GRADUATE ATTRIBUTES IN GEOGRAPHY

Some of the Graduate attributes of a graduate in Geography are:-

- **Disciplinary knowledge and skills-** Acquiring sound knowledge to understand the major concepts ,theoretical principles and practical applicability in core Geography and its different sub -fields like Geomorphology, Climatology and climate change, changing perspectives of Human Geography, Pedology, Ecology and Bio- geography, Environmental geography, Forest and wildlife management, Regional Planning, Cartography, Regional Geography, Economic Geography, Philosophy of Geography etc. with special reference to Resource Geography, Research Methodology, Sustainable Geography, Remote Sensing, GIS & GNSS, Hazard management and other related fields of study including broader interdisciplinary sub –fields like Geology, Mathematics, Physics, Chemistry, Life Sciences, Environmental Sciences, Information Technology etc.
- **Skilled Interpreter-** Ability to explain complex geographical information in a clear and concise manner in writing as well as ability to express complicated concepts in a simple language for better understanding of the subject.
- **Critical Observer and Analyzer -** Ability to observe, understand and analyse geographical phenomena critically.
- **Attitude of Investigation -** Ability to ask relevant questions relating to the geographical issues and problems so that the problem area may be developed properly.
- **Efficient Planner**-Capable of formulating proper regional plans on the basis of resource inventory to solve the problem in question with appropriate planning, implementation and regular monitoring.
- **Team activity-** Capable of working efficiently in diverse teams in classroom as well as field-based situations.
- **Trained professional –** Ability to deal with problems related with changing climatic scenario as well as hazard and disaster management as a skilled professional.
- **Expert Field investigator-** Capable of conducting the Field work, the key activity of Geography by collecting proper primary data to understand and resolve the actual problem for the overall development of the area.
- **Digitally efficient –** Capable of using computers for GIS and GNSS studies as well as developing ability to utilize appropriate numerical and statistical methods related to Geography.

- **Ethical awareness** - Development of demonstrating ability to think and analyze rationally with modern and scientific outlook and identify ethical issues to avoid unethical practices like falsification, committing plagiarism etc. Developing ability to adopt unbiased objectives and following truthful activities in all geographical spheres.
- **Lifelong learners-** Capable of self- paced and self- directed learning for personal development as well as to improve skill and knowledge leading to reskilling in all spheres of geography.
- **National and International perspective –** The graduates should prepare themselves during their most formative years for their appropriate role to contribute towards the national development by reducing regional disparities as well as to highlight our national priorities internationally pertaining to their field of interest and future proficiency.
- **Nature is the Laboratory of Geography-** Ability to relate with the nature as well as with the environment appropriately for the essential issue of maintaining nature-human co-existence following the measures of Sustainable development oriented towards nurturing the balance of ecology and biosphere.
- **Maintenance of sustainability-** Ability to apply the measures of sustainability in all spheres of life with genuine dedication.

PROGRAM LEARNING OUTCOMES (POs) IN B.SC. (HONOURS) GEOGRAPHY (NEP)

The graduate students with the Degree of B.A/B.Sc (Honours) in Geography should be able to:-

- Acquiring a structured understanding of the academic field of Geography.
- Linkages with related disciplines and various types of related professional fields.
- Application of geographical concepts in most recent and emerging developments.
- Demonstrate the systematic geographical knowledge towards current problems along with their solutions.
- Specific skills in Map making to analyze various problems on the space.
- Ability to evaluate critically the spatial aspects in all levels on different time scales.
- Career oriented skill development.
- Application of acquired knowledge in daily life focusing the changing scenario.
- Communication skill towards utilizing acquired knowledge both theoretically and practically.
- Developing analytical skill to evaluate geographical problems.
- Appropriate skill in the proper application of most recent geographical research tools.
- Pertinent skill in the identification and explanation of physico- cultural characteristics and processes.
- Understanding man-environment and nature-society interactions along with global environmental challenges.
- Developing skills in the analysis of geographical information through geo-spatial technologies.
- Responding the global and national challenges.
- Utilization of Field experience-based knowledge towards recent geographical problems with pragmatic solutions.

Programme Outcomes (POs) in Geography (Major):

PO 1: Basic concept

PO 2: Linkage with other disciplines

PO 3: Application of geographical concepts

PO 4: Problem identification and solution making approach

PO 5: Map making skill

PO 6: Critical Evaluation

PO 7: Skill Development

PO 8: Applied dimension

PO 9: Communication skills

PO 10: Analytical Skill

PO 11: Use of research tools

PO 12: Identification of geographical characteristic and processes

PO 13: Understanding man-environment relation

PO 14: Application of geo-spatial technologies

PO 15: Response to challenges

PO 16: Field based knowledge

Course Outcomes (COs)
Discipline-specific Course: Honours (H – CC)

CC1: PHYSICAL GEOGRAPHY
(Credits: 04; Theory-03, Practical: 01)

Course Learning Outcome (CLOs):

The students will acquire knowledge about-

CO 1: Cartography focusing concept and applications of different types of scales and projections along with components and classification of maps.

CO 2: Geotectonics mainly the internal structure of the earth in relation with seismic waves.

CO 3: Geomorphic processes and resultant landforms like weathering and various agents of erosion along with some other denudation processes and landforms produced by fluvial processes.

CO 4: Nature, composition and layering of the atmosphere with special reference to circulation in the atmosphere.

CO 5: Accumulate clear concept about factors of soil formation along with evolution of an ideal soil profile.

CO 6: Biogeography by gathering knowledge about plant adaptation and distribution according to water availability.

CO 7: True concept of nature and classification of hazards and disasters in Indian context.

CO 8: In the Laboratory course students learn first-hand-

i) Graphical construction of different types of scales,

i) Delineation of drainage basins on Survey of India1:50,000 topographical map to determine stream Ordering and Bifurcation ratio.

iii) IdentificationofdrainageandchannelpatternsfromSurveyofIndia1:50,000topographicalmaps.

iv) Construction and interpretation of Wind rose diagram.

PO-CO Mapping

Course Code: CC 1

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO 15	PO 16
CO1	√	√	√	√	√	√	√	√	√	√	√	X	X	√	√	X
CO2	√	√	√	√	X	√	√	√	√	√	√	√	X	√	√	√
CO3	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO4	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	X
CO5	√	√	√	√	X	√	√	√	√	√	√	√	√	X	√	√
CO6	√	√	√	√	X	√	√	√	√	√	X	√	X	X	√	X
CO7	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO8	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	√

Course Outcomes (COs)
Discipline-specific Course: Honours (H – CC)

CC2: HUMAN GEOGRAPHY
(Credits: 04; Theory-03, Practical: 01)

Course Learning Outcome (CLOs):

The students will acquire knowledge about-

CO 1: Nature, scope, recent trends and elements of Human Geography in special reference to different schools of thought.

CO 2: Evolution of human society in temporal sense and spatially, human adaptation to the environment with a journey focusing post- industrial urban societies.

CO 3: Population Geography with special reference to the concept of Demographic transition and demographic dividend as well as distribution, density and growth of population in India.

CO 4: Characteristics of Urban and Rural settlements with special reference to site, situation, types and patterns of rural settlement as well as morphology and hierarchy of urban settlement after Census of India.

CO 5: In the Laboratory course students learn first-hand-

i) Measurement of Arithmetic growth rate of population comparing two decadal datasets.

ii) Representation and interpretation of population density by Choropleth Method.

iii) Identification of types of settlements from Survey of India1:50,000 topographical map.

iv) Construction of Proportional Squares to have a clear concept regarding distribution of households.

PO-CO Mapping

Course Code: CC 2

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO 15	PO 16
CO1	√	√	√	√	X	√	√	√	√	√	X	√	√	√	√	√
CO2	√	√	√	√	X	√	√	√	√	√	X	√	√	√	√	√
CO3	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO4	√	√	√	√	X	√	√	√	√	√	X	√	√	√	√	√
CO5	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

Course Outcomes (COs)
Discipline-specific Course: Honours (H – CC)

CC 3: GEOTECTONICS
(Credits: 04; Theory-03, Practical: 01)

Course Learning Outcome (CLOs):

The students will acquire knowledge about-

CO1: Relative and absolute dating of rocks.

CO2: Geological time scale focusing the events of Pleistocene.

CO3: Formation and structural differentiation of the earth.

CO4: Concept of Isostasy with important models and applicability as well as the theory of Plate Tectonics with processes and landforms at plate margins along with the characteristics and origin of major relief features of the ocean floor and concept of hotspots.

CO5: Genetic classification of mountains and types of volcanic eruptions.

CO6: Formation and classification of Folds and Faults.

CO7: Morphometric indices of tectonic activity like

i) Basin asymmetry factor,

ii) Transverse topographic symmetry factor,

iii) Mountain front sinuosity

CO8: In the Laboratory course