**GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR**
**(Established by State Legislature Act 17 of 1995)**
**'A+' Grade, NAAC Accredited State Govt. University**

Acad./AC-III/BOS&R-33/2025/ 3577
Dated: 07/7/25

To

The Controller of Examinations
GJUS&T, Hisar.

Geo/25/760
08.07.25

**Sub: Approval of Scheme of examinations and syllabi of M.Sc. Geography (1st to 4th semester) w.e.f. academic session 2025-26 as per NEP-2020 being run by University Teaching Department and affiliated degree Colleges.**

Sir,

I am directed to inform you that the Vice-Chancellor, on the recommendations of Dean, Faculty of Humanities and Social Sciences on dated 25.06.2025, is pleased to approve the Scheme of examinations and syllabi of M.Sc. Geography (1st to 4th semester) w.e.f. academic session 2025-26 as per NEP-2020 being run by University Teaching Department and affiliated degree Colleges, under Section 11(5) of the University Act, 1995 in anticipation of approval of the Academic Council.

A copy of the scheme of examinations and syllabi of above said programme is enclosed herewith. You, are therefore, requested to take further necessary action, accordingly.

Yours faithfully

DA: As above

Assistant Registrar (Academic)
for Registrar

Endst. No. Acad./AC-III/BOS&R-33/2025/ 3578-85 Dated: 7/7/25

A copy of above is forwarded to the following for information and necessary action:-

1. Dean, Faculty of Humanities and Social Sciences, GJUST, Hisar.
2. Chairperson, Department of Geography, GJUST, Hisar. He is requested to arrange to upload the above said scheme of examinations and syllabi of above said programme on the website of the University.
3. Principals, Concerned affiliated degree Colleges, GJUST, Hisar alongwith Scheme of examinations and syllabi of subject of M.Sc. Geography (1st to 4th semester) w.e.f. academic session 2025-26 as per NEP-2020 being run by University Teaching Department and affiliated degree Colleges.
4. OSD to Vice-Chancellor (for kind information of the Vice-Chancellor), GJUST, Hisar.
5. P.A. to office of Registrar (for kind information of the Registrar), GJUST, Hisar.

Assistant Registrar (Academic)

# Department of Geography

## Scheme of Examination and Syllabus for

## M.Sc. Geography

## (2-year Degree Program)
## For UTD and Affiliated Colleges

**as per NEP-2020**

**w.e.f. session 2025-26**
**(Batch 2025 onwards)**

**Guru Jambheshwar University of Science &Technology Hisar-125001, Haryana**

**(A+ NAAC Accredited State Govt. University)**

Chairperson
Department of Geography
Guru Jambheshwar University
of Science & Technology, Hisar

DEPARTMENT OF GEOGRAPHY

# M.Sc. Geography

## (2 Year Degree Program)
## For UTD and Affiliated Colleges
## w.e.f 2025-26

## Scheme and Syllabi of Programme

Name of the Programme: M.Sc. Geography
**(CURRICULUM AND CREDIT FRAMEWORK FOR PG PROGRAMMES) by UGC as per NEP 2020**

Duration of the Programme: Two Years (Four Semesters)

## About Us

Department of Geography started in 2023 at undergraduate level and subsequently elated to postgraduate level in 2025. At present the department is running two programmes of M.Sc. Geography & Integrated B.sc- (Hons. /Hons. With Research)-M.sc Geography. These courses in geography prepare the students for pursuing career in academics, teaching, urban and regional planning, applications of Remote Sensing and Geographical Information Systems, Cartography, Surveying, Town and Country Planning, Disaster Management, Aerial Photography, Satellite imaging and other public services. The department has started GIS and Computer Cartography Laboratory to facilitate studies involving remote sensing techniques, GIS software, digital processing of imageries and statistical programmes for processing socio-economic data.

DEPARTMENT- VISION AND MISSION VISION

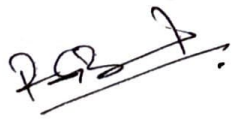
to become a model department as a Centre of quality education, research with innovation and recognition at National and International level for serving the society.

MISSION

- M1: To provide quality education to aspiring young minds for improving their skills, inculcating values, creating leadership qualities and enhance research with innovative methods.
- M2: To produce young geographers who would contribute in the areas of higher education, regional and national planning, development, environment, ethics and sustainable development.
- M3: To develop Teaching-Learning methods which can produce socially committed professionals who contribute effectively in nation building

**Course Objectives**

- To be able to explain territorial diversity and complexity and the interrelations of natural environmental phenomena with economic, social and cultural phenomena.
- To ensure that students are able to act and take part in the management of territory by drawing on their training in geography.
- Specifies a behavior, skill, or action that a student can demonstrate if they have achieved mastery of the objective.
- To help you understand how geographers think about the world, consider geography's five themes-location, place, region, movement and human-environment interaction.
- To ensure a general grounding of the fundamental knowledge of geography, its epistemological development and its research methods.
- To ensure that students are able to put theoretical, methodological and instrumental knowledge into practice, make comprehensive analyses, interpret spatial problems and processes and make territorial diagnoses.
- To ensure that students are able to act and take part in the management of territory by drawing on their training in geography.
- To develop the specific skills related to work techniques, particularly those related to analysis, process and representation of geographical information and field work.
- To ensure that the necessary knowledge to teach geography at secondary school level is given in accordance with the current legislation.
- To enable graduates to take postgraduate or specialization courses in which a territorial component is dealt with.
- To be able to explain territorial diversity and complexity and the interrelations of natural environmental phenomena with economic, social and cultural phenomena.



**GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR**

## DEPARTMENT OF GEOGRAPHY

# Scheme and Instruction for M.Sc. Geography Two-year Programme for UTD and Affiliated Colleges w.e.f 2025-26 (Batch 2025 onwards)

The M.Sc. Geography Two-year Programme is a postgraduate course designed is accordance with the provisions of the CURRICULUM AND CREDIT FRAMEWORK FOR PG PROGRAMMES" by UGC.
The course curriculum is structured to reflect the University's belief that multi-disciplinary thinking is the key to develop comprehensive understanding.

The course M.Sc. Geography Two-year Programme under the CURRICULUM AND CREDIT FRAMEWORK FOR PG PROGRAMMES" offers multiple entries and exist options for the students pursuing the course. The award diploma and degree to the students pursuing M.Sc. Geography - will be as mentioned below:

| Year | Type of Diploma/Degree | Qualification title/nomenclature and programme duration |
|---|---|---|
| 1st Year | P.G. Diploma | P.G. Diploma in Geography (*) |
| 2nd Year | Master's degree | Master of Science in Geography |

Note: In case of any confusion or conflict with the rules and regulation of the university, the rules and regulation of the university shall prevail and decision of the Vice Chancellor will be final.

The M.Sc. Geography programme is divided into four semesters (two semesters in first year, two semesters in the second year.

After Completion of First year the students will be awarded as Post Graduate Diploma in Geography

(*) An internship course of 4-6 weeks duration during summer vacation after second semester is to be completed by every student. Internship can be either for enhancing the employability or for developing the research aptitude

The division of marks is as under:

| **Suggested Evaluation Methods** | |
|---|---|
| Internal Assessment: 20/30 Marks<br>➢ **Theory**<br>• Class Participation: **05** Marks<br>• Seminar / presentation / assignment / quiz etc.: **05 Marks**<br>• Mid-Term Exam: **10 Marks**<br>• Assignment: **10 Marks** | End-Term Examination<br>50/70 Marks |
| ➢ **For Practical – 10/30 Marks**<br>• Class Participation: **05 Marks**<br>• Seminar / Demonstration / Viva-Voce/Lab records etc.: **15 Marks**<br>• Mid-Term Exam: **10 Marks** | 20/70 Marks |

The Internal Assessment awarded to a student in any particular course will be based on performance of the students in minor tests, Attendance and Co-curricular Activities (Assessment, Vivo-Voce, Presentation, Live assignment, Subject Quiz, Group Discussion, Case Study, etc.)

The students who fail in internal assessment as well as in aggregate will have the option to improve their score in the internal assessment giving a special chance to such students. However, no student will be allowed to improve his/her score of internal assessment, if he/she has already scored 40% marks in aggregate as well in external examination. A student who could not secure 40% marks in external will have to reappear in the external examination of the respective paper as per university rules.

Instructions to the examiners and students for the End term exams:

- The following instructions are related to the papers having four credits i.e. 70 marks of theory and 30 marks of internal assessment. The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus. In addition, eight more questions will be set comprising two questions from each unit. The students shall be required to attempt five questions in all selecting one question from each unit in addition to the compulsory Question No. 1. All questions shall carry equal marks. The maximum time allotted for the major test is 03 (three) hours. – **70 Marks**

- The following instructions are related to the papers having four credits i.e. 50 marks of theory and 20 marks of internal assessment with 30 marks of practical exam. The examiner is required to set nine questions in all. The first question will be compulsory consisting of five short questions covering the entire syllabus. In addition, eight more questions will be set comprising two questions from each unit. The students shall be required to attempt five questions in all selecting one question from each unit in addition to the compulsory Question No. 1. All questions shall carry equal marks. The maximum time allotted for the major test is 2.5 (two and half) hours. – **50 Marks**

- The following instructions are related to the papers having two credits i.e. 35 marks of theory and 15 marks of internal assessment. The examiner is requested to set five questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus will consist of five short answer type questions each of three marks). The candidate is required to attempt two questions in all selecting one from each unit carry ten marks and the compulsory Question No.1.The maximum time allotted for the major test is 2 (two) hours - **35 Marks**

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## Scheme of Examination for M.SC Geography for UTD and Affiliated Colleges

**Duration of the Programme: (Two Years Programme)**

CURRICULUM AND CREDIT FRAMEWORK FOR PG PROGRAMMES
Of National Education Policy-2020
**W.E.F 2025-26 (Batch 2025 onwards)**
**FIRST YEAR**

**SEMESTER-I**

| Type of Course | Course Code | Nomenclature of Paper/Course | Credits | Contact Hours | Internal Marks | External Marks | Total Marks | Duration of Exam (Hrs.) |
|---|---|---|---|---|---|---|---|---|
| Discipline Specific Course | U25GEO101T | Evolution of Geographical Thought | 4 | 4 | 30 | 70 | 100 | 3 |
| | U25GEO102T | Geomorphology | 4 | 4 | 30 | 70 | 100 | 3 |
| | U25GEO103T | Statistical Methods in Geography | 4 | 4 | 30 | 70 | 100 | 3 |
| Discipline Elective Course | U25GEO111T | Fundamentals of Remote- sensing | 2 | 2 | 15 | 35 | 50 | 2 |
| | U25GEO111P | Fundamentals of Remote- sensing Lab | 2 | 4 | 15 | 35 | 50 | 3 |
| | U25GEO112T OR U25GEO113T | Sustainable Development OR Social Geography | 2 | 2* | 15 | 35 | 50 | 2 |
| Discipline Specific Course | U25GEO104P | Cartographic Techniques Lab | 4 | 8 | 30 | 70 | 100 | 3 |
| Value Added Course | | To be opted from the pool of VAC | 2 | 2 | 15 | 35 | 50 | 2 |
| | | | **24** | **30+2*** | **180** | **420** | **600** | |

***Additional Contact Hours as per optional subjects opted by the students**

| SEMESTER-II | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Type of Course** | **Course Code** | **Nomenclature of Paper/Course** | **Credits** | **Contact Hours** | **Internal Marks** | **External Marks** | **Total Marks** | **Duration of Exam (Hrs.)** |
| **Discipline Specific Course** | U25GEO201T | Research Methodology | 4 | 4 | 30 | 70 | 100 | 3 |
| | U25GEO202T | Geography of India | 4 | 4 | 30 | 70 | 100 | 3 |
| **Discipline Elective Course** | U25GEO211T OR U25GEO212T | Regional Planning and Development OR Political Geography | 4 | 4* | 30 | 70 | 100 | 3 |
| **Discipline Elective Course** | U25GEO213T | Fundamentals of GIS and GNSS Technology | 2 | 2 | 15 | 35 | 50 | 2 |
| | U25GEO213P | Fundamentals of GIS and GNSS Technology Lab | 2 | 4 | 15 | 35 | 50 | 3 |
| | U25GEO214P | Morphometric Techniques Lab | 4 | 8 | 30 | 70 | 100 | 3 |
| **Discipline Specific Course** | U25GEO203T | Oceanography | 2 | 2 | 15 | 35 | 50 | 2 |
| **Seminar** | U25GEO201S | Seminar | 2 | 2 | 15 | 35 | 50 | 2 |
| **Internship** | U25GEO201I | INTERNSHIP* | 4 | | | | 100 | |
| | | | **24+4** | **30+4*** | **180** | **420** | **700** | |

***Additional Contact Hours as per optional subjects opted by the students.**

**After Completion of First year the students will be awarded as Post Graduate Diploma in Geography.**

***An internship course of 4-6 weeks duration during summer vacation after second semester is to be completed by every student. Internship can be either for enhancing the employability or for developing the research aptitude.**

**Guru Jambheshwar University of Science and Technology**
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**Scheme of Examination for M.SC Geography**
**for UTD and Affiliated Colleges**

**Duration of the Programme: (Two Years Programme)**

CURRICULUM AND CREDIT FRAMEWORK FOR PG PROGRAMMES
**Of National Education Policy-2020**

**SECOND YEAR (Batch 2025 onwards)**

**SEMESTER-III**

| Type of Course | Course Code | Nomenclature of Paper/Course | Credits | Contact Hours | Internal Marks | External Marks | Total Marks | Duration of Exam (Hrs.) |
|---|---|---|---|---|---|---|---|---|
| Discipline ecific Course | U25GEO301T | Climatology | 4 | 4 | 30 | 70 | 100 | 3 |
| | U25GEO302T | Urban Geography | 4 | 4 | 30 | 70 | 100 | 3 |
| | U25GEO303T | Economic Geography | 4 | 4 | 30 | 70 | 100 | 3 |
| Discipline ctive Course | U25GEO311T OR U25GEO312T | Agricultural Geography OR Disaster Management | 4 | 4* | 30 | 70 | 100 | 3 |
| Discipline ecific Course | U25GEO304T | Population Geography | 4 | 4 | 30 | 70 | 100 | 3 |
| ıcticum Class | U25GEO305P | Project Report based on Field Survey | 4 | 8 | 30 | 70 | 100 | 3 |
| ɔen Elective Course | | To be opted from the pool of OEC | 2 | 2 | 15 | 35 | 50 | 2 |
| | | | **26** | **30+4*** | **195** | **455** | **650** | |

***Additional Contact Hours as per optional subjects opted by the students**

## SEMESTER-IV

| Type of Course | Course Code | Nomenclature of Paper/Course | Credits | Contact Hours | Internal Marks | External Marks | Total Marks | Duration of Exam (Hrs.) |
|---|---|---|---|---|---|---|---|---|
| Discipline Specific Course | U25GEO401T | Ecosystem and Environment | 4 | 4 | 30 | 70 | 100 | 3 |
| | U25GEO402T | Town and Country Planning | 4 | 4 | 30 | 70 | 100 | 3 |
| Research (Dissertation/ Project Report/ Academic Report Exemption for those students who have completed their U.G with Research) | U25GEO403D | Dissertation / Project Report/ Academic Report | 12 | 0 | | 300 | 300 | 0 |
| | | OR | | | | | | |
| | U25GEO404T | Geography of India (Regional and systematic) | 4 | 4 | 30 | 70 | 100 | 3 |
| | U25GEO405T | Applied Climatology | 4 | 4 | 30 | 70 | 100 | 3 |
| | U25GEO406T | Geography of Migration | 4 | 4 | 30 | 70 | 100 | 3 |
| Skill Enhancement Course | | To be opted from the pool of SEC | 2 | 2 | 15 | 35 | 50 | 2 |
| | | | **22** | **10/22** | **75/165** | **475/385** | **550** | |

**Guru Jambheshwar University of Science and Technology**
**Hisar-125001, Haryana**
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**Scheme of Examination for M.SC Geography for UTD and Affiliated Colleges**

**Duration of the Programme: (Two Years Programme)**

CURRICULUM AND CREDIT FRAMEWORK FOR PG PROGRAMMES
**Of National Education Policy-2020**

**FIRST and SECOND YEAR (Batch 2025 onwards)**
**Nomenclature of Paper/Course for Pool of VAC/OEC/SEC**

**SEMESTER-I**

| Type of Course | Course Code | Nomenclature of Paper/Course | Credits | Contact Hours | Internal Marks | External Marks | Total Marks | Duration of Exam (Hrs.) |
|---|---|---|---|---|---|---|---|---|
| Value added Course | U25VAC117T | Disaster Management | 2 | 2 | 15 | 35 | 50 | 2 |
| | | | | | | | | |

**SEMESTER-III**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Open Elective Course | U25OEC317T | Geography in Everyday Life | 2 | 2 | 15 | 35 | 50 | 2 |
| | | | | | | | | |

**SEMESTER-IV**

Skill Enhancement

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ~~Open Elective~~ Course | U25SEC417T | Geography of Startups and Innovation | 2 | 2 | 15 | 35 | 50 | 2 |
| | | | | | | | | |

**Program Outcomes (PO) with Post Graduate Attributes**

Programme outcomes are attributes of the post graduates from the programme that are indicative of the post graduates' ability and competence to work after being a qualified professional geographer upon post-graduation. Program outcomes are statements that describe what students are expected to know or do by the time of post-graduation, they must relate to knowledge and skills that the students acquire from the programme. The achievement of all outcomes indicates that the student is well prepared to achieve the program educational objectives down the road. The department of geography has the following eleven POs. The course syllabi and the overall curriculum have been designed to achieve these outcomes:

## Program Outcomes (PO) for Post Graduate Programmes (CBCS) in the Faculty of Sciences, Kurukshetra University, Kurukshetra

| | | |
|---|---|---|
| **PO1** | Knowledge | Capable of demonstrating comprehensive disciplinary knowledge gained during course of study |
| **PO2** | Research Aptitude | Capability to ask relevant/appropriate questions for identifying, formulating and analyzing the research problems and to draw conclusion from the analysis |
| **PO3** | Communication | Ability to communicate effectively on general and scientific topics with the scientific community and with society at large |
| **PO4** | Problem Solving | Capability of applying knowledge to solve scientific and other problems |
| **PO5** | Individual and Team Work | Capable to learn and work effectively as an individual, and as a member or leader in diverse teams, in multidisciplinary settings. |
| **PO6** | Investigation of Problems | Ability of critical thinking, analytical reasoning and research-based knowledge including design of experiments, analysis and interpretation of data to provide conclusions |
| **PO7** | Modern Tool usage | Ability to use and learn techniques, skills and modern tools for scientific practices |
| **PO8** | Science and Society | Ability to apply reasoning to assess the different issues related to society and the consequent responsibilities relevant to the professional scientific practices |
| **PO9** | Life-Long Learning | Aptitude to apply knowledge and skills that are necessary for participating in learning activities throughout life |
| **PO10** | Ethics | Capability to identify and apply ethical issues related to one's work, avoid unethical behaviour such as fabrication of data, committing plagiarism and unbiased truthful actions in all aspects of work |
| **PO11** | Project Management | Ability to demonstrate knowledge and understanding of the scientific principles and apply these to manage projects |

**M.Sc. Geography**

**First Semester**

## Evolution of Geographical Thought

**Course code: U25GEO101T**
**60 Hrs. (4 Hrs. /week)**
**Credits: 4**
**Time: 3 Hrs.**

**Marks for External: 70**
**Marks for Internal Exam: 30**
**Total Marks: 100**

*Note: The examiner is requested to set nine questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus, will consist of seven short answer type questions each of two marks). The candidate is required to attempt five questions in all selecting one from each unit and the Question No.1. All questions carry equal marks.*

**Objective:** Main objective of this course is to acquaint the students with the philosophy, methodology and historical development of geography as a professional field. The idea is to address the spirit and purpose of the changing geographies and to what we as geographers contribute towards knowledge production. The course aims at developing critical thinking and analytical approaches

### UNIT- I

1. Basic Frame and Concepts: Man-environment Relationship; Newenvironmentalism.
2. Contribution of Greek, Roman and Arab Geographers in the development of Geography.
3. Evolution of Geography in Indian Context.

### UNIT- II

4. Contribution of American and German Geographers.
5. French School of Geographic Thought.
6. Humanistic and phenomenological approaches in Geography.

### UNIT -III

7. Behavioral revolution in Geography.
8. Marxism and Postmodernism in Geography.
9. Modern Approaches: Quantitative revolution and Positivism.

### UNIT- IV

10. Impact of Darwinian theory in Geography.
11. Concepts: space, place, time and spatial organization.
12. Contemporary Development: Radicalism and Feminism.

**Books Recommended**


1. Adams, P., Steven, H. and Karel, T. (eds.) (2001): Texture of Place. Exploring Humanistic Geographies. University of Minnesota Press, Minneapolis.
2. Anderson, K., Domosh, M., Pile, S. and Thrift, N. (eds.) (2003): Handbook of Cultural Geography. Sage Publications, London.
3. Barnes, T. and Gregory, D. (eds.) (1997): Readings in Human Geography: The Poetics and Politics of Inquiry. Arnold, London.
4. Bunkše, E. V. (2004): Geography and the Art of Life. John Hopkins University Press, Baltimore.
5. Buttimer, A. (1971): Society and Milieu in the French Geographic Tradition. Rand McNally, Chicago.
6. Daniels, P., Bradshaw, M., Shaw, D. and Sidaway, J. (2000): An Introduction to Human Geography. Issues for the 21st Century. Prentice Hall, London.
7. Dear, M. J. and Flusty, S. (2002): The Spaces of Postmodernity: Readings in Human Geography. Blackwell Publishers, Oxford.
8. Dikshit, R. D. (2004): Geographical Thought. A Critical History of Ideas. Prentice-Hall of India, New Delhi. (in English and Hindi).
9. Doel, M. (1999): Poststructuralist Geographies. The Diabolical Art of Spatial Science. Edinburgh University Press, Edinburgh
10. Gaile, G. and Wilmott, C. (eds.) (2003): Geography in America at the Dawn of the 21stCentury. Oxford University Press, Oxford and New York.
11. Harvey, D. (1969): Explanation in Geography. Arnold, London.
12. Harvey, M. E. and Holly, P.B. (2002): Themes in Geographic Thought. Rawat Publications Jaipur and New Delhi.
13. Hubbard, P., Kitchin, R., Bartley, B. and Fuller, D. (2002): Thinking Geographically: Space, Theory and Contemporary Human Geography.Continuum, London.
14. Johnston,R., Gregor, D.,Pratt, G, Watts, M. and Whatm ore, S. (2003):The Dictionary of Human Geography. Blackwell Publishers, Oxford. 5th edition.
15. Johnston, R.J. (1985): The Future of Geography, Metheun and Company Ltd., New York.(2003 edition published).
16. Johnston, R.J. and Sidaway, J.D. (2004): Geography and Geographers. 6th edition, Edward Arnold, London.
17. Kapur, A. (ed.) (2001): Indian Geography – Voice of Concern. Concept Publishing Company, New Delhi.
18. All Possible Words – P. James


***Course outcomes***

***At the end of the course, the students would be able to:***

**CO 1:** Cognizance of nature and philosophy of geography.

**CO 2:** Contextualization of development of geographic knowledge in ancient and medievalperiod.

**CO 3:** Awareness about philosophy and concepts of modern geography.

**CO 4:** Acquaintance with positivist and alternative explanations in geography.

**M.Sc. Geography**

**First Semester**

**Geomorphology**

**Course code: U25GEO102T**
**60 Hrs. (4 Hrs. /week)**
**Credits: 4**
**Time: 3 Hrs.**

**Marks for External: 70**
**Marks for Internal Exam: 30**
**Total Marks: 100**

*Note: The examiner is requested to set nine questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus, will consist of seven short answer type questions each of two marks). The candidate is required to attempt five questions in all selecting one from each unit and the Question No.1.All questions carry equal marks.*

**Objective:** This paper deals with fundamentals and properties of physical features of earth.

## Unit-I

1. Introduction to geomorphology as a science: definition, nature, scope and recent developments.
2. Fundamental concepts: geological structure and landforms; Uniformitarianism, Multi-cyclic and polygenetic landforms.
3. Evolution of landscape; Climatogenetic Geomorphology.

## Unit-II

4. Continental drift theory and its basic considerations; Plate tectonics-meaning and concept, margins and boundaries, plate motion and cycle.
5. Elements of Hill Slope and theories of slope evolution by Davis, Penck and King.

## Unit-III

6. Weathering: Causes and Types, Mass movement, causes, classifications and types of mass movements.
7. Earth Movements, Process of Mountain Building and Vulcanicity.

## Unit-IV

8. Geomorphic processes and resulting land forms: Fluvial, Glacial, Periglacial.
9. Geomorphic processes and resulting land forms: Aeolian, Karst and Coastal Landforms.

**Books Suggested:**


1. Bloom AL. 2002. Geomorphology: A systematic Analysis of late Cenozoic landforms. Prentice -Hall Private Limited, New Delhi.
2. Embleton, C and Thormne. J.1979. Process in Geomorphology. London, Edward Arnold.
3. Kale VS and Gupta A.2001. Introduction to Geomorphology. Orient Longman, Hyderabad.
4. RitterDF., KochelRC. and Miller JR.1995. Process Geomorphology. Dubuque, WinC. Brown Publishers.
5. Sharma HS and Kale VS2009. Geomorphology in India, PrayagPustak Bhawan,Allahabad.
6. Sharma, VK.2010. Introduction to Process Geomorphology. Tayler and Francis's, London.
7. Sharma, VK. 1992. Earth's Surface Processes and Forms. Tata McGraw Hill Publications,New Delhi.
8. Singh S.2002. Geomorphology, PrayagPustak Bhawan, Allahabad.
9. Strahler AH. 2013. Introducing Physical Geography, Wiley and Sons, New York.
10. Thornbury, WD. 2004. Principles of Geomorphology, John Wiley Sons, New York.


***Course outcomes:***

***At the end of the course, the students would be able to:***

**CO 1:** Development of understanding about the fundamental concepts of geomorphology.

**CO 2:** Enrichment of knowledge about tectonic activities and hill slope relationship.

**CO 3:** Familiarization with the processes and patterns shaping the landforms.

**CO 4:** Understanding of environmental management using principles of applied geomorphology

**M.Sc. Geography**

**First Semester**

**Statistical Methods in Geography**

**Course code: U25GEO103T**
**60 Hrs. (4 Hrs. /week)**
**Credits: 4**
**Time: 3 Hrs.**

**Marks for External: 70**
**Marks for Internal Exam: 30**
**Total Marks: 100**

*Note: The examiner is requested to set nine questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus, will consist of seven short answer type questions each of two marks). The candidate is required to attempt five questions in all selecting one from each unit and the Question No.1. All questions carry equal marks.*

**Objective:** Statistical methods are applied in geography in order to make precise and unambiguous statements. These are used to describe and explain various geographical patterns and relationships

**Unit-I**

1. Statistical Methods in Geography: Concept and Significance.
2. Primary and Secondary Data; Levels of data measurement: Nominal, Ordinal, Interval, and Ratio.

**Unit-II**

3. Descriptive statistics: histogram and frequency curve, Partitioned values: quartiles and deciles, Graphical representation of data
4. Measures of Central Tendency and methods of computation of Mean, Median and Mode.

**Unit- III**

5. Normal Probability Curve and its characteristics.
6. Measures of dispersion: Range, Quartile deviation, Mean deviation, Standard deviation; Relative measure of dispersion: Coefficient of variation.
7. Measure of inequality: Location quotient and Lorenz curve.

**Unit- IV**

8. Sampling: theory, methods, distribution and chance errors.
9. Correlation and Regression: Scatter diagram, Rank correlation by Spearman and Product Moment by Karl Pearson, Significance testing of Correlation.
10. Regression analysis, Regression equations, Construction of Regression line, Simple Linear Regression, properties of Least square estimate, Coefficient of Determination.

**Recommended Readings:**


1. David M. Smith (1975), Patterns in Human Geography, Penguin, Harmondsworth.
2. Ebdon, D (1983), Statistics in Geography: A Practical Approach, Blackwell, London.
3. Gregory, S. (1978) Statistical Methods and the Geographer (4th Edition), Longman, London.
4. Gupta, S.P., Statistical Methods, Sultan Chand and Sons, Latest Edition.
5. Mathews, J.A. (1987), Quantitative and Statistical Approaches to Geography, Practical Manual, Pergmon, Oxford.
6. Pal, S.K. (1998), Statistics for Geoscientists; Techniques and Applications, Concept Publishing Company, New Delhi.


**Course outcomes:**

**At the end of the course, the students would be able to:**

**CO 1:** Introduction to tools of quantitative information and data.

**CO 2:** Enhancement of knowledge about statistical analysis of spatial pattern from geographical data

**CO 3:** Enrichment of knowledge about inferential data analysis analysis and errors associated with it.

**CO 4:** Awareness about impacts of Statistical methos in Geography and Social science research.

**M.Sc. Geography**

**First Semester**

## Fundamentals of Remote-sensing

**Course code: U25GEO111T**
**30 Hrs. (2 Hrs. /week)**
**Credits: 2**
**Time: 2 Hrs.**

**Marks for External: 35**
**Marks for Internal Exam: 15**
**Total Marks: 50**

*Note: The examiner is requested to set five questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus, will consist of five short answer type questions each of three marks). The candidate is required to attempt three questions in all selecting one from each unit carry ten marks and the Question No.1.*

**Objective:** The aim of this course is to apprise the students to various aspects of Aerial photographs, Remote Sensing and GIS which are the important elements of the Geospatial technology.

### Unit -I

1. Definition; History of Remote Sensing; Stages of Remote Sensing, Electromagnetic Radiation (EMR), Characteristics; Electromagnetic Spectrum (EMS); Energy Interaction in the Atmosphere and Surface of Earth and concept of signature, Atmospheric Windows, Radiation Laws.

2. Types of Remote Sensing with Respect to Wavelength Regions and their significance. Sensor and Platforms and their types and characteristics

### Unit -II

3. Remote Sensing Satellites and Data Products: Overview of Different Satellite and Sensors for Earth Observations– Coarse; Medium and High-Resolution Missions (Landsat Series; SPOT, Quick bird, ASTER, Sentinel, SAR and IRS Missions.

4. Application of Remote Sensing in Natural Resources Management: Water resources, Land use/ land Cover (LULC) Forest and Environmental issues. Application of Remote Sensing in Human Resources Management: Agricultural issues and Impact Assessment on Indian Economics; Urban and Regional Planning and present issues & Challenges.

**M.Sc. Geography**

**First Semester**

**Fundamentals of Remote-sensing Lab**

**Course code: U25GEO111P**
**60 Hrs. (4 Hrs. /week)**
**Credits: 2**
**Time: 3 Hrs.**

**Marks for External: 35**
**Marks for Internal Exam: 15**
**Total Marks: 50**

Note: The examiner shall set four questions, two from each unit. The candidate shall attempt three questions in all, selecting at least one question from each unit.

**Distribution of Marks for Evaluation**
**Exercise= 10 Viva-voce = 15 File record=10**

## UNIT-I

1. Types of satellite images and Study of a satellite image - annotation (IRS - IB, IRS- IC etc.)(1 exercises)
2. Acquisition of open-source satellite data from BHUVAN (ISRO), USGS / GLOVIS. (2 exercises)
3. Preparation of FCC and comparison of features on true colour, panchromatic (2 Exercise)
4. Preparation of interpretation key of satellite imageries. (1exercise)
5. Interpretation of a Multispectral Satellite Image (Landsat, LISS III, LISS- IV, Cartosat & Sentail etc.):Identification, Mapping and interpretation of Natural and Cultural features (2 exercises)

## UNIT-2

6. Geo-referencing: GCP Based and Image to Image Geo-referencing (2 exercise)
7. Pre-processing of imageries (i) sub set (ii) resolution merge (2 Exercise)
8. Unsupervised digital classification of satellite imagery (Rabi and Kharif seasons) (2 Exercise)
9. Supervised digital classification of satellite imagery (Rabi and Kharif seasons) (2 Exercise)

*Recommended Readings:*


1. Chanrda, A.M. and S.K. Ghosh (2006) **Remote Sensing and Geographical Information System**, Narosa Publishing House, New Delhi
2. Chang, Kang-tsung (2002) **Introduction to Geographic Information Systems,** Tata McGrawHills Publishing Company Ltd, New Delhi.
3. Chaunial, D.D. (2016) **Principles of Remote Sensing and Geographical Information System** (InHindi), Sharda Pustak Bhawan, Allahabad.
4. Joseph, George (2003) **Fundamental of Remote Sensing**, University's Press (India) Pvt. Ltd.,Hyderabad.
5. Lillesand, T.M. and Ralph W. Keifer (2002) **Remote Sensing and Image Interpretation**, JohnWiley & Sons, Inc., New York.
6. Panda, B.C., (2005) **Remote Sensing : Principles and Applications**, Viva Books Pvt. Ltd., NewDelhi.
7. Reddy, Anji, M. (2001) **Textbook of Remote Sensing and Geographical Information Systems**,BSP B.S. Publications, Hyderabad.
8. Siddique, M.A. (2006) **Introduction to Geographical Information Systems**, Sharda PustakBhawan, Allahabad.
9. Singh Surendra and A.N. Patel (1999) **Principles of Remote Sensing**, Scientific Publishers (India)


***Course outcomes***

***At the end of the course, the students would be able to:***

**CO 1:** Acquaintance with fundamentals of remote sensing.

**CO 2:** Development of capability to interpret the aerial photographs.

**CO 3:** Enrichment of skills to extract information from resource satellite imageries.

**CO 4:** Awareness about digital image processing and its applications in resource monitoring and mapping.

**M.Sc. Geography**

**First Semester**

**Sustainable Development**

**Course code: U25GEO112T**
**30 Hrs. (2 Hrs. /week)**
**Credits: 2**
**Time: 2 Hrs.**

**Marks for External: 35**
**Marks for Internal Exam: 15**
**Total Marks: 50**

*Note: The examiner is requested to set five questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus, will consist of five short answer type questions each of three marks). The candidate is required to attempt two questions in all selecting one from each unit carry ten marks and the Question No.1.*

**Objective:** Sustainable development applied in all branches of geography for future generation problem solution. This paper deals how to use different resources in present scenariowith saving resources for future generation.

## Unit-I

1. Sustainable Development: Concepts and Applicability; Indices and Factors of Sustainable Development, Environmental Sustainability; Economic Sustainability; and Sustainable Development Goals
2. Resource Issues and Sustainable Development; Approaches to Study the Sustainable Development, Natural Resources Utilization, Role of Technology in Sustainable Development.

## Unit-II

3. Sustainability of Water Resources, Sustainable Management of Forests, EcosystemManagement; Coastal Environments, Sustainable agriculture and food security; Environmental education for sustainable development,
4. Environmental Sustainability and Environmental Ethics; Resource Conservation and Development; Awareness and Education; Government Policies and Programmes; PopulationControl.

**Suggested Reading:**


1. Blewett, J. (ed.) (2008): Understanding Sustainable Development, Routledge
2. Brundtland Commission (1987): Our Common Future, Oxford University Press
3. Chambers, N., Craig, S. and Wackernagel M. (2004): Sharing Nature's Interest, EarthscanPublications Ltd., London
4. Dalal-Clayton, B. and Bass, S. (2002): Sustainable Development Strategies: A ResourceBook, Routledge
5. Dressner, S. (2002): The Principles of Sustainability, Earthscan Publications Ltd., London
6. Elliott, L. (2004): Global Politics of the Environment, Palgrave MacMillan, New York
7. Hulse, J.H. (2007): Sustainable Development at Risk: Ignoring the Past, FoundationBooks
8. Knight, B., Chigudu, H. and Tandon R. (2002): Reviving Democracy: Citizens at the Heart of Governance, Earthscan Publications
9. Mollinga, P., Dixit, A. and Athukorala K. (ed) (2006): Integrated Water ResourcesManagement, Sage, New Delhi
10. Rogers P. (2007): An Introduction to Sustainable Development, Earthscan Publications
11. Sachs, J. (2015): The Age of Sustainable Development, Columbia University Press


*Course outcomes*

***At the end of the course, the students would be able to:***

**CO 1:** Enrichment of knowledge about sustainability concepts in modern world.
**CO 2:** Augmentation of knowledge about programmes and policies of sustainable development.
**CO 3:** Development of capability to understand the sustainability.
**CO 4:** Understanding of Resource management using the principle of sustainability.

**M.Sc. Geography**

**First Semester**

**Social Geography**

**Course code: U25GEO113T**
**30 Hrs. (2 Hrs. /week)**
**Credit: 2**
**Time: 2 Hrs.**

**Marks for External: 35**
**Marks for Internal Exam: 15**
**Total Marks: 50**

*Note: The examiner is requested to set five questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus, will consist of five short answer type questions each of three marks). The candidate is required to attempt two questions in all selecting one from each unit carry ten marks and the Question No.1.*

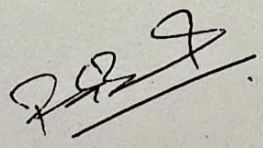
**Objective:** Social Geography is an important aspect to understand the development ofsociety and different social groups in India.

## Unit-I

1. Social Geography: Nature, meaning and Development of Social Geography; Relationship of Social Geography with other branches of Social Sciences.
2. Distribution of Tribes in Indian and Global Context.
3. Caste: Origin and Morphology of Settlements; Distribution of Scheduled Castes.

## Unit-II

4. Attributes of spatial distribution of languages and religions.
5. Races: origin and spatial distribution of Racial groups.
6. Concept of Social differentiation, Socio-Cultural Regions of India.



**Suggested Readings:**


1. Ahmad, A. Social Geography, Rawat Publication, New Delhi, 1999.
2. Jean, D. and Sen, A. Economic Development and Social opportunity, Oxford University Press, New Delhi, 1996.
3. Dubey, S.C. Indian Society, National Book Trust, New Delhi, 1991.
4. Schwartzberg J. An Historical Atlas of South Asia, University of Chicago Press, Chicago, 1978.
5. Sen, A and Jean, D. Indian Development: Selected Regional Perspectives, Oxford University Press, 1996.
6. Smith, D. Geography: A Welfare Approach, Edward Arnold, London, 1977.
7. Sopher, D. An Exploration of India, Cornell University Press, 1980.
8. Rao, S. Personality of India, M.S. University Baroda, Vadodara, 1958.


*Course outcomes:*

*At the end of the course, the students would be able to:*

**CO 1:** Enrichment of understanding about spatial dimensions of Indian society.
**CO 2:** Cognizance of caste and clan territories in India.
**CO 3:** Acquaintance with linguistic and religious profile of World
**CO 4:** Awareness about social change and transformation in spatial context.

**M.Sc. Geography**

**First Semester**

**Cartographic Techniques Lab**

**Course code: U25GEO104P**
**120 Hrs. (8 Hrs. /week)**
**Credits: 4**
**Time: 3 Hrs.**

**Marks for External: 70**
**Marks for Internal Exam: 30**
**Total Marks: 100**

**Note:** The examiner shall set four questions, two from each unit. The candidate shall attempt three questions in all, selecting at least one question from each unit.

Distribution of Marks for Evaluation
**Exercise = 30 Viva-voce = 20 File record=20**

## UNIT-I

1. **Simple Diagrams:**
   a) Line and bar graph — 2 exercise
   b) Poly graph — 2 exercise
   c) Rainfall deviation diagram — 2 exercise
2. *One dimensional diagram:*
   a) Simple — 2 exercise
   b) Comparative bar — 2 exercise
   c) Compound bar — 2 exercise
3. *Two dimensional diagrams:*
   a) Proportional circle — 2 exercise
4. *Three dimensional diagrams:*
   a) Cube Diagram — 2 exercise
5. *Weather Diagrams:*
   a) Climo graph (Taylor and Foster) — 4 exercise
   b) Hythergraph — 2 exercise
   c) Ergograph — 2 exercise

## UNIT-II

6. **Distribution maps:**
   a) Dot method — 2 exercise
   b) Isopleth Method — 4 exercise
   c) Choropleth- Bivariate — 4 exercise
7. *Diagrams:*
   a) Snail Diagram — 2 exercise
   b) Cartogram (rectangular, traffic flow) — 2 exercise

**Recommended Readings:**


1. Robinson A. Morrison, J.L. Muecke. P.C. and Guptill S.C.(2002) Elements of Cartography, John Willey.
2. Taylor, D.R.F. (1985) Education and Training in Contemporary Cartography, John Willey.
3. Jil D., Charles W., Mohsen. M. (2016) Cartographic Grounds: Projecting the Landscape Imaginary, Prinston Press, New York
4. Cynthia A.B. (2005) Designing Better Maps-A Guide for GIS Users, ESRI Press, New York.
5. Walford, N. (1995): Geographical Data Analysis, John Wiley & Sons, New York.
6. Nag, P. et al (1992): Thematic Cartography and Remote Sensing, Concept Publishing Co., New Delhi.


**Course outcomes:**

At the end of the course, the students would be able to:

**CO 1**: Awareness about various types of cartographic diagrams.
**CO 2:** Enrichment of skills to prepare the thematic maps and diagrams.
**CO 3:** Acquisition of skills to represent the statistical data.
**CO 4:** Capability to understand and interpret the graphs/diagrams/maps.

**M.sc Geography**
**First Semester**
**Disaster Management**
**Value Added Course (VAC)**

**Course code: U25VAC117T**
**30 Hrs. (2 Hrs. /week)**
**Credits: 2**
**Time: 2 Hrs.**

**Marks for External: 35**
**Marks for Internal Exam: 15**
**Total Marks: 50**

***Note:*** *The examiner is requested to set five questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus will consist of five short answer type questions each of three marks). The candidate is required to attempt two questions in all selecting one from each unit carry ten marks and the compulsory Question No.1.*

**Unit-I**

1. Concept of Hazards, Risk, Vulnerability and Disaster. Types of Hazards: Natural (Tectonic Hazards – Earthquakes and Volcanoes; Hydrological Hazards – Floods and Droughts.
2. Regional Dimension of Natural Hazards: Occurrence and Trends. (Tectonic Hazards – Earthquakes and Volcanoes; Hydrological Hazards – Floods and Droughts.

**Unit-II**

3. Disaster Losses and Impact – Displacements, Livelihood. Economy and Infrastructure, and Health.
4. Mitigation and Management: Plans and Policies. Role of Remote Sensing, GIS and GPS in Disaster Management.

**Recommended Readings:**


1. Allan, S., Adam, B. and Carter, C., (eds.), (2000): *Environmental Risks and the Media,* Routledge, London.
2. Ambala-Bertrand, J.M., (1993): *Political Economy of Large Natural Disasters: With Special Reference to Developing Countries,* Clarendon Press, Oxford.
3. Blaikie, P., Cannon, T., Davis, I., (*et al.*), (1994): At Risk: *Natural Hazards, People's Vulnerability, and Disasters,* Routledge, London. Burton, I., Kates, R.W. and White, G.F., (1993): *Environment as Hazards*, 2nd edition, Guilford Press, New York.
4. Hewitt, K., (1997): *Regions of Risk" A Geographical Introduction to Disasters*, Longman, London.
5. Hood, C. and Jones, D.K.C. (eds.), (1996): *Accident and Design: Contemporary debates in Risk Management,* UCL Press, London.
6. Kasperson, J.X., Kasperson, R.E. and turner, B.L., (1995): *Regions at Risk: Comparisons of Threatened Environments,* United Nation University Press, Tokyo.
7. Mitchell, J.K., (ed.) (1999): *Crucibles of Hazard: Mega-Cities and Disasters in Transition,* United Nations University Press, New York.
8. Schneider, S.K., (1995): *Flirting with Disaster: Public Management in Crisis Situations*, M.E. Sharpe, New York.
9. Quarantillo, E.L. (ed.) (1998): *What is a Disaster? Perspective on the Question*, Routledge, London.
10. Schneid, T. and Collins, L. (1998): *Disaster Management and Preparedness*, Lewis Publishers, Washington, D.C.
11. Godschalk, D.R. (et.al.) (1999): *Natural Hazard Mitigation Recasting Disaster Policy and Planning,* Island Press, Washington, D.C.
12. Smith, Keith (1996): *Environmental Hazards; Assessing Risk and Reducing Disaster, Routledge*, London and New York.
13. Parasram, S. and Umi Krishnan, P.V. (2000): *India Disaster Report*, Oxford University Press, New Delhi


**Course outcomes:**

**At the end of the course, the students would be able to:**

**CO 1:** Understand basic concepts of natural hazards and disaster management.

**CO 2:** Know the techniques of management of disasters.

**CO 3:** Know the disaster management setup of India.

**CO 4:** Awareness about Mitigation and management in Disasters.

**M.Sc. Geography**

**Second Semester**

**Research Methodology**

**Course code: U25GEO201T**
**60 Hrs. (4 Hrs. /week)**
**Credits: 4**
**Time: 3 Hrs.**

**Marks for External: 70**
**Marks for Internal Exam: 30**
**Total Marks: 100**

*Note: The examiner is requested to set nine questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus, will consist of seven short answer type questions each of two marks). The candidate is required to attempt five questions in all selecting one from each unit and the Question No.1.All questions carry equal marks.*

**Objective:** This paper is to familiarize the students with basics of research and its significance. It aims to make them understand the ways data are collected, classified, tabulated and analyzed. It also trains them to differentiate between casual and research-based statements that help them in their life.

**Unit-I**

1. Meaning and Purpose of Research, Types of Research; Research in Geography.
2. Research process: Steps and Characteristics.
3. Formulation of Research Problem and Literature Review; Measurements in research and scales.

**Unit-II**

4. Hypotheses Formulation and Testing.
5. Sampling: Types and Characteristics.
6. Data collection in qualitative and quantitative research: Preparation of questionnaires and schedules, Surveys and experiments.

**Unit-III**

7. Scientific Method in Geography; The Routes of Scientific Explanation: Deductive and Inductive forms of reference.
8. Processing and Analysis of Data.

**Unit-IV**

9. Writing of research report.
10. Publication guidelines for Research Papers.
11. Ethics in Research.

**Recommended Readings:**


1. Dey, Ian (1993), *Qualitative Data Analysis*, London: Routledge.
2. Eyles, John and David M. Smith (1988), *Qualitative Methods in Human Geography*, Oxford: Polity Press.
3. Harvey, David (1969), *Explanation in Geography*, London: Edward Arnold.
4. Hubbard, Phil et.al.(2002), *Thinking Geographically*, London: Continuum.
5. Hoggart, Keith et.al. (2002), *Researching Human Geography*, London: Arnold.
6. Huston, R.J. and J.D. Sidaway (2004), *Geography and Geographers*, London: Arnold.
7. Kitchin, Rob and Nicholas J. Tate (2000), *Conducting Research in Human Geography*,London: Prentice Hall.
8. Krishan, Gopal and Nina Singh (2016), *Researching Geography: The Indian Context*,NewDelhi: Routledge India.
9. Limb, Melanie and Claire Dwyer (2001), *Qualitative Methodologies for Geographers*,London:Arnold.
10. Robinson, Guy M. (1998), *Methods and Techniques in Human Geography*, New York:JohnWiley.
11. Seale, Clive (ed.) (2008), *Social Research Methods*, London: Routledge (Indian Editon).
12. Somekh, Bridget and Cathy Lewin (eds.) (2005), *Research Methods in the SocialSciences*, New Delhi: Vistaar Publications.


**Course Outcomes:**

**At the end of the course, the students would be able to:**

**CO 1**: Students would be able to formulate research questions;

**CO 2**: Understand advantages and disadvantages of quantitative and qualitative approaches, andwrite a research proposal

**CO 3**: Enrichment of skills to extract information about research.

**CO 4**: Awareness about Research methods and research papers and ethics.

**M.Sc. Geography**

**Second Semester**

**Geography of India**

**Course code: U25GEO202T**
**60 Hrs. (4 Hrs. /week)**
**Credits: 4**
**Time: 3 Hrs.**

**Marks for External: 70**
**Marks for Internal Exam: 30**
**Total Marks: 100**

*Note: The examiner is requested to set nine questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus, will consist of seven short answer type questions each of two marks). The candidate is required to attempt five questions in all selecting one from each unit and the Question No.1.All questions carry equal marks.*

**Objective:** To describe various geographical aspects of land, people and economy of Indian sub-continent

**Unit –I**

1. Relief characteristics and Physiographical divisions of India.
2. Drainage system and its functional significance.
3. Climate: characteristics, seasons and climatic regions of India by W. Koppen and Thornthwaite.

**Unit- II**

4. Soil and vegetation: Distribution, characteristics and conservation.
5. Production and distribution of major crops: Rice, Wheat, Bajra, Pulses, Sugarcane, Cotton, Jute, Tea.
6. Population: Distribution, and composition with special reference to Migration scenario of India.

**Unit- III**

7. Production, distribution, and conservation of Minerals: Iron ore, Manganese, Copper, Gold, Mica and Power Resources: Coal, Petroleum, Natural gas and other renewable resources.
8. Manufacturing Industries: Factors influencing the location, classification and Major industries: Cotton Textile, Jute, Iron and Steel, Copper, Automobile and Ship Building.

**Unit- IV**

9. Transport: Rail, Road, Air and Water.
10. International Trade: Imports and Exports. F.D.I and Globalization.
11. Major disasters in India.

**Suggested Readings:**


1. Dubey, R. N.,1971: Economic Geography of India, Kitab Mahal, Allahabad
2. Hussain Majid (2015): Geography of India, Mc Graw Hill Education.
3. Joshi, H. L.,1990: Industrial Geography of India, Rawat Publications, Jaipur
4. Nag, P. and Sengupta, S., 1992: Geography of India, Concept publications. Co., New Delhi.
5. Singh, R. L.: India: A Regional Geography, N.G.S.I., Varanasi, 1971
6. Sharma, T. C. and Coutinho, O. 1988: Economic and Commercial Geography of India. Vikas Publishing House Pvt. Ltd, New Delhi.
7. Singh, S. and Saroha, J. 2019. Geography of India, Mc Graw Hill Education.


*Course outcomes*

***At the end of the course, the students would be able to:***

**CO 1:** Provides understanding about the physical structure of India.

**CO 2:** Enrichment of understanding about spatial organization of agriculture and irrigationsystems.

**CO 3:** Acquaintance with geographical distribution and production of major resources.

**CO 4:** Enhancement of knowledge about spatial distribution of industries and internationaltrade of India.

## M.Sc. Geography
## Second Semester
## Regional Planning and Development

**Course code: U25GEO211T**
**60 Hrs. (4 Hrs. /week)**
**Credits: 4**
**Time: 3 Hrs.**

**Marks for External: 70**
**Marks for Internal Exam: 30**
**Total Marks: 100**

*Note: The examiner is requested to set nine questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus, will consist of seven short answer type questions each of two marks). The candidate is required to attempt five questions in all selecting one from each unit and the compulsory Question No.1.All questions carry equal marks.*

**Objective:** Regional Planning and Development are the core areas of geographical inquiry. Decentralized planning has a profound role in managing the evolved situation.

### Unit -I

1. Regional Planning: Concept, rationale and its relation with Geography.
2. Concept of Region: Characteristics, hierarchy and demarcation.
3. Planning: Process, types, objectives and hierarchy.

### Unit -II

4. Surveys for planning: concept, types and functions.
5. Selection of indicators and measures of regional disparities.
6. Regional Growth Theories: Friedman's Core-Periphery theory; Growth Pole theory of Perroux; Polarization and Trickle-Down effect theory of Hirschman; Circular and Cumulative Causation model of Myrdal.

### Unit -III

7. Regional Development strategies in the 21st century.
8. Planning regions of India by Prakasa Rao, R.P Mishra, V. Nath, Chandrashekhar and P. Sen Gupta.
9. Development of Island areas of India.

### Unit IV

10. NITI AAYOG: structure, functions and achievements. Indian Five-Year Plans; planning policies for regional development.
11. Case studies: Tennessee Valley Authority, NCR -Regional Development, Master plan of Chandigarh - The City Beautiful.

**Recommended Readings:**


1. Bhatt, L.S. 1972. *Regional Planning in India*. Statistical Publishing Society, Calcutta.
2. Chand, M and V.K. Puri. 1985. *Regional Planning in India*. Allied Pub. Pvt. Ltd. NewDelhi.
3. Coates, B.R. and R.J. Johnston. 1977. *Geography and Inequality*. Oxford UniversityPress, Oxford. Government of India. 2013. *Report of the Committee for Evolving a Composite Development Index of States* Ministry of Finance. http://finmin.nic.in/reports/Report_CompDevState.pdf
4. Friedmann, J. and William Alonso. 1967. *Regional Development and Planning: aReader*. MIT Press, Cambridge Massachusetts
5. Kuklinski, A.R. ed. 1972. *Growth Poles and Growth Centers in Regional Planning*. Monton, The Hague.
6. Misra R.P. et al. eds. 1974. *Regional Development Planning in India*, Vikas, New Delhi.
7. Mohan, Krishna. 2005. *Addressing Regional Backwardness: An Analysis of AreaDevelopment Programmes in India*, New Delhi: Manak Publications.
8. Raza, Moonis. 1988. *Regional Development*, Heritage, New Delhi.
9. Singh, Nina. 2015. "Regional Backwardness in India: An Exploration ofDemographic Indicators". Population Geography, vol.37, No. 1&2, pp. 13-25.
10. Surya Kant and Nina Singh. 2015. Geography Development Public Policy: SelectEssays of Gopal Krishan. RK Books, New Delhi.
11. Kant, Surya et al. 2004. Reinventing Regional *Development*. Rawat Publications, Jaipur.
12. Sundram, K. V. 1977. *Urban and Regional Planning in India*. Vikas Publishing House Pvt. Ltd, New Delhi.


**Course Outcomes:**

**At the end of the course, the students will be able to:**

**CO 1**: familiarized with the theoretical foundations and conceptual grounding of this branch;

**CO 2**: understand and evaluate the concept of region in geography and its role and relevance inregional development;

**CO 3**: comprehend the regional development and planning process in India.

**CO 4**: Awareness about the disparities of resources in India.

**M.Sc. Geography**

**Second Semester**

**Political Geography**

**Course code: U25GEO212T**
**60 Hrs. (4 Hrs. /week)**
**Credits: 4**
**Time: 3 Hrs.**

**Marks for External: 70**
**Marks for Internal Exam: 30**
**Total Marks: 100**

*Note: The examiner is requested to set nine questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus, will consist of seven short answer type questions each of two marks). The candidate is required to attempt five questions in all selecting one from each unit and the compulsory Question No.1.All questions carry equal marks.*

**Objective:** This course is designed to provide students an understanding of the theoretical concepts of political geography; to have a familiarity with the most current topics in political geography

## Unit -I

1. Introduction: Concept, Nature and Scope and approaches to the study of Political Geography
2. Theoretical Contribution to Political Geography: Ratzel, Kjellen, Hartshorne, Taylor

## Unit -II

3. Attributes of States: Frontiers and Boundaries, Demarcation, function and problems of Boundaries.
4. Concept of Nation and State - Factors determining state power, Physical Attributes and Human Attributes.

## Unit-III

5. Global Strategic views: A.T Mahan, Mackinder, Spykman and Alexander P. de. Seversky.
6. Political Geography of Oceans.: Maritime Boundaries, Delimitation, principles and problem.

## Unit-IV

7. Geography of Voting: Geographic influence on voting pattern/behavior, gerrymandering.
8. Geographical study of International Organization: SAARC, ASEAN, OPEC, EU, QUAD, NATO.

**Recommended Readings:**


1. Agnew, J.A. (1987), ***Place and Politics***, Boston: Allen and Unwin.
2. Agnew, J.A. (1998), ***Geopolitics***, London: Routledge.
3. Blacksell, Mark (2003), ***Political Geography***, London: Routledge.
4. Flint, Collin and Taylor, P.J. (2011), ***Political Geography***, New Delhi: Pearson.Cox,Kevin R. (2008), ***The Sage Handbook of Political Geograph***, New Delhi: Sage.
5. Dicken, Peter (2003), ***Global Shift***, New Delhi: Sage.
6. Dikshit, R.D. (2000), ***Political Geography: The Spatiality of Politics***, NewDelhi: TataMcGraw Hill.
7. Dodds, Klaus (2007), ***Geopolitics***, New York: Oxford University Press.
8. Gallaher, Carolyn et.al. (2009), **Key Concepts in Political Geography**, New Delhi:Sage.
9. Jones, Martin, Rhys Jones and Michael Woods (2003), ***An Introduction to PoliticalGeography***, London: Routledge.
10. Khor, Martin (2001), ***Rethinking Globalization***, London: Zed Books.
11. Nash, Kate (2000), ***Readings in Contemporary Political Sociology***, Oxford:Blackwell.
12. Painter, J. (1995), ***Politics, Geography and Political Geography***, London: Arnold


*Course outcomes*

***At the end of the course, the students would be able to:***

**CO 1**: Familiarization with the conceptual framework of geo-political issues.
**CO 2:** Augmentation of knowledge about state and nation in geographic perspective.
**CO 3**: Enhancement of knowledge about global strategic views and geo-politics in post-cold war era.
**CO 4:** Awareness about contemporary geo-political situation and issues in India.

## M.Sc. Geography

## Second Semester

## Fundamentals of GIS and GNSS Technology

**Course code: U25GEO213T**
**30 Hrs. (2 Hrs. /week)**
**Credits: 2**
**Time: 2 Hrs.**

**Marks for External: 35**
**Marks for Internal Exam: 15**
**Total Marks: 50**

*Note: The examiner is requested to set five questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus, will consist of five short answer type questions each of three marks). The candidate is required to attempt two questions in all selecting one from each unit carry ten marks and the compulsory Question No.1*

**Objective:** The aim of this course is to apprise the students to various aspects of Aerial photographs, Remote-Sensing & GIS and GNSS which are the important elements of the Geospatial Technology.

### Unit – I

1. Introduction to GIS: Definitions and historical development, Components of GIS, Scope, Interdisciplinary Relations and Applications areas of GIS
2. Data Structure in GIS; Raster and Vector, GIS Data Types; Spatial and Non-Spatial Data/ Attribute data, Coordinate System and Map Projection & datum.
3. Spatial Data Analysis; Concept of Topological Analysis; Overlay Analysis, Network Analysis, Buffering, Neighborhood, Interpolation, Data Integration, Spatial Join and Query.

### Unit – II

4. Concept of Web GIS; Historical development and Components. Different type of GIS Software. Citizen Science; Volunteered Geographic Information and Crowd sourcing.
5. Introduction to Global Positioning System: Definition, History and Development, GPS Satellite Constellations
6. GPS Segments: Space, Control and User. Signals & Codes; GPS Receivers, Operating Principle. Concept of DGPS and WAAS. GNSS and Types (NAVSTAR; GLONASS; GALELIO, IRNSS). GPS Applications in Various Fields.

M.Sc. Geography

Second Semester

## Fundamentals of GIS and GNSS Technology Lab

**Course code: U25GEO213P**
**60 Hrs. (4 Hrs. /week)**
**Credits: 2**
**Time: 3 Hrs.**

**Marks for External: 35**
**Marks for Internal Exam: 15**
**Total Marks: 50**

**Note:** The examiner shall set four questions, two from each unit. The candidate shall attempt any three questions in all.

**Distribution of Marks for Evaluation**
**Exercise = 15 Viva-voce = 10 File record=10**

### Unit – I

1. Creation Shape file and of Geo-database (2 exercises).
2. Vector data creation; Point, polyline and Polygon (2 exercises).
3. Digitization of vector layers with help of satellite data/Toposheet/Maps (2 exercises).
4. Adding attributes in vector layers with Statistical and Geometrical calculation (2 exercises)

### Unit – II

5. Editing and building topology, joining non-spatial data (2exercise).
6. Analysis: overlay, query and proximity (2 exercises).
7. Collection of GCP and mobile mapping Composite profiles with creation map from GCP Point using Interpolation and. (2 exercises).
8. Symbolization: chorochromatic, choropleth and point proportional and Preparation of layout for various thematic maps in various files formats and printing (2 exercises).

**Suggested Readings:**


- Burrough, P.A. and McDonnell, R. (1998). Principles of Geographic InformationSystems. Oxford University Press, Oxford.
- Bhatta Basudeb (2014). Remote Sensing and GIS. Oxford University Press, Oxford.
- Chang, K.T. (2003). Introduction to Geographic Information Systems. TataMcGraw Hill Publications Company, New Delhi.
- Demers, M. N. (2000). Fundamentals of Geographic Information Systems. John Wiley and Sons, Singapore
- Heywood I, Cornelius S and Carver S. (2000). An Introduction to Geographical Information Systems, Longman, New York.


**Course Outcomes:**

**At the end of the course the students will be able to:**

**CO 1:** Acquaintance with the fundamentals of Geographical Information Systems.

**CO 2:** Capability to differentiate the data types in geographical information systems.

**CO 3:** Understanding about the applications of geographical information systems in resource mapping.

**CO 4:** Knowledge about types and functioning of global positioning system

**M.Sc. Geography**

**Second Semester**

**Morphometric Analysis Lab**

**Course code: U25GEO214P**
**120 Hrs. (8 Hrs. /week)**
**Credits: 4**
**Time: 3 Hrs.**

**Marks for External: 70**
**Marks for Internal Exam: 30**
**Total Marks: 100**

**Note for Paper Setters:** The examiner shall set four questions, two from each unit. The candidate shall attempt three questions in all, selecting at least one question from each unit.

**Distribution of Marks for Evaluation**
**Exercise= 30 Viva-voce = 20 File record=20**

## Unit – I

Morphometric Analysis of Drainage Basin- Types and its Geographical Significance, Linear Aspects: Stream Ordering Based on Horton and Strahler, Areal Aspects: Stream Frequency and Drainage Density. (08 Exercises)

## Unit- II

Relief Aspects: Hypsometric Curve and Integral Hypsometric Curve, Clinographic Curve, Slope Analysis- Average Slope (Wentworth's method), Relative Relief (Smith's method), Profile Analysis -Longitudinal profile. (12 Exercises)

**Recommended Readings:**


1. Monkhouse, F.J. and H.R. Wilkinson (1980), **Maps and Diagrams**, B.I. Publications, Bombay.
2. Singh, R.L. (1979), **Elements of Practical Geography**, Kalyani Publishers, New Delhi.
3. Singh, S. (1997), **Geomorphology**, Prayag Pustak Bhawan, Allahabad.


**Course Outcomes:**

Students would be able to:

**CO 1:** Learn the morphometric techniques.

**CO 2:** Know the types and significance of Morphometry.

**CO 3:** Understand the usefulness of morphometric techniques in the case of a drainage basin.

**CO 4:** Awareness about basic concepts of topographic techniques.

**M.Sc. Geography**

**Second Semester**

**Oceanography**

**Course code: U25GEO203T**
**30 Hrs. (2 Hrs. /week)**
**Credits: 2**
**Time: 2 Hrs.**

**Marks for External: 35**
**Marks for Internal Exam: 15**
**Total Marks: 50**

*Note: The examiner is requested to set five questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus, will consist of five short answer type questions each of three marks). The candidate is required to attempt two questions in all selecting one from each unit carry ten marks and the Question No.1.*

**Objective:** The course on oceanography will discuss the physiography of ocean floors and dynamics of ocean water. It will also provide an understanding about ocean-human interface including weather, climate, navigation, security and resource utililsation.

## Unit-I

1. Nature and scope of oceanography; Configuration of ocean floors. Atlantic, Pacific and Indian ocean.
2. Relief of Ocean; Coral reefs-origin and distribution; Ocean deposits.

## Unit-II

3. Temperature, Salinity and density of oceans;
   Tides: Origin and types.
4. Dynamics of ocean currents; Currents of Atlantic, Pacific and Indian Ocean; Sea-level changes: Evidences, mechanism and impact.

**Recommended Readings:**


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


***Course outcomes:***

***At the end of the course, the students would be able to:***

**CO 1:** Awareness about the basic concepts and applications of Oceanography.

**CO 2:** Acquaintance with Marine resources.

**CO 3:** Enrichment of knowledge about topographic features of oceanic floor and deposits.

**CO 4:** Augmentation of knowledge about movement and circulation in oceanic water.

**M.Sc. Geography**

**Second Semester**

**Seminar**

**Course code: U25GEO201S**
**30 Hrs. (2 Hrs. /week)**

**Credits: 2**
**Exam Time: 2 Hrs.**

**Marks for Internal :15**
**Marks for External :35**
**Total Marks: 50**

**Note:** Evaluation of the seminar will be done by the internal examiner(s) on the parametersas decided by staff council of the department. There will be no external examination /viva-voce examination

**Course outcomes:**

CO 1: Enhancement in presentation skills of students.

CO 2: Enhanced analysis and comprehensive ability the given problem.

**M.Sc. Geography**

**Third Semester**

**Climatology**

**Course code: U25GEO301T**
**60 Hrs. (4 Hrs. /week)**
**Credits: 4**
**Time: 3 Hrs.**

**Marks for External: 70**
**Marks for Internal Exam: 30**
**Total Marks: 100**

*Note: The examiner is requested to set nine questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus, will consist of seven short answer type questions each of two marks). The candidate is required to attempt five questions in all selecting one from each unit and the compulsory Question No.1.All questions carry equal marks.*

**Objective:** This paper deals with the basic concepts of Climate applied in Geography.

**Unit-I**

1. Nature and scope of Climatology and its relation with Meteorology.
2. Composition and structure of Earth's atmosphere.
3. Insolation and Temperature; Heat budget of Earth.

**Unit-II**

4. Atmospheric pressure and its distribution pattern; General circulation and Planetary winds.
5. Humidity; Types and forms of Precipitation and Condensation.
6. Theories of Precipitation formation.

**Unit-III**

7. Stability and instability of atmosphere, air masses and fronts.
8. Weather systems: Origin and characteristics of extra tropical and tropical cyclones.
9. Walker circulation- ENSO, La Nina, Origin of monsoons and Jet streams.
10. Climatic classification by Koppen and Thornthwaite.

**Unit-IV**

11. Climatic change: patterns, evidences and theories of climate change.
12. Global warming and its impact on earth systems.
13. Techniques of Weather Forecasting, Climate and Weather related instruments.

**Books Suggested:**


1. Athrens, C. D. Meteorology Today: An Introduction to Weather, Climate and Environment, West Publishing Co., 1994
2. Barry, R. G. and Chorley, R. J. Atmosphere, Weather and Climate, Marth Ren, 2010.
3. Critchfield, H. J. General Climatology, Prentice Hall of India, New Delhi, 1987.
4. Collins, J.M. Climatology, Oxford, 2014.
5. Das, P.K. The Monsoons, National Book Trust, New Delhi, 1984.
6. Lal, D.S. Climatology, Chaitanya Publishing House, Allahabad, 1966.
7. Lutgens, F.K. and Tarbuck, E.J. The Atmosphere: An Introduction to Meteorology, Prentice Hall of India, New Delhi, 2010.
8. Miller, A.A. Climatology, Methuen and Co., London, 1979.
9. Oliver, J.E. and Hidore, J.J. Climatology: An Atmospheric Science, Pearson Education Inc. New Delhi, 2003.
10. Ram Sastry, AA, Weather and Weather Forecasting, Publication Division, New Delhi.
11. Trewartha G. T., an Introduction to Climate, McGraw Hill Company, New York, 1980.


***Course outcomes:***

***At the end of the course, the students would be able to:***

**CO 1**: Enhancement of knowledge about atmospheric constituents and structure.

**CO 2:** Development of scientific understanding about climatic elements and their characteristics

**CO 3:** Sharpens the understanding about atmospheric moisture, stability, and instability and weather systems.

**CO 4**: Enrichment of knowledge about climatic classification, climate change and global warming.

**M.Sc. Geography**
**Third Semester**
**Urban Geography**

**Course code: U25GEO302T**
**60 Hrs. (4 Hrs. /week)**
**Credits: 4**
**Time: 3 Hrs.**

**Marks for External: 70**
**Marks for Internal Exam: 30**
**Total Marks: 100**

*Note: The examiner is requested to set nine questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus, will consist of seven short answer type questions each of two marks). The candidate is required to attempt five questions in all selecting one from each unit and the compulsory Question No.1.All questions carry equal marks.*

**Objective:** The primary objective of teaching Urban Geography is to equip learners with a comprehensive understanding of spatial structure, processes and dynamics of urban areas. This includes fostering critical thinking about the development, growth and functioning of cities as well as the socio-economic political and environmental challenges.

## Unit-I

1. Urban Geography: Concept, Nature and Scope.
2. Origin and evolution of towns and factors of urban growth.
3. Recent trends, patterns and development of urbanization in global context.

## Unit -II

4. Theories of Origin of Towns by Gordern Childe, Hennery Pirenne Lewis Mumford.
5. Rural Urban Fringe: Structural characteristics and its development.
   i. Settlement: Types, patterns, distribution and contemporary problems.

## Unit -III

6. Central Place theory of Chirltaller and Losch.
7. Theories of internal structure of cities: Concentric zone model by E.W. Burgess,Sector model by Homer Hoyt, Multiple Nuclei model by Harris and Ullman.

## Unit -IV

8. Social Area Analysis; Bases of residential segregation.
9. Concepts of Urban system: Rank size rule, Law of primate city, urban sprawl, rural urbans fringe, ring and satellite towns, peri-urban area.
10. Concepts of megacities, global cities and edge cities.

**Books Suggested:**


1. Mayer, H.M. and Kohn, C.F. (1968) Readings in Urban Geography. The University of Chicago Press, Chicago.
2. Berry, J.E.(1970) Geography Perspective on Urban System, Prentice Hall, New Jersey.
3. Cater, Herald (1972)The study of Urban Geography, Edward Arnold, London.
4. Datta, A. and Shaban, A.(2017) Mega-Urbanization in Global South: Fast Cities and New Urban Utopias of the Post-colonial State, Routledge: London and New York.
5. Johnson, J. (1974)Suburban Growth, John Wiley and Sons, London.
6. Kaplan, Wheeler and Holloway(2007) Urban Geography, John Wiley, USA.
7. Clark, D. (1982), Urban Geography, Croom Halm, London and Cambridge.
8. Northern, R.M.(1979) Urban Geography, John Wiley, Toronto.
9. Michael P. (2004) Urban Geography: A Global Perspective, Routledge, USA.
10. Parnell, S. and Oldfield, S. (2014)The Routledge Handbook on Global Cities, Routledge, London.
11. Ramachandra,R(1992) Urbanization and Urban System in India, Oxford, London.
12. Raymond and Murphy(1960) The American Cities: An Urban Geography, McGraw Hills, NewYork.
13. Scott, A.J. (2002) Global City-Regions: Trends, Theory, Policy, Oxford Press, London


***Course outcomes:***

***At the end of the course, the students would be able to:***

**CO 1:** Provides understanding about evolution of towns and pattern of urbanization.
**CO 2:** Enrichment of knowledge about economic and functional characteristics of cities.
**CO 3:** Acquaintance with urban morphology and land use models.
**CO 4:** Familiarization with theories of urban development.

**M.Sc. Geography**

**Third Semester**

**Economic Geography**

**Course code: U25GEO303T**
**60 Hrs. (4 Hrs. /week)**
**Credits: 4**
**Time: 3 Hrs.**

**Marks for External: 70**
**Marks for Internal Exam: 30**
**Total Marks: 100**

***Note:*** *The examiner is requested to set nine questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus, will consist of seven short answer type questions each of two marks). The candidate is required to attempt five questions in all selecting one from each unit and the compulsory Question No.1.All questions carry equal marks.*

**Objective:** The objective of teaching economic Geography is to develop a deep understanding of the spatial dimensions of economic activities and the complex intersection between economy, environment and society.

## Unit-I

1. Meaning, nature, scope, importance, recent trends and approaches in economic geography.
2. Economic activities: Classification and role in development.

## Unit-II

3. Stages of economic growth by Rostow; Limits of growth by Fosters and Medows.
4. Industrial location theories of Weber, DM Smith and Hoover.

## Unit-III

5. World distribution of major natural resources: Iron ore, Coal, Petroleum, Bauxite, and lithium.
6. Sustainable development and environmental implications of economic activities.

## Unit-IV

7. Globalization and recent trends of international trade; Impact of Globalization on Indian economy.
8. Major regional trade blocks of the world, free trade initiatives (GATT, UNCTAD, and WTO).
9. India's economic policies of 21st century.

**Suggested Readings:**


1. Gautam, A. 2010. Advanced Economic Geography. Sharda Pustak Bhawan, Allhabad.
2. Hartshorne, T. A. and Alexander, J. W. 2001. Economic Geography. Prentice Hall of India. New Delhi.
3. Hudson, R. 2005. Economic Geography. Sage Publication, New Delhi.
4. Jones, C. F. and Darkenwarld, G. G. Economic Geography. The Macmillan and Company. New York.
5. Knox, P. 2003. The Geography of World Economy. Arnold, London.
6. Saxena, H.M. 2013. Economic Geography. Rawat Publications, Jaipur.
7. Wheeler, J.O. and Muller, P.O. 1985. Economic Geography. John Wiley and Sons. New York


**Course outcomes:**

*At the end of the course, the students would be able to:*

**CO 1**: Provides understanding about the location and distribution of economic activities.

**CO 2:** Familiarization with location theories of economic activities.

**CO 3**: Provides understanding about the location and distribution of economic activities

**CO 4**: Acquaintance with the spatial organization of world economies.

**CO 5:** Knowledge about trade blocs, trends in trade and various processes of globalization.

**M.Sc. Geography**

**Third Semester**

**Agricultural Geography**

**Course code: U25GEO311T**
**60 Hrs. (4 Hrs. /week)**
**Credits: 4**
**Time: 3 Hrs.**

**Marks for External: 70**
**Marks for Internal Exam: 30**
**Total Marks: 100**

*Note: The examiner is requested to set nine questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus, will consist of seven short answer type questions each of two marks). The candidate is required to attempt five questions in all selecting one from each unit and the Question No.1.All questions carry equal marks.*

**Objective:** The course should fully acquaint the students with the understanding of agricultural geography as enveloped branch of geography.

## UNIT-I

1. Nature, scope and significance of agricultural geography.
2. Origin and dispersal of agriculture in the World.
3. Determinants of agricultural patterns: physical, technological and cultural.

## UNIT-II

4. Concepts of land capability survey, land use and cropping pattern.
5. Agricultural Concepts: intensity of cropping, Cropping diversification and concentration, Crop combination.
6. Approaches in agricultural regionalization: Von Thunen Model of agricultural land use, Agro-climatic zonation: Concept and Indian experiences.

## UNIT-III

7. Bases of identification of agricultural systems by Whittlesey and agricultural typology by Kostrowiki.
8. Green revolution: Its impacts and consequences in India.

## UNIT-IV

9. Food production and security in India.
10. Agriculture and climate change: impacts and adaptation.
11. Agricultural Policies in India after independence.

**Suggested Readings:**


1. Bowler TR (1992) the Geography of Agriculture in Developed Market Economics. Longman.
2. Geoffrey, H.F.(1970) Geography of Agriculture: Themes in Research. Practice Hall, N.J.
3. Grigg D (1995) Introduction to Agricultural Geography. Routledge, London.
4. Husain, Majid (1996) Systematic Agricultural Geography. Rawat Publications, Jaipur.
5. Morgon, W.B. and Munton, R.J.C.(1971) Agricultural Geography. Methuen, London.
6. Singh Jasbir and Dhillon S.S. (1994) Agricultural Geography. Tata Mc Graw Hill, New Delhi.
7. Safi, Mohammad (2007) Agricultural Geography. Prentice-Hall of India.
8. Singh Jasbir (1989) Agricultural Geography.
9. Symons, Leslic (1967): Agricultural Geography, G. Bell and Sons, London.


***Course outcomes:***

***At the end of the course, the students would be able to:***

**CO 1:** Enrichment of knowledge about origin, location and distribution of agricultural activities.
**CO 2:** Enhancement of knowledge about changing land use and cropping pattern.
**CO 3:** Acquaintance with agricultural systems, efficiency and productivity.
**CO 4:** Awareness about impacts of climate change and economic liberalization on agriculture.

**M.Sc. Geography**

**Third Semester**

**Disaster Management**

**Course code: U25GEO312T**
**60 Hrs. (4 Hrs. /week)**
**Credits: 4**
**Time: 3 Hrs.**

**Marks for External: 70**
**Marks for Internal Exam: 30**
**Total Marks: 100**

*Note: The examiner is requested to set nine questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus will consist of seven short answer type questions each of two marks). The candidate is required to attempt five questions in all selecting one from each unit and the compulsory Question No.1. All questions carry equal marks.*

**Objective:** Major objective is to provide students with an in-depth understanding of natural and human-induced hazards, their spatial distribution, and impacts. It aims to develop skills in risk assessment, mitigation strategies, and preparedness planning.

**Unit-I**

1. Fundamental Concepts: Hazard, vulnerability, risk and Disaster.
2. Classification of Disasters.
3. Hydrological disasters: Floods and Droughts.
4. Climatic disasters: Cyclones and Heavy precipitation events.

**Unit-II**

5. Tectonic Disasters: Earthquakes, volcanoes, tsunamis and landslides.
6. Human induced disasters: Epidemics, industrial and transport disasters; wars and terrorism induced disasters.
7. Disaster Profile of world and India.

**Unit-III**

8. Disaster management cycle: Preparedness, Response, Recovery and Mitigation.
9. Early Warning system and emergency communication network for various disasters.
10. Disaster management in India: Organizational structure and policies; Role of Armed Forces, NDRF, NGO's, NDMA, SDMA; International agencies related to disaster management. (UNDRR, IFRC)

**Unit-IV**

11. Planning for disaster mitigation; Post disaster recovery and rehabilitation.
12. Sendai Framework for Disaster risk reduction; SDGs and Disaster Management; Impact of climate change on disaster frequency and intensity.
13. Impact of disaster: Social, Economic Political and Environmental.
14. Applications of Geospatial technology and AI in disaster prevention and monitoring.

**Books Suggested:**


1. Blaikie, P (1994) At Risk: Natural Hazards, People's Vulnerability and Disasters, Routledge, London.
2. Carter, NW (1991) Disaster Management: A Disaster Manager's Handbook, ADB, Manila.
3. Cuny, FC (1983) Disasters and Development, Oxford University Press.
4. Hewitt, K (1977) Regions of Risk: A Geographical Introduction to Disasters, Longman, Harlow.
5. National Policy on Disaster Management (2009) Ministry of Home Affairs, Govt. of India, New Delhi.
6. Smith, K (1996) Environmental Hazards: Assessing Risks and Reducing Disasters, Routledge, London.
7. Varley, A. Disaster, Development and Environment, John Wiley and Sons, Chichest


**Course outcomes:**

At the end of the course, the students would be able to:

**CO 1**: Understanding about the spatial dimensions and distribution of disasters
**CO 2:** Enrichment of knowledge about natural and human induced disasters.
**CO 3:** Acquaintance with the concepts of disaster management, vulnerability and mitigation
**CO 4**: Awareness about the role of geospatial technology in disaster management.

**M.Sc. Geography**

**Third Semester**

**Population Geography**

**Course code: U25GEO304T**
**60 Hrs. (4 Hrs. /week)**
**Credits: 4**
**Time: 3 Hrs.**

**Marks for External: 70**
**Marks for Internal Exam: 30**
**Total Marks: 100**

**Note:** *The examiner is requested to set nine questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus will consist of seven short answer type questions each of two marks). The candidate is required to attempt five questions in all selecting one from each unit and the compulsory Question No.1.All questions carry equal marks.*

**Objective:** Major Objective is to equip learners with a comprehensive understanding of spatial and temporal patterns of population distribution, composition, and dynamics. It aims to develop analytical skills to assess the relationship between population and resources, and to interpret demographic data for planning and policy-making.

## UNIT-I

1. Population Geography: Definition, nature, scope and its relationship with other disciplines.
2. Sources of demographic data in India: Census, Civil registration system, Sample Registration System, Sample surveys, PLFS and NFHS.
3. Theories of population: Malthus, Ricardo and Marx and Demographic Transition Model.

## UNIT-II

4. Akerman's Population Resources Regions; Concept of underpopulation, optimum population and overpopulation.
5. Population Distribution and Density: Trends , Patterns and Determinants in global and Indian context; Population control movements.
6. Population growth in India and world: Trends, Patterns and determinants.

## UNIT-III

7. Fertility and Mortality: Measures, Determinants and Trends and Patterns in India and world.
8. Migration: Trends, Pattern, Determinants and Theories ; Features of internal migration in India, International Migration to and From India.
9. Population composition and characteristics: Age and Sex composition, literacy, marital status and economic characteristics of population of India.

## UNIT-IV

10. Rural-Urban Composition of Population of India; Problems of urban population and sustainable cities.
11. India's Population Policy: Post independence development, Reproductive and Child Health Programmes; Health and Nutrition Programs.
12. Population problems and polices of Developed and Developing countries.

**Suggested Readings:**


1. Bhende, A. A. and Kanitkar, T. (2011): Principles of Population Studies, Himalaya Publishing House, Mumbai.
2. Cassen, Robert & Bates, Lisa M. (1994): Population Policy: A New Consensus Overseas Development Council, Washington, D.C.
3. Chandna, R. C. (2016): Population Geography: Concepts, Determinants and Patterns, Kalyani Publishers, New Delhi.
4. Demko, G. J. and others (Eds.) (1971): Population Geography, Reader, McGraw- Hill Books Co., New York
5. Graff, M., and Bremner, J. (2014):A Practical Guide to Population and Development, Washington DC: Population Reference Bureau.
6. Hassan, I. (2020) Population Geography: ASystematic Exposition, Routledge, London.
7. May, J.F. (2012) World population policies: their origin, evolution, and impact, Washington DC: Springer.
8. Mahajan,N(2014) Population Geography, R.K. publishers, Delhi.
9. Murray C. J. L., J. A. Salomon, C. D. Mathers and A. D. Lopez (), Summary Measures of Population Health: Concepts, Ethics, Measurement and Applications. WHO, Geneva.
10. Newbold, K Bruce (2016) Population geography: Tools and Issues.
11. Qazi, S.A (2010). Population Geography, APH publishers.


**Course outcomes:**

**At the end of the course, the students would be able to:**

**CO 1:** Knowledge about population data base, methodological issues and mapping.

**CO 2:** Familiarization with the dynamics of population anddemographic dividends.

**CO 3:** Enrichment of knowledge about population theories and models.

**CO 4:** Awareness about population policies of different countries and relation between population and environment.

## M.Sc. Geography

## Third Semester

## Project Report based on Field Survey

**Course code: U25GEO305P**
**120 Hrs. (8 Hrs. /week)**
**Credits: 4**
**Time: 3 Hrs.**

**Marks for External: 70**
**Marks for Internal Exam: 30**
**Total Marks: 100**

**Note:** The question paper of Lab work test shall contain three questions in all. Candidate(s) are required to attempt two questions in all. All questions carry equal marks.

### Unit-I

Field Work in Geographical studies- Role, Value and Ethics; Field techniques- Merits and Demerits; Source of Data- Primary and Secondary; Collection of data: methods of primary data collection- Observation method, interview method, through questionnaire, through schedule and other methods; Questionnaire and Schedule; Processing and analysis of data.

### Unit-II

Field Work and Report writing: Identification of research problem.

Preparing research design- aims and objectives, methodology, analysis, interpretation and writing of report.

Note-1:

1. The students shall conduct physical/socio-economic survey in the area as decided by the department under the supervision of a faculty member (s) of the department.
2. A group of 15 students will prepare a report based on primary and secondary data collected during field work.
3. The duration of the field work should not exceed ten days.
4. One copy of the report on A-4 size paper should be submitted in soft binding.

**Recommended Readings:**


1. Ahuja, Ram (2003), Social Survey and Research (Hindi version), Rawat Publications, Jaipur.
2. Basotia, G. R. and Sharma, K. K. (2002), Research Methodology, Mangal Deep Publications, Jaipur.
3. Creswell J. (1994), Research Design: Qualitative and Quantitative Approaches, Sage Publications.
4. Dikshit, R. D. (2003), The Art and Science of Geography: Integrated Readings, Prentice- Hall of India, New Delhi.
5. Evans M. (1988), "Participant Observation: The Researcher as Research Tool" in Qualitative Methods in Human Geography, eds. J. Eyles and D. Smith, Polity.
6. Gideon Sjoberg and Roger Nett (1992), A Methodology for Social Research, Rawat Publications, Jaipur.
7. Mukherjee, Neela (1993), Participatory Rural Appraisal: Methodology and Application. Concept Publs. Co., New Delhi.
8. Mukherjee, Neela (2002), Participatory Learning and Action: with 100 Field Methods. Concept Publs. Co., New Delhi.
9. Robinson A. (1998), "Thinking Straight and Writing That Way", in Writing Empirical Research Reports: A Basic Guide for Students of the Social and Behavioural Sciences, eds. by F. Pryczak and R. Bruce Pryczak, Publishing: Los Angeles.
10. Special Issue on "Doing Fieldwork" The Geographical Review 91:1-2 (2001).
11. Stoddard R. H. (1982), Field Techniques and Research Methods in Geography, Kendall/Hunt.
12. Wolcott, H. (1995), The Art of Fieldwork, Alta Mira Press, Walnut Creek, CA.


**Course outcomes:**

**At the end of the course, the students will be able to:**

**CO 1:** Understand the basic Physical/socio-economic characteristics of the chosen area

**CO 2:** Understand the field methods/techniques to do research work.

**CO 3:** Build the capability of writing a report.

**CO 4:** Ability to work as a team and handle the field situations.

**M.Sc. Geography**

**Third Semester**

**Geography in Everyday Life**

**Course code: U25OEC317T**
**30 Hrs. (2 Hrs. /week)**
**Credits: 2**
**Time: 2 Hrs.**

**Marks for External: 35**
**Marks for Internal Exam: 15**
**Total Marks: 50**

***Note:** The examiner is requested to set five questions in all, selecting two questions from each unit andone compulsory question (Question No.1 based on entire syllabus will consist of five short answer type questions each of three marks). The candidate is required to attempt two questions in all selecting one from each unit carry ten marks and the compulsory Question No.1.*

**Unit-I**

1. Study of Environment, Role of Geography in Planning and development.
2. Geography and Disaster, Geography and Cartography.

**Unit-II**

3. Atmosphere structure and composition.
4. Climate Change and Human-Being.

**Recommended Books:**

1. "Land of the Seven Rivers: A Brief History of India's Geography" – *Sanjeev Sanyal*
A compelling narrative that traces India's geographical evolution, exploring how rivers, mountains, and other natural features have influenced the nation's history and culture.

2. "The Incredible History of India's Geography" – *Sanjeev Sanyal*
Tailored for younger readers, this book presents India's geographical history in an engaging manner, highlighting the interplay between geography and civilization.

3. "India Becoming: A Portrait of Life in Modern India" – *Akash Kapur*
An exploration of India's transformation through the lives of individuals across urban and rural settings, illustrating how geographical shifts impact personal and societal change.

**Course outcomes:**

**At the end of the course the students will be able to:**

CO 1: Describe key concepts of human and physical geography as they relate to everyday experiences such as mobility, housing, food, climate, and communication.

CO 2: Identify and interpret spatial patterns and relationships in local and global contexts using basic geographic tools (maps, GPS, visual media, etc.).

CO 3: Analyse how place, environment, and culture shape individual and collective identities, behaviours, and routines.

CO 4: Evaluate the geographic dimensions of social issues such as urbanization, migration, inequality, and environmental sustainability.

# M.Sc. Geography
## Fourth Semester
## Ecosystem and Environment

**Course code: U25GEO401T**
**60 Hrs. (4 Hrs. /week)**
**Credits: 4**
**Time: 3 Hrs.**

**Marks for External: 70**
**Marks for Internal Exam: 30**
**Total Marks: 100**

*Note: The examiner is requested to set nine questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus, will consist of seven short answer type questions each of two marks). The candidate is required to attempt five questions in all selecting one from each unit and the compulsory Question No.1.All questions carry equal marks.*

**Objective:** The basic objectives of the course are to apprise the students about our environment, to understand its interrelationship with man and his linkages with other organisms, which vary in different biomes. Also to sensitize the students with the Environmental problems and degradations.

### Unit 1

1. Concept, Nature and Scope of Environment Studies.
2. Components of Environment: Atmosphere, Hydrosphere, Lithosphere and Biosphere
3. Concept and Structure of the Ecosystem (Biotic and Abiotic)

### Unit 2

4. Functions of Ecosystem: Physical, Biological and Biogeochemical processes.
5. Concept of Productivity, Ecological Pyramids, Homostasis.
6. Types of ecosystem: Tundra, Forest, Grassland, Desert, Aquatic; Importance and Threats with Special reference to India.

### Unit 3

7. Ecosystem Preservation and Conservation Strategies, Basics of Ecosystem Restoration
8. Ecological regions of India.
9. Natural Resources: Natural Resources: (Minerals, Soil, crops); Land use, Land cover changes, Land Degradation, Soil erosion, Desertification, Deforestation.
   Energy Resources: renewable resources and non-renewable resources, as well as agro-residue as a biomass energy source.
10. Environmental pollution (Air, Water, Soil, Noise): Causes, Effects and Controls.

### Unit 4

11. Causes of Climate Change, global warming, ozone layer depletion, Acid Rain,
12. International agreements and Programmes: Stockholm Conference, Earth Summit, Montreal and Kyoto Protocol, Paris Agreement, UNFCCC, Ramsar convention.
13. Environment policies and legislation in India: Protection Act of Wild Life, Water, Air, Forest, Environment Protection Act, and National Environment Tribunal Act.

**Suggested Readings:**


1. Agarwal, A. and Sen, S.The Citizens Fifth Report. Centre for Science and Environment New Delhi 1999.
2. Bertalanffy, L. General Systems Theory, George Bragiller, New York, 1958.
3. Bodkin, E.Environmental Studies, Charles E.Merril Pub Co., Columbus, Ohio, 1982.
4. Chandna, R.C.: Environmental Awareness, Kalyani Publishers, New Delhi, 1998.
5. Chorley, R.J., Geomorphology and General Systems Theory, U.S.G.S. Professional Paper, 500B, 1962.
6. Eyre, S.R. and Jones, G.R.J.Geography as Human Ecology, Edward Arnold, London, 1966.
7. Kormondy, E.J.Concepts of Ecology, Prentice Hall, 1989.
8. Mishra,S.P.and Pandey, S.N. (2016) Essential Environmental studies, Ane publications New Delhi.
9. Nobel and Wright: Environmental Science, Prentice Hall, New York 1996.
10. Odum, E.P.Fundamentals of Ecology, W.B. Saunders, Philadelphia, 1971.


Course outcomes:
At the end of the course, the students would be able to:

**CO 1**: Familiarization with the concept and elements of ecosystem.
**CO 2:** Enrichment of knowledge about the characteristics of different biomes.
**CO 3:** Awareness about the inter-linkages between human artifacts and natural environment
**CO 4:** Acquaintance about world environmental problems and policy framework

## M.Sc. Geography

## Fourth Semester

## Town and Country Planning

**Course code: U25GEO402T**
**60 Hrs. (4 Hrs. /week)**
**Credits: 4**
**Time: 3 Hrs.**

**Marks for External: 70**
**Marks for Internal Exam: 30**
**Total Marks: 100**

*Note: The examiner is requested to set nine questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus will consist of seven short answer type questions each of two marks). The candidate is required to attempt five questions in all selecting one from each unit and the compulsory Question No.1.All questions carry equal marks.*

**Objective**: The major objective of this paper is to highlight the role of geographic concepts and methods in settlement planning at the micro level. Divided into four units, it deals with conceptual and methodological issues, planning strategies, and case studies

### Unit-I

1. Human Settlement: A brief history with its relevance in modern context.
2. Settlement System: Types and Functions.
3. Town and Country Planning Practice in India.

### Unit-II

4. Town Planning: Definition, nature, importance and scope.
5. Preparation of town plan: Statement of objectives, surveys and data collection for town planning with special reference to urban land surveys, formulation of policies, zoning, locational and space
6. Requirements for residential, work, and play areas.
7. Planning of transport and public utilities.
8. Problems of town planning in India.
9. Urban planning policies in Indian Five-Year Plans.
10. Indian town planning experiences- Master Plan of Delhi and Chandigarh.

### Unit-III

11. Country Planning: Definition, nature, importance and scope.
12. Rural Land use and its determinants.
13. Rural Land use, land suitability, and soil surveys.

### Unit-IV

14. Rural development in India during Five Year Plans.
15. Planning for the following problems of rural India:
    a. Drinking water
    b. Floods and Soils
    c. Public utility services
    d. Poverty and employment.

**Suggested Readings:**


1. Benjamin N.: *Cities made of boundaries : mapping social life in urban form*, London: UCL Press, 2018.
1. Bhardwaj, R.K.: *Urban Development in India*, National Book Trust, New Delhi, 1974.
2. Chapin, F.S. & Kaiser E.J., Urban Land use Planning, Harper Bros., New York, 3rd Ed., 1985.
3. Hiraskar , G.K.: *Fundamentals of Town Planning*, Dhanpat rai publications, 2018
4. Jackson, J., *Surveys for Town and Country Planning*, Hutchinson Univ. Library, London, 1966.
5. Modak, V.N. and V.N. Ambedkar, *Town and Country Planning and Housing*, Oriental Longman, New Delhi, 1971.
6. TCPO, *Regional Planning Efforts in India*, Government of India, New Delhi, 1985.
7. Govt. of India, *Report of the National Commission on Urbanisation, Vols. I & II*, Ministry of Urban Development, New Delhi, 1988.


**Course outcomes:**

**At the end of the course, the students will be able to:**

**CO 1:** Analyse spatial patterns of urban and rural settlements and identify key planning challenges such as congestion, sprawl, pollution, and resource use.

**CO 2:** Interpret planning regulations, zoning laws, master plans, and policies related to land use, infrastructure, and housing.

**CO 3:** Evaluate the role of planning tools such as GIS, remote sensing, land use surveys, and statistical data in spatial planning.

**CO 4:** Compare urban and rural planning strategies and assess their impact on sustainability, equity, and quality of life.

# PROJECT REPORT

# (DISSERTATION)

**Course Code: U25GEO403D**
**Credits- 12**

Marks for Internal Assessment – 00 Marks

External Marks Project Report (Dissertation) – 300 Marks

**Duration (Hours per week):**

**Objectives:**

- To acquaint the students with the importance of field work as one of the methodologies in Geography.
- To sensitize the student about pre-field work preparations, conduct of the field work, post- field work-based analysis and interpretation
- To acquaint the student with the requirements of the writing of a dissertation.

**COURSE CONTENTS:** Since this paper is of practical nature only, therefore contents of syllabusneed not to be organized into units. Students must prepare a dissertation on a topic that involves field investigation and data collection.

**Dissertation in Geography:** The work will involve:

- Statement of objectives and scope of field investigation;
- Methods of field work for studies of different scales (macro, meso and micro)
- Preparation of a questionnaire, sampling techniques, data collection tools and procedure
- Processing and analysis of collected data
- Representation and interpretation of data/ information.
- Writing a dissertation on assigned problem involving field investigations

**Note**

1. The candidates are required to submit their dissertation one week before the commencement of end semester examination.
2. Assessment of dissertation and viva voce on it will be done by a Board of Examiners, consisting of external examiner, internal examiner and the chairperson of the department.
3. Improvement/repeat cases must prepare either an improved form of their earlier work or prepare a new one. They must get it approved and signed by the faculty member teaching the course at their parent department.
4. Internal assessment may include written assignments, snap tests, participation in discussion in the class, term papers, attendance etc.

## M.Sc. Geography
## Fourth Semester

# Geography of India (Regional and Systematic)

**Course Code: U25GEO404T**
**60 Hrs. (4 Hrs. /week)**
**Credits: 4**
**Time: 3 Hours**

**Marks for External: 70**
**Marks for Internal: 30**
**Total Marks: 100**

**Note:** *The examiner is requested to set nine questions in all; selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus will consist of seven short answer type questions each of two marks). The candidate is required to attempt five questions in all selecting one from each unit and the compulsory Question No.1. All questions carry equal marks.*

**Objective:** The geographic dimensions of India in terms of its political and administrative characteristics. The physical and climatic attributes and their interface with developmental strategies. The human and economic dimensions of India in a spatial perspective.

### Unit-I

1. Unity in diversity of India: Unifying mechanism and divisive streaks.
2. Evolution of the administrative map of India since Independence.

### Unit-II

3. Role of language, religion and culture in the formation of regions.
4. The question of regional disparity and identity in India.

### Unit-III

5. Regionalization schemes of India: Physiographic (SP Chatterjee), Climatic (Koeppen and Trewartha), Agricultural (Jasbir Singh and CB. Memoria), and Industrial (BN Sinha).

### Unit-IV

6. Northwest India as a Geographic Entity: Jammu & Kashmir, Himachal Pradesh, Haryana, Punjab and Union Territories of Delhi and Chandigarh.
7. Land: Physiography and drainage.
8. People: Population number, distribution and density, growth and urbanization.
9. Economy: Agriculture, Industry and Transport.

**Suggested Readings:**


1. Ahmad Aijazuddin: *Social Geography*, Rawat Publication, New Delhi, 1999.
2. Chandna, R.C.: *Geography of Population*, Kalyani Publishers, Delhi, 1998.
3. Deshpande, C.D.: *India- A Regional Interpretation*, ICSSR and Northern Book Center, New Delhi, 1992.
4. Gautam, A.: *Advanced Geography of India*, Sharda Pustak Bhawan, Allahabad, 2009.
5. Hussain, M.: *Geography of India*, Tata McGraw Hill Pub. Company Ltd., New Delhi, 2008.
6. Govt. of India: *India, A Reference Annual* : Ministry of Information & Broadcasting, GOI, New Delhi, 2018.
7. Krishan, G.: *The Vitality of India: A Regional Perspective*, Rawat Publications, 2017
8. Muthiah, S.: *A Social and Economic Atlas of India*, Oxford University Press, Delhi, 1987.
9. Siddhartha, K.: *India: The Physical Aspects*, Transworld Media & Communications Pvt. Ltd., New Delhi.
10. Singh, J.: *India-A Comprehensive Systematic Geography*, Gyanodya Prakashan, Gorakhpur, 2003.
11. Spate O.H.K. & A.T.A. Learmonth: *Geography of India and Pakistan*, Methuen, London (First Indian Edition,1984, Munshiram Manoharlal, New Delhi), 1967.
12. Sukhwal, B. L.: *India: A Political Geography*, Allied Publishers, New Delhi.
13. Tirtha, Ranjit: *Emerging India*, Conpub. Ann Arbour, U.S.A. Michigan, 2006.
14. Tiwari, R.C.: *Geography of India*, Prayag Publishers, Allahabad, 1999.
15. Wadia, D. N.: *Geology of India*, Macmillan & Co., London, 1953.


*Course outcomes:*
*At the end of the course, the students would be able to:*

**CO 1**: This course should allow the candidates to learn about the basic concepts related to Regional Geography of India.

**CO 2**: Furthermore, the student will become conversant with the different forms of physical features and human activities, its characteristics, types, regional patterns, major drivers and consequencesacross geographical context.

**CO 3**: Students should be able to appreciate the various dimensions environmental change and human activities.

## M.Sc. Geography

## Fourth Semester

## Applied Climatology

**Course code: U25GEO405T**
**60 Hrs. (4 Hrs. /week)**
**Credits: 4**
**Time: 3 Hrs.**

**Marks for External: 70**
**Marks for Internal Exam: 30**
**Total Marks: 100**

*Note: The examiner is requested to set nine questions in all, selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus will consist of seven short answer type questions each of two marks). The candidate is required to attempt five questions in all selecting one from each unit and the compulsory Question No.1.All questions carry equal marks.*

**Objective**: To introduce and discuss the basic topics of applied climatology. To understand how these concepts can be useful in everyday planning and operations.

### Unit-I

1. Applied Climatology: History; Development; Atmospheric Concerns and Awareness; Climate Impact Assessment.
2. Basic Climatic Elements: Radiation; Temperature; Moisture, Clouds and Precipitation; Air Pressure and Winds.
3. Major Controls of Climate: Latitude, Geographic Position, Land and Water, Prevailing Winds, Ocean Currents, Altitude, Pressure and wind System.

### Unit-II

4. Weather Analysis: Data Acquisition and Dissemination.
5. Weather Forecasting: Methods, Types, Accuracy.
6. Medium Range Forecasts, Long Range Forecasts.
7. Satellites in Weather Forecasting.

### Unit-III

8. Air Pollution: Sources and Types of Air Pollution. Meteorological Factors Affecting Air Pollution.
9. Acid Precipitation.
10. Urban Heat Island.

### Unit-IV

11. Climatic Change: Definition and Detection: Sea floor Sediment, Glacial Ice, Tree Ring.
12. Natural Causes of Climate Change: Plate Tectonics, Volcanic Activity, Orbital Variations.
13. Human Impact on Global Climate.

**Suggested Readings:**


1. Barry, R.G. & Chorley, R.J.: *Atmosphere, Weather and Climate*, Methuen Co. Ltd., London, 5th Edition, 1987.
2. Bhutani, Smita: *Our Atmosphere*, Kalyani Publishers, Ludhiana, 2000.
3. Darrel Hess: *Mcknight's Physical Geography: A Landscape Appreciation*, Prentice Hall of India Pvt. Ltd., New Delhi, 2012.
4. Frederick K. Lutgens & Edward J. Tarbuck: *The Atmosphere: An Introduction to Meteorology*, Prentice Hall of India Pvt. Ltd., New Delhi, 2012.
5. Lal, D.S.: *Climatology*, thoroughly revised and Enlarged Edition, Sharda Pustak Bhaban, Allahabad, 2009.
6. Lydolph, P.E.: *The Climate of the Earth*, Rowman Nad Allanheld, Totowa, New Jersey, 1985.
7. Oliver, John E.; Oliver, John and Hidore John J: *Climatology: An Atmospheric Science*, Prentice Hall of India Pvt. Ltd. New Delhi, 2001
8. Strahler, A.N.: *Modern Physical Geography*, John Wiley and Sons, New York, Singapore, 1987.
9. Strahler, A and A. Strahler: *Introducing Physical Geography*, 6th Edition, JohnWiley & Sons, Hoboken, New Jersey, 2013.
10. Strahler, A. and A. Strahler: *Physical Geography: Science and Systems of Human Environment*. 3rd Edition, John Wiley, Hoboken, New Jersey, 2005.
11. Trewarth, G.T.: *Eath's Problem Climate*, University of Visconsin, Madision, 1961.
12. Trewartha, G.T.: *An Introduction to Climate*, McGraw Hill, New York, 1980, Fifth Edition (International Student Edition).


*Course outcomes:*

*At the end of the course, the students would be able to:*

**CO 1**: This course should allow the candidates to learn about the basic concepts related to applied concept of climate.

**CO 2:** Furthermore, the student will become conversant with the different forms of climate, its characteristics, types, regional patterns, major drivers and consequences across geographical context.

**CO 3**: Students should be able to appreciate the various dimensions of climate change and human behavior.

# M.Sc. Geography
## Fourth Semester
## Geography of Migration

**Course Code: U25GEO406T**
**60 Hrs. (4 Hrs. /week)**
**Credits: 4**
**Time: 3 Hours**

**Marks for External: 70**
**Marks for Internal: 30**
**Total Marks: 100**

**Note:** *The examiner is requested to set nine questions in all; selecting two questions from each unit and one compulsory question (Question No.1 based on entire syllabus will consist of seven short answer type questions each of two marks). The candidate is required to attempt five questions in all selecting one from each unit and the compulsory Question No.1. All questions carry equal marks.*

**Objective:** This course endeavors to encourage the understanding of issues and challenges of human migration from spatial perspectives. Different forms of human migration, its characteristics and regional patterns shall be highlighted. Place of migration issues in the 2030 SDG agenda shall be evaluated.

**Unit-I**

**1. Migration Overview:** Basic concepts, data sources, measures, and historical perspectives.

**Unit-II**

**2. Internal Migration:** Concepts, characteristics, typologies, regional patterns, explanationsand implications.

**Unit-III**

**3. International Migration:** Concepts, characteristics, typologies, regional patterns,explanations, and consequences.

**Unit-IV**

**4. Migration Policies and Governance:** Regional models across global north-global south.
**5. Migration, Environment, and Climate Change linkages:** floods, droughts, desertification, natural disasters; migration, development, and sustainable development goals.

**Suggested Readings:**


1. Brettell, C.B., and Hollifield, J.F. (eds.) 2014. Migration Theory: Talking across Disciplines,3d ed. New York: Routledge.
2. Castles, S., de Haas, H. and Miller, M.J. 2014. The Age of Migration: International Population Movements in the Modern World, 5th ed. New York and London: Guilford.
3. Hatton, T., and Williamson, J.G. 1998. The age of mass migration: causes and economicimpact, New York: Oxford University Press.
4. Kosinsk, L.A., Elahi, K.M. eds.) 1985. Population redistribution and development in SouthAsia, Boston: Kluwer Academic Publishers Group.


***Course outcomes:***

***At the end of the course, the students would be able to:***

**CO 1**: This course should allow the candidates to learn about the basic concepts related to human migration.

**CO 2**: Furthermore, the student will become conversant with the different forms of human migration, its characteristics, types, regional patterns, major drivers and consequencesacross geographical context.

**CO 3**: Students should be able to appreciate the various dimensions of global environmental change and human migration.

## M.Sc. Geography

## Fourth Semester

## Geography of Startups and Innovation

**Course Code: U25SEC417T**
**30 Hrs. (2 Hrs./week)**
**Credits: 2**
**Time: 2 Hours**

**Marks for External: 35**
**Marks for Internal: 15**
**Total Marks: 50**

*Note: The examiner is required to set five questions in all. The first question will be compulsory consisting of five short questions covering the entire syllabus (three marks each). In addition, four more questions will be set comprising two questions from each unit. The students shall be required to attempt three questions in all selecting one question from each unit in addition to the compulsory Question No. 1. Long questions shall carry equal ten marks each.*

### Unit-I

1. Introduction to the start-ups and innovations. Meaning, Definition and significance, overview of start-ups ecosystem in India.
2. Classification of start-ups, Patterns of Spatio-Temporal distribution of start-ups in India.
3. Role of Geography in start-ups and Innovations.
4. Theories of Industrial Location: Weber, Smith and Losch.
5. Drivers of Start-ups and Innovations: Economic, Physical and political, Challenges faced by start-ups in India.

### Unit-II

6. Role of start-ups in Local and National Economy
7. Local Resources/ Raw Materials: Nature, Types, Availability and Spatial Distribution.
8. Suitable start-ups in local area based on available raw material and resources: Types, Process of setting start-ups, Eligibility and requirements, and related Regulatory Framework in India.
9. Government programs and policies promoting start-up ecosystem in India.
10. Innovations and Recent developments in Agriculture and Allied Activities.

**Recommended Books:**

1. Unleashing Innovation: Startups in India" – *Dr. Surya Garg*

2. "Jugaad Innovation: A Frugal and Flexible Approach to Innovation for the 21st Century" – *Navi Radjou, Jaideep Prabhu, and Simone Ahuja*

3. "Experimental Times: Innovation and the Limits of India's Startup Boom" – *Hemangini Gupta*

4. "India's Green Startups" – *Jayant Sinha and Sandiip Bhammer*

**Course outcomes:**

**At the end of the course, the students will be able to:**

**CO 1**: Explain key concepts, theories, and models related to spatial dynamics of innovation, startups, and regional development

**CO 2**: Analyse the role of geographic location, agglomeration economies, and regional ecosystems in shaping startup success and innovation clusters.

**CO 3**: Evaluate global and regional case studies (e.g., Silicon Valley, Bangalore, Shenzhen, Berlin) to identify spatial factors that influence innovation systems.

**CO 4**: Assess the impact of infrastructure, institutions, and policy frameworks on the growth and sustainability of startup ecosystems in diverse geographies.

**CO 5**: Design a strategic roadmap or ecosystem framework to foster innovation in a selected city or region using geographic and economic analysis.

**Chairperson**
**Department of Geography**
**Guru Jambheshwar University**
**of Science & Technology, Hisar**