल सक्सेना,: भारत का भूगोल, रावत पब्लिकेशन्स, जयपुर, 2017
13. चौहान, पी.आर., महातम प्रसाद : भारत का भूगोल, वसुन्धरा प्रकाशन, गोरखपुर, 2003.
7. अग्रवाल, पी.सी: भारत का भौतिक भूगोल, एशिया प्रकाशन रायपुर 2003
8. वर्मा, एल. एन. : छत्तीसगढ़ भौगोलिक अध्ययन, पुस्तक सदन, विलासपु, 2017.


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# M.A./M.Sc. (Geography) Semester-IV

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc. | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG601 | Computer Cartography | | Skill Enhancement and Value Added |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 2 | 4 | 0 | 0 |
| Maximum Marks | CIA | | ESE |
| 100 | 30 | | 70 |

## Learning Objective (LO):

The main objective of the course is to impart adequate professional knowledge and computer skills so as to enable the students to take up career in the field of Geospatial Technology.

## Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | To introduce to the students a new Geospatial Technology of Digital Cartography | U |
| 2 | To provide conceptual knowledge about the Map making Elements. | E |
| 3 | To develop the skill of spatial data acquisition, management, analysis, mapping and decision making etc. | U |
| 4 | Understand and analyze the role of Remote Sensing and GIS in Computer Cartography. | Ap |
| 5 | To gain an understanding of cartographic software to produce accurate appropriate convincing and creative cartographic and graphic images. | |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

## CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 3 | 3 | 1 | 1 | - | 3 | 1 | 1 | 2 | 1 | 3 | 1 | 2 | 1 | 2 |
| CO2 | 3 | 3 | 3 | 1 | 1 | - | 3 | - | 1 | 2 | 1 | 3 | 2 | 2 | 2 | 2 |
| CO3 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | - | 1 | 2 | 1 | 3 | 2 | 2 | 1 | 2 |
| CO4 | 3 | 3 | 3 | 1 | 1 | - | 3 | 1 | 1 | 2 | 1 | 3 | 1 | 2 | 1 | 2 |
| CO5 | 3 | 3 | 3 | 1 | 1 | - | 3 | - | 1 | 2 | 1 | 3 | 2 | 2 | 2 | 2 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | **Introduction to Cartography:** Definition, Nature and Scope of Cartography; Manual Cartography Vs Computer Cartography. | 4 | 1 |
| II | **Elements of Cartography:** Maps: Categories and scale factor; coordinate systems; Representation and compilation of spatial data; Graphic elements of map making; Symbolization: Visualization: visual variables; Colour and pattern. | 8 | 2 |
| III | **Basics of Computer Cartography:** Cartographic Data: Point data, linear data areal data, And volume data, Sources of cartographic data: Conventional and non-conventional; Map design; Symbolization. | 8 | 3 |
| IV | **Remote Sensing and GIS and Cartography:** Role of Remote Sensing, Geographical Information System and Global Positioning System in map production. | 4 | 4 |
| V | **Application of Computer Cartography:** Hardware and software for computer cartography; Representation of geospatial data: histogram, bar graphs, line graphs, scatter diagram, pie diagram and trend line; Advantages and disadvantages of computer assisted cartography. | 6 | 5 |

### Books Recommended:


1. Monmonier, M.S.: Computer Assisted Cartography: Principles and Prospects, Prentice Hall, 1982
2. Robinson, H. et al Elements of Cartography, 6th Edition, John Wiley & Sons, New York, 1995
3. Monkhouse, F.J.R. & Wilkinson H.R.:Maps and Diagrams, Methuen &Co. London. 2000
4. Raise, Erwin : Principles of Cartography, McGraw-Hill, New York. 1962
5. Cromley, R.G.: Digital Cartography, Prentice-Hall, New York. 1992
6. Dent, B.D.: Cartography- Thematic Map Design, 5th Edition, WCB Mc Grew Hill, Boston, 1999
7. Rampal, K.K.: Mapping and Compilation, Concept Publishing Co. New Delhi, 1993
8. Slocum, T.A.et al.: Thematic Cartography and Geovisualization , 3rd Edition, Prentice Hall,2008
9. Mishra, R.P. : Fundamentals of Cartography, Prasaranga, University of Mysore, 1973
10. Kraak M.J.and Ormeling.F Cartography: Visualization of Spatial Data, Pearson Edu.pvt Ltd. (Singapore) Inelian Branch, New Delhi, 2004
11. Sarkar, A Practical Geography: A Systematic Approach, Orient Longman, Kolkatta, 2003


