



Guru Jambheshwar University of Science and Technology
Hisar-125001, Haryana
['A+' NAAC Accredited State Govt. University]



Examination Scheme and Syllabus for B.A (General and Honours)

Subject: - Geography

As per Scheme-A, Scheme-B and Scheme-C for the session 2026-27

(For Affiliated Colleges according to National Education Policy-2020)

(Batch 2024 and 2025 only)

THIRD YEAR

SEMESTER-V								
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 (General)	C24GE0501T	Economic Geography	3	3	20	50	70	2.5
	C24GE0501P	Economic Geography Lab	1	2	10	20	30	3
(General/ Hons.) Vocational Course	C24VOC509T	Basics of Remote-Sensing	2	2	15	35	50	2
	C24VOC509P	Basics of Remote-Sensing Lab	2	4	15	35	50	3
Core Course (CC) (Hons.)	C24GE0502T	Fundamentals of Remote- Sensing	2	2	15	35	50	2
	C24GE0502P	Fundamentals of Remote- Sensing Lab	2	4	15	35	50	3
	C24GE0503T	Geographical Thought	4	4	30	70	100	3
	C24GE0504T	Geomorphology	4	4	30	70	100	3
	C24GE0505T	Social and Cultural Geography	4	4	30	70	100	3

SEMESTER-VI								
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 (General)	C24GE0601T	Basics of Remote-Sensing and GIS	3	3	20	50	70	2.5
	C24GE0601P	Basics of Remote-Sensing and GIS Lab	1	2	10	20	30	3
(General/ Hons.) Vocational Course	C24VOC609T	Basics of GIS	2	2	15	35	50	2
	C24VOC609P	Basics of GIS Lab	2	2	15	35	50	3
Core Course (Hons.)	C24GE0602T	Climatology	4	4	30	70	100	3
	C24GE0603T	Regional Planning and Development	4	4	30	70	100	3
	C24GE0604T	Fundamentals of Geographic Information Systems	2	2	15	35	50	2
	C24GE0604P	Fundamentals of Geographic Information Systems Lab	2	2	15	35	50	3
	C24GE0605T	Bio-Geography	4	4	30	70	100	3
Skill enhancement course (General/Hons.)	C24SEC616T	Digital Cartography	2	2	15	35	50	2

DEPARTMENT OF GEOGRAPHY

Syllabus for B.A (General and Hons.)

DSC/CC/MDC/SEC/MIC/VAC/VOC

For Affiliated colleges

Session - 2026-27

(Batch 2024 and 2025 only)

As per NEP 2020

Program Outcomes (PO) with Graduate Attributes

Programme outcomes are attributes of the graduates from the programme that are indicative of the graduates' ability and competence to work after being a qualified professional geographer upon graduation. Program outcomes are statements that describe what students are expected to know or do by the time of 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 PO's. The course syllabi and the overall curriculum have been designed to achieve these outcomes:

P01	Knowledge	Capable of demonstrating comprehensive disciplinary knowledge gained during course of study
P02	Communication	Ability to communicate effectively on general and scientific topics with the scientific community and with society at large
P03	Problem Solving	Capability of applying knowledge to solve scientific and other problems
P04	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.
P05	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
P06	Modern Tool usage	Ability to use and learn techniques, skills and modern tools for scientific practices
P07	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
P08	Life-Long Learning	Aptitude to apply knowledge and skills that are necessary for participating in learning activities throughout the life
P09	Environment and Sustainability	Ability to design and develop modern systems which are environmentally sensitive and to understand the importance of sustainable development.
P010	Ethics	Apply ethical principles and professional responsibilities in scientific practices
P011	Project Management	Ability to demonstrate knowledge and understanding of the scientific principles and apply these to manage projects

B.A. (General)
Fifth Semester
Economic
Geography
Discipline Specific Course (DSC)

Course Code: C24GE0501T
45 Hrs. (3 Hrs./Week)
Credit: 3
Exam Time: 2.5 Hrs.

External Marks: 50
Internal Marks: 20
Total Marks: 70

Note: The maximum time duration for attempting the paper will be 2.5 hours. 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 consisting 2 marks each. In addition to that eight more questions will be set, two questions from each unit. The students shall be required to attempt four questions in all selecting one question from each unit in addition to compulsory Question No. 1. All questions shall carry equal marks i.e. 10 marks.

Objective: To introduce the students with economic activities and resources of earth.

Unit-1

Nature and Scope of Economic Geography; Types of Economic Activities: Primary, Secondary, Tertiary, Quaternary sectors.
Factor Affecting Location of Economic Activities: Physical factors (Climate, Relief, Soil), Human factors (Labour, Capital, Technology, Market)

Unit- II

Resources: Concept and Classification of Resources; Renewable and Non-renewable; Resource Utilization and Conservation
Mineral Resources: Iron Ore and Bauxite; Power Resources: Coal, Petroleum, Nuclear, and Hydroelectricity; Major Industrial Regions in India.

Unit-III

Trade and Transport: main features of international Trade; Major Oceanic Routes of the World; Rostow's Model of Economic Growth; Theory of Industrial Location by Weber.

Unit-IV

Globalization; International Trade; Major Trade Blocks of the World: SAARC, ASEAN, EU and IORA, OPEC.
Global Initiatives to reduce the Regional Disparities in Developing and Developed Countries.

Economic Geography Lab

Course Code: C24GE0501P

30 Hrs. (2 hrs./Week)

Credit: 1

Exam Time: 3 Hrs.

External Marks: 20

Internal Marks: 10

Total Marks: 30

Practical Record: A practical file of at least 08 exercises on the below mentioned themes:

1. Choropleth mapping of country-wise variation in GDP and PCI (2 exercises).
2. Mapping of major ports of India (1 exercises).
3. Time series analysis of world food, commercial and plantation crops production and trade using polygraph method (2 exercises).
4. Representation of major crops of India using compound bar diagram (1 exercise)
5. Representation of decadal production petroleum and iron-ore in India (Compound bar diagram) (2 exercise).

Suggested Readings:

1. Owen, S. and Owens, P.L. 1991. Environment, Resources and Conservation. Cambridge University Press, New York
2. James, D. W. and Muller, P.O.1988. Economic Geography. John Wiley and Sons, New York.
3. Hartshorne, T. N. and Alexander, J. W. 2009, Economic Geography. New Delhi, Prentice Hall of India.
4. Jones, C.F. and Daockenwald G.G. 1975. Economic Geography. McMillan Company, New York
5. Gautam, A. 2010. Advanced Economic Geography. Sharda Pustak Bhawan, Allahabad.

Course outcomes

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

- CO 1: Understand the Economic activities.
- CO 2: Enable to understand the natural resources of earth.
- CO 3: Provide awareness about the resources, industries and transportation in world.
- CO 4: Enable students to Represent different economic data with the help of graphical and map tools.

B.A. (General/Hons.)
Fifth Semester
Basics of Remote- Sensing
Vocational Course (VOC)

Course code:C24VOC509T

Credits: 2

Time: 2 Hours

External exam-35 Marks

Internal exams:15 Marks

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 and the compulsory Question No.1. Long questions carry ten marks each.

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

Remote Sensing: Definition, History and Application. Electromagnetic Radiation (EMR): Electromagnetic Spectrum (EMS); Energy Interaction with The Atmosphere, Energy Interactions with The Earth's Surface; Types of Remote Sensing with Respect to Wavelength Regions. Resolution: Spatial, Spectral, Radiometric and Temporal.

Unit-II

Platforms and Sensor: Remote Sensing Platforms; Terrestrial, Airborne, and Spaceborne Platforms; Sensor Types: Active and Passive Sensor; Orbit and their Types: Geosynchronous, Sun synchronous Orbit. Types of Images- Panchromatic, FCC and True Color Combination.

Basics of Remote- Sensing Lab

Course Code: C24VOC509P

60 Hrs. (4 hrs./Week)

Credit: 2

Exam Time: 3 Hrs.

External Marks: 35

Internal Marks: 15

Total Marks: 50

Note: - *There will be three questions in all and candidate has to attempt two exercises.*

Distribution of marks for evaluation:

Internal marks-15

External Marks-35

(Exercise = 10

File record = 10

Viva-Voce = 15

marks)

Total -35

Unit-1

1. Kinds of satellite images and Study of a satellite image - annotation (IRS.)
2. Data downloading (Bhoonidhi Portal, Google Earth Engine and USGS)
3. Image loading/Import of different Satellite Image format.
4. Band combinations: True Colour Composite (TCC) and False Colour Composite (FCC) using digital satellite data.
5. Image Enhancement (Spatial, Spectral and Radiometric).

Unit-2

6. Image Geo-referencing (image to image)
7. Creating Subset with the help of AOI layer, administrative boundary Layer.
8. Mosaicking
9. Digital Image Processing (DIP) Classification (Supervised and Un-supervised) Land use/Land cover Classification from satellite images.
10. Preparation of final Land Use/Land Cover (LULC) map with legend, Scale, North arrow, Coordinate grid and Map layout.

Recommended Readings:

Lillesand, T., Kiefer, R. W., & Chipman, J. (2014). Remote Sensing and Image Interpretation. John Wiley & Sons.

Rees, W. G. (2012). Physical Principles of Remote Sensing. Cambridge University Press.

Jensen, J. R. (2009). Remote Sensing of the Environment: An Earth Resource Perspective 2/E. Pearson Education India.

Sabins, F. F. (2007). Remote Sensing: Principles and Applications. Waveland Press

Avery, T.E. and Berlin, G. I..(1992) Fundamentals of Remote Sensing and Air Photo Interpretation. 514 Ed, Macmillan, New York, USA.

Aggarwal, C.S. And Garg, P. K. (2000) Remote Sensing. A.H. Wheeler & Co. Ltd, New Delhi.

Campbell, J. B. (2002) Introduction to Remote Sensing. 3rd ed., Taylor & Francis, NewPart B-C

Burrough, P.A. and McDonnell, R. (1998). Principles of Geographic Information Systems. 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

- CO1. Explain remote sensing principles.
- CO2. Differentiate platforms and sensors.
- CO3. Describe GIS components and data models.
- CO4. Apply basic GIS spatial analysis.

**B.A. (Hons.)
Fifth Semester
Geomorphology
Core Course (CC)**

Course Code: C24GE0504T
60 Hrs. (4 hour/week)
Credit: 4
Exam Time: 3 Hrs.

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

Note: The maximum time duration for attempting the paper will be 3 hours. 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 consisting 2 marks each. In addition to that eight more questions will be set, two questions from each unit. The students shall be required to attempt four questions in all selecting one question from each unit in addition to compulsory Question No. 1. All questions shall carry equal marks i.e. 14 marks.

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

Unit- 1

Nature, scope and approaches of geomorphology; geological time scale, fundamental concepts: Geological structure and landforms, uniformitarianism, multicyclic and polygenetic landforms.

Unit -2

Evolution of landscape: Theory of Davis and Penck; Weathering: Physical, Chemical and Biological; Mass movement and its classification.

Unit -3

Geomorphic processes and landforms formed by Fluvial, Aeolian, Glacial, Karst and Coastal Processes.

Unit -4

Role of Geomorphology in highway, railway, and tunnel construction; Dam and reservoir site selection.

Books Suggested:

1. Bloom AL. 2002. Geomorphology: A systematic Analysis of late Cenozoic landforms. Prentice-Hall Private Limited, New Delhi.
2. Embleton, C and Thornburne, J. 1979. Process in Geomorphology. London, Edward Arnold.
3. Kale VS and Gupta A. 2001. Introduction to Geomorphology. Orient Longman, Hyderabad.
4. Ritter DF., Kochel RC. and Miller JR. 1995. Process Geomorphology. Dubuque, WinC. Brown Publishers.
5. Sharma HS and Kale VS 2009. Geomorphology in India, Prayag Pustak Bhawan, Allahabad.
6. Sharma, VK. 2010. Introduction to Process Geomorphology. Taylor 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, Prayag Pustak 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

B.A. (Hons.)
Fifth Semester
Fundamentals of Remote- Sensing
Core Course (CC)

Course code:C24GE0502T

Credits: 2

Time: 2 Hours

External exam:35 Marks

Internal exams:15 Marks

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 and the compulsory Question No.1. Long questions carry ten marks each.

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

Remote Sensing: Definition, History and Application. Electromagnetic Radiation (EMR): Electromagnetic Spectrum (EMS); Energy Interaction with The Atmosphere, Energy Interactions with The Earth's Surface; Types of Remote Sensing with Respect to Wavelength Regions. Resolution: Spatial, Spectral, Radiometric and Temporal.

Unit-II

Platforms and Sensor: Remote Sensing Platforms; Terrestrial, Airborne, and Spaceborne Platforms; Sensor Types: Active and Passive Sensor; Orbit and their Types: Geosynchronous, Sun synchronous Orbit. Types of Images- Panchromatic, FCC and True Color Combination.

Fundamentals of Remote- Sensing Lab

Course Code: C24GE0502P

60 Hrs. (4 hrs./Week)

Credit: 2

Exam Time: 3 Hrs.

External Marks: 35

Internal Marks: 15

Total Marks: 50

Note: - *There will be three questions in all and candidate has to attempt two exercises.*

Distribution of marks for evaluation:

Internal marks-15

External Marks-35

(Exercise = 10

File record = 10

Viva-Voce = 15

marks)

Total -35

Unit-1

1. Kinds of satellite images and Study of a satellite image - annotation (IRS.)
2. Data downloading (Bhoonidhi Portal, Google Earth Engine and USGS)
3. Image loading/Import of different Satellite Image format.
4. Band combinations: True Colour Composite (TCC) and False Colour Composite (FCC) using digital satellite data.
5. Image Enhancement (Spatial, Spectral and Radiometric).

Unit-2

6. Image Geo-referencing (image to image)
7. Creating Subset with the help of AOI layer, administrative boundary Layer.
8. Mosaicking
9. Digital Image Processing (DIP) Classification (Supervised and Un-supervised) Land use/Land cover Classification from satellite images.
10. Preparation of final Land Use/Land Cover (LULC) map with legend, Scale, North arrow, Coordinate grid and Map layout.

Recommended Readings:

Lillesand, T., Kiefer, R. W., & Chipman, J. (2014). Remote Sensing and Image Interpretation. John Wiley & Sons.

Rees, W. G. (2012). Physical Principles of Remote Sensing. Cambridge University Press.

Jensen, J. R. (2009). Remote Sensing of the Environment: An Earth Resource Perspective 2/E. Pearson Education India.

Sabins, F. F. (2007). Remote Sensing: Principles and Applications. Waveland Press

Avery, T.E. and Berlin, G. I..(1992) Fundamentals of Remote Sensing and Air Photo Interpretation. 514 Ed, Macmillan, New York, USA.

Aggarwal, C.S. And Garg, P. K. (2000) Remote Sensing. A.H. Wheeler & Co. Ltd, New Delhi.

Campbell, J. B. (2002) Introduction to Remote Sensing. 3rd ed., Taylor & Francis, NewPart B-C

Burrough, P.A. and McDonnell, R. (1998). Principles of Geographic Information Systems. 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

- CO1. Explain remote sensing principles.
- CO2. Differentiate platforms and sensors.
- CO3. Describe GIS components and data models.
- CO4. Apply basic GIS spatial analysis.

B.A. (Hons.)
Fifth Semester
Geographical Thought
Core Course (CC)

Course Code: C24GE0503T

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: 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- 1

The Contribution of Greeks and Romans in the development of Geography,
Contribution of Arabs and Indians in the development of geography.

Unit -2

Contribution of American and German Geographers in the evolution of Geography.
French School of Geographic Thought; Modern Approaches: Positivism and Quantitative Revolution.

Unit-3

Man - Environment Relationship: Environmental Determinism, Possibilism, Neo-Determinism.
Behavioral Revolution in Geography and its impact on philosophy and methodology of discipline.

Unit -4

Contemporary Development: Humanism, Radicalism, Feminism and Post-modernism; Inductive and deductive approaches of scientific explanation

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 21st Century. 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 Whatmore, S. (2003): The Dictionary of Human Geography. Blackwell Publishers, Oxford. 5th edition.
15. Johnston, R.J. (1985): The Future of Geography, Methuen 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 medieval period.

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

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

**B.A (Hons.)
Fifth Semester
Social and Cultural Geography
Core Course (CC)**

Course Code: C24GE0505T
60 Hrs. (4 Hrs./week)
Credit: 4
Exam Time: 3 Hrs.

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

Note: The maximum time duration for attempting the paper will be of 3 hours. The examiner is required to set five questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus consisting of two marks each. In addition to that four more question will be set, two questions from each unit. The student shall be required to attempt three questions in all selecting one question from each unit in addition to compulsory Question No. 1. All questions shall carry equal marks i.e. 14 marks.

Objective: Social and Cultural Geography is an important aspect to understand the development of society and different social and cultural groups in India

Unit- I

Nature and Scope of Social geography; Development of Social Geography; Concepts of Social Space; Relevance of Social Geography; Social differentiation

Unit- II

Social Identities in India: Ethnicity, Tribes, Caste and Religion; Language; Social Issues in India: Gender and Space, Education, Poverty.

Unit -III

Cultural Geography: Meaning, Evolution, Development and Significance; Cultural Area; Cultural Region; Cultural Hearth; Cultural Realm.

Unit -IV

Cultural Landscape Evolution; Cultural Diffusion Theory; Adaptation; Acculturation; Assimilation; and Resistance/ Cultural Resilience.

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.

B.A. (General)
Sixth Semester
Basics of Remote- Sensing and GIS
Discipline Specific Course (DSC)

Course Code: C24GE0601T
45 Hrs. (3 Hrs./Week)
Credit: 3
Exam Time: 2.5 Hrs.

External Marks: 50
Internal Marks: 20
Total Marks: 70

Note: The maximum time duration for attempting the paper will be 2.5 hours. 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 consisting 2 marks each. In addition to that eight more questions will be set, two questions from each unit. The students shall be required to attempt four questions in all selecting one question from each unit in addition to compulsory Question No. 1. All questions shall carry equal marks i.e. 10 marks.

Objective: To introduce the principles and applications of Remote Sensing and GIS.

Unit -I

Remote Sensing: Definition, History and Application. Electromagnetic Radiation (EMR): Electromagnetic Spectrum (EMS); Energy Interaction in The Atmosphere, Energy Interactions with The Earth's Surface; Types of Remote Sensing with Respect to Wavelength Regions.

Unit -II

Platforms and Sensor: Remote Sensing Platforms; Terrestrial, Airborne, and Spaceborne Platforms; Sensor Types: Active and Passive Sensor; Orbit and their Types: Geosynchronous, Sun synchronous Orbit

Unit-III

Introduction to GIS: Definitions and Historical development of GIS; Components of GIS Data structure in GIS (Raster and Vector); DBMS: GIS Data Types: Spatial and Non-Spatial data /Attribute data. Spatial Data Analysis;

Unit-IV

Concept of Topological Analysis; Overlay Analysis; Network Analysis; Neighbourhood and Buffering.

**Basics of Remote-sensing and GIS Lab
Discipline Specific Course (DSC)**

Course Code: C24GE0601P

Credit: 1

Time: 3 Hours

Marks for External: 20

Marks for Internal: 10

Total Marks: 30

Note: Instructions for external practical examiner: There will be three questions in all and candidate has to attempt two exercises.

Distribution of External marks for evaluation Exercise = 10 marks

File record = 5 marks

Viva-Voce = 5 marks

Unit-1

Kinds of satellite images and Study of a satellite image - annotation (IRS.)

Data downloading (Bhoonidhi Portal, Google Earth Engine and USGS)

Image loading/Import of different Satellite Image format.

Band combinations: True Colour Composite (TCC) and False Colour Composite (FCC) using digital satellite data.

Image Enhancement (Spatial, Spectral and Radiometric).

Unit-2

Image Geo-referencing (image to image)

Creating Subset with the help of AOI layer, administrative boundary Layer.

Mosaicking

Digital Image Processing (DIP) Classification (Supervised and Un-supervised) Land use/Land

cover Classification from satellite images.

Preparation of final Land Use/Land Cover (LULC) map with legend, Scale, North arrow, Coordinate grid and Map layout.

Recommended Readings:

Lillesand, T., Kiefer, R. W., & Chipman, J. (2014). Remote Sensing and Image Interpretation. John Wiley & Sons.

Rees, W. G. (2012). Physical Principles of Remote Sensing. Cambridge University Press.

Jensen, J. R. (2009). Remote Sensing of the Environment: An Earth Resource Perspective 2/E. Pearson Education India.

Sabins, F. F. (2007). Remote Sensing: Principles and Applications. Waveland Press

Avery, T.E. and Berlin, G. I..(1992) Fundamentals of Remote Sensing and Air Photo Interpretation. 514 Ed, Macmillan, New York, USA.

Aggarwal, C.S. And Garg, P. K. (2000) Remote Sensing. A.H. Wheeler & Co. Ltd, New Delhi.

Campbell, J. B. (2002) Introduction to Remote Sensing. 3rd ed., Taylor & Francis, NewPart B-C

Burrough, P.A. and McDonnell, R. (1998). Principles of Geographic Information Systems. 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

- CO1. Explain remote sensing principles.
- CO2. Differentiate platforms and sensors.
- CO3. Describe GIS components and data models.
- CO4. Apply basic GIS spatial analysis.

B.A. (General/Hons.)
Sixth Semester
Basics of GIS
Vocational Course (VOC)

Course code:C24VOC609T

Credits: 2

Time: 2 Hours

External exam:35 Marks

Internal exams:15 Marks

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 and the compulsory Question No.1. Long questions carry ten marks each.

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

Introduction to GIS: Definitions and Historical development of GIS; Components of GIS
Data structure in GIS (Raster and Vector); DBMS: GIS Data Types: Spatial and Non-Spatial data /Attribute data. Spatial Data Analysis; Concept of Topological Analysis; Overlay Analysis; Network Analysis; Neighborhood and Buffering. Web GIS: Definition, historical development and component; GIS Software: Open Source and commercial

Unit-II

Introduction to Global Positioning System: Definition; History and Development; GPS Satellite Constellations. GPS Segments: Space; Control; User. GPS Application in Various field; Concept of DGPS and WAAS; GNSS and Types (NAVSTAR; GLONASS; GALELIO; IRNSS/NavIC)

Basics of GIS Lab

Course Code: C24VOC609P

60 Hrs. (4 hrs./Week)

Credit: 2

Exam Time: 3 Hrs.

External Marks: 35

Internal Marks: 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-1

1. GIS Software: Introduction to Open Sources (QGIS) and Commercial Software (Arc GIS, ERDAS).
2. Geo-referencing (maps to image, image to image)
3. Creation of Shape file: Point, Polyline and Polygon
4. Digitization of Raster Map: Point, Line and Polygon Features
5. Preparation of Attribute Tables, Editing and Joining Tables

Unit-2

6. Analyzing Attribute Data: Calculating Area, Perimeter, Length.
7. Digitization of Point, Line and Polygon features from satellite imagery or scanned maps with Cultural and Physical features using GIS Software.
8. Joining, and linking non-spatial (Excel/CSV) data with spatial datasets.
9. Basic Analysis in GIS: Buffering, Overlay and Query Building .
10. Preparation thematic map layout including Title, Legend, Scale Bar, North Arrow, Coordinate Grid, Neat line and Export to PDF/JPEG.

Suggested Readings:

- Burrough, P.A. and McDonnell, R. (1998). Principles of Geographic Information Systems. 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

B.A. (Hons.)
Sixth Semester
Climatology
Core Course (CC)

Course Code: C24GE0602T
60 Hrs. (4 Hrs./Week)
Credit: 4
Exam Time: 3 Hrs.

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

Note: The maximum time duration for attempting the paper will be 3 hours. 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 consisting 2 marks each. In addition to that eight more questions will be set, two questions from each unit. The students shall be required to attempt four questions in all selecting one question from each unit in addition to compulsory Question No. 1. All questions shall carry equal marks i.e. 14 marks.

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

Unit -1

Composition and structure of atmosphere; Insolation and Temperature: Distribution and Factor Affecting distribution over Earth; Horizontal and Vertical distribution of temperature; Heat budget of Earth;

Unit- 2

Atmospheric pressure: Distribution and Factors affecting; Atmospheric Humidity: Types and Factors affecting. Forms of condensation dew, frost, fog and clouds;

Unit- 3

Forms of precipitation; Fronts, cyclones, anticyclones.
Urban heat island

Unit- 4

Koppen's climatic classification; Monsoon: Mechanism, Factors affecting, Distribution of Rainfall and significance with reference to India.

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.

B.A. (Hons.)
Sixth Semester
Regional Planning and Development
Core Course (CC)

Course Code: C24GE0603T
60 Hrs. (4 Hrs./Week)
Credit: 4
Exam Time: 3 Hrs.

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

Note: The maximum time duration for attempting the paper will be 3 hours. 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 consisting 2 marks each. In addition to that eight more questions will be set, two questions from each unit. The students shall be required to attempt four questions in all selecting one question from each unit in addition to compulsory Question No. 1. All questions shall carry equal marks i.e. 14 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 -1

Meaning, Nature and Scope of Regional Planning
Concepts of Region and Regionalisation
Types of Regions:

- Formal Region
- Functional Region
- Planning Region

Need and Importance of Regional Planning

Unit- 2

Growth and Development: Concepts and Differences
Regional Development Theories:

- Growth Pole Theory (Perroux)
- Core-Periphery Model (Friedmann)

Indicators of Regional Development

- Economic Indicators
- Social Indicators
- Human Développement Index (HDI)

Unit -3

Evolution of Regional Planning in India
Planning Regions in India:

- Criteria and Delineation
- Multi-level Planning

Area Development Programmes:

- Hill Area Development Programme
- Tribal Area Development Programme
- Drought Prone Area Programme (DPAP)
- Watershed Development Programme

Unit -4

Role of NITI Aayog in Regional Development
National Capital Region (NCR) Planning
Smart Cities and Sustainable Regional Development
Environmental Concerns in Regional Planning
Regional Planning as a Tool for Sustainable Development

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. New Delhi.
3. Coates, B.R. and R.J. Johnston. 1977. *Geography and Inequality*. Oxford University Press, Oxford. Government of India. 2013. *Report of the Committee for Evolving a Composite Development*
4. *Index of States* Ministry of Finance.
http://finmin.nic.in/reports/Report_CompDevState.pdf
5. Friedmann, J. and William Alonso. 1967. *Regional Development and Planning: a Reader*. MIT Press, Cambridge Massachusetts
6. Kuklinski, A.R. ed. 1972. *Growth Poles and Growth Centers in Regional Planning*. Monton, The Hague.
7. Misra R.P. et al. eds. 1974. *Regional Development Planning in India*, Vikas, New Delhi.
8. Mohan, Krishna. 2005. *Addressing Regional Backwardness: An Analysis of Area Development Programmes in India*, New Delhi: Manak Publications.
9. Raza, Moonis. 1988. *Regional Development*, Heritage, New Delhi.
10. Singh, Nina. 2015. "Regional Backwardness in India: An Exploration of Demographic Indicators". *Population Geography*, vol.37, No. 1&2, pp. 13-25.
11. Surya Kant and Nina Singh. 2015. *Geography Development Public Policy: Select Essays of Gopal Krishan*. RK Books, New Delhi.
12. Kant, Surya et al. 2004. *Reinventing Regional Development*. Rawat Publications, Jaipur.
13. 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 in regional development;
- CO 3:** comprehend the regional development and planning process in India.
- CO 4:** Awareness about the disparities of resources in India.

B.A. (Hons.)
Sixth Semester
Fundamentals of Geographic
Information Systems
Core Course (CC)

Course code:C24GE0604T

Credits: 2

Time: 2 Hours

External exam:35 Marks

Internal exams:15 Marks

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 and the compulsory Question No.1. Long questions carry ten marks each.

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

Introduction to GIS: Definitions and Historical development of GIS; Components of GIS
Data structure in GIS (Raster and Vector); DBMS: GIS Data Types: Spatial and Non-Spatial data /Attribute data. Spatial Data Analysis; Concept of Topological Analysis; Overlay Analysis; Network Analysis; Neighborhood and Buffering. Web GIS: Definition, historical development and component; GIS Software: Open Source and commercial

Unit-II

Introduction to Global Positioning System: Definition; History and Development; GPS Satellite Constellations. GPS Segments: Space; Control; User. GPS Application in Various field; Concept of DGPS and WAAS; GNSS and Types (NAVSTAR; GLONASS; GALELIO; IRNSS/NavIC)

**Fundamentals of
Geographic
Information
Systems Lab**

Course Code: C24VOC609P
60 Hrs. (4 hrs./Week)
Credit: 2
Exam Time: 3 Hrs.

External Marks: 35
Internal Marks: 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-1

GIS Software: Introduction to Open Sources (QGIS) and Commercial Software (Arc GIS, ERDAS).

Geo-referencing (maps to image, image to image)

Creation of Shape file: Point, Polyline and Polygon

Digitization of Raster Map: Point, Line and Polygon Features

Preparation of Attribute Tables, Editing and Joining Tables

Unit-2

Analyzing Attribute Data: Calculating Area, Perimeter, Length.

Digitization of Point, Line and Polygon features from satellite imagery or scanned maps with Cultural and Physical features using GIS Software.

Joining, and linking non-spatial (Excel/CSV) data with spatial datasets.

Basic Analysis in GIS: Buffering, Overlay and Query Building .

Preparation thematic map layout including Title, Legend, Scale Bar, North Arrow, Coordinate Grid, Neat line and Export to PDF/JPEG.

Suggested Readings:

- Burrough, P.A. and McDonnell, R. (1998). Principles of Geographic Information Systems. Oxford University Press, Oxford.
- Bhatta Basudeb (2014). Remote Sensing and GIS. Oxford University Press, Oxford.
- Chang, K.T. (2003). Introduction to Geographic Information Systems. Tata McGraw 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

**B.A. (Hons.)
Sixth Semester
Bio-Geography
Core Course (CC)**

Course code: C24GE0605T

Credits: 4

Time: 3 Hours

External exam-70 Marks

Internal exams:30 Marks

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 14 marks each.

Objective: To introduce the student to the concept of biogeography, its components, interpretation and application; interaction between living organisms with climate and physical environment

UNIT-I

Nature, scope and significance of biogeography.

Energy flow; food chain; food web; ecological pyramids and biogeochemical cycles.

UNIT- II

Distribution of plant life on the earth and its relation to soil, climate and human activities.

Geographical distribution of animal life on the earth and its relation to vegetation types, climate and human activities.

UNIT -III

Soil system: Meaning and importance, components and structure.

Soil profiles and Horizons, Factor affecting soil formation, classification of soil.

UNIT- IV

Bio-diversity hotspots; wild-life conservation in India.

Biomes: - Meaning and concept, types of biomes, Major Biomes of World.

Books Recommended

1. Chandna R. C., (2002) Environmental Geography, Kalyani, Ludhiana.
2. Cox, C.D. and Moore, P.D. (1993) Biogeography: An Ecological and Evolutionary Approach, Blackwell.
3. Cunningham W. P. and Cunningham M. A., (2004) Principals of Environmental Science, McGraw hill, London.
4. Huggett, R.J. (1998) Fundamentals of Biogeography. Routledge, U.S.A.
5. Khushoo, T.N. and Sharma, M. (1991) Indian Geosphere-Biosphere Har-Anand Publication, Delhi.
6. Lillies, J. (1974) Introduction of Zoogeography, McMillan. London.
7. Mathur, H.S. (1998) Essentials of Biogeography, Anuj Printers, Jaipur.
8. MOEF (2006) National Environmental Policy-2006, Ministry of Environment and Forests, Government of India.
9. Odum, E. P. et al. (2005) Fundamentals of Ecology, Cengage Learning India.
10. Pears, N. (1985) Basic Biogeography, Longman, London.

Course outcomes

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

CO 1: understand the basic ecological principles.

CO 2: *enrich understanding about distribution of plants and Animals' life on the earth.*

CO 3: *Aware about conservation of biotic resources and effects of industrial effluents on ecosystems.*

CO 4: *acquaint with environmental hazards and bio reserves.*

B.A (General/Hons.)
Sixth Semester
Digital Cartography
Skill Enhancement Course (SEC)

Course Code: 24SEC0616T
Credits: 2

Marks for External: 35
Marks for Internal: 15

Time: 2 Hours

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 and the compulsory Question No.1. Long questions carry ten marks each.*

Objective: The course aims to provide students with a comprehensive understanding of the principles, techniques, and applications of digital cartography. It enables them to acquire practical skills in digital map creation, spatial data acquisition, editing, visualization, analysis, and thematic mapping using modern cartographic and GIS tools. The course also develops the ability to interpret, communicate, and present geographical information effectively for planning, research, and decision-making.

Unit-I

Introduction to Digital Cartography, Comparison of Digital and Manual Cartographic Techniques

Maps: classification, characteristics, significance and limitations.

Basic concepts of surveying and survey equipment's coordinate system and map: magnetic and true north and rectangular.

Unit-II

Techniques of map enlargement and reduction; map producing agencies in India (GSI, SOI, FSI, NATMO, NBBSLUP, NRSC, AISSLUP and IMD).

SPSS and Excel work.

Recommended Readings:

1. Robinsin, A., Morrison, J.L ,Muehrcke. P.C. and Guptil,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, Princeton 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.

Course Outcomes:

- CO1: Have knowledge about computer aided cartography.
CO2: Prepare good quality maps.
CO3: Take up career in the field of digital cartography.