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## M.A./M.Sc. (Geography) Semester-I

| Program | Subject | Year | Semester |
|---|---|---|---|
| M.A./M.Sc | Geography | 1 | I |
| Course Code | Course Title | | Course Type |
| GEOG602 | Indian Knowledge System in Geography | | IKS (Indian Knowledge System) |
| Credit | Hours Per Week (L-T-P) | | |
| | L | T | P |
| 2 | 4 | 0 | 0 |
| Maximum Marks | CIA | | ESE |
| 100 | 30 | | 70 |

### Learning Objective (LO):

To provide a General introduction to Indian Knowledge System (IKS) and sensitize the students to the contribution made by ancient Indians in the field of Science philosophy and related application and concept.

### Course Outcomes (CO):

| CO No. | Expected Course Outcomes<br>At the end of the course, the students will be able to : | CL |
|---|---|---|
| 1 | Understand the Indian Knowledge system in Geography | U |
| 2 | Student get knowledge about the Bharatiya Civilization and Development of Knowledge System | U |
| 3 | Understand the Indian Literature and Scholars. | An |
| 4 | Students get knowledge about the basics of surveying and Geospatial Technology. | E |
| 5 | Approach and Preservation of IKS related to Geography | Ap |

CL: Cognitive Levels (**R**-Remember; **U**-Understanding; **Ap**-Apply; **An**-Analyze; **E**-Evaluate; **C**-Create).

### CO-PO/PSO Mapping for the course:

| PO / CO | POs | | | | | | | | | | | PSO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 3 | 4 | 5 |
| CO1 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | 1 | 1 | 2 | - | 3 | 1 | - | - | 1 |
| CO2 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | - | 1 | 2 | - | 3 | 2 | - | 1 | 1 |
| CO3 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | - | 1 | 2 | - | 3 | 2 | 1 | 1 | 2 |
| CO4 | 3 | 3 | 3 | 1 | 1 | 2 | 3 | 1 | - | 2 | 1 | 3 | 2 | 1 | 1 | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CO5 | 3 | 3 | 3 | 1 | 1 | 1 | 2 | - | 1 | 2 | - | 3 | 2 | - | - | 1 |

"3" – Strong; "2" – Moderate; "1"- Low; "-" No Correlation

## Detailed Syllabus:

| Unit No. | Topics | No. of Lectures | CO No. |
|---|---|---|---|
| I | **IKS an Overview:** Definition, Importance, Classification and Unique aspects of IKS. Introduction of Four Vedas and Vedic Life and its distinctive features. | 5 | 1 |
| II | **Bharatiya Civilization and Development of Knowledge System:** Harappan and Sindhu Valley Civilization, Traditional Knowledge System, Main Schools of Philosophy, Ancient Education System, the Takṣasila University, the Nalanda University. | 7 | 2 |
| III | **Literature and Scholars in Geography :** Indian Puran and Vedas, Literature, Life and works of Patanjali, Vedavyasa, Kauṭilya, Paṇini, Aryabhaṭa, Varahamihira, Adi Saṅkaracarya, Bhaskaracarya. | 7 | 3 |
| IV | **Surveying and Map Preparation:** Basics of Surveying, chain, Plane table, Dumpy level and Theodolite. Map Preparation with Geospatial Technology. | 5 | 4 |
| V | **Protection Preservation, Conservation of IKS:** Documentation and preservation of IKS, Approaches and Strategies to Conservation management of IKS. | 6 | 5 |

**Books Recommended:**


1. Chauhan, Bhag Chand Textbook on The Knowledge System of Bhārata , 2011
2. Raha, Sibaji. Histrory of Science in India Volume-1, Part-I, Part-II, Volume VIII, 2007 al.National Academy of Sciences, India and The Ramkrishan Mission Institute of Culture, Kolkata 2014
3. Kohle, Pradeep: Pride of India- A Glimpse of India's Scientific Heritage edited by et al. Samskrit Bharati 2006.
4. Verma, Keshav Dev: Vedic Physics, Motilal Banarsidass Publishers, 2012.
5. Soni, Suresh: India's Glorious Scientific Tradition by, Ocean Books Pvt. Ltd. 2010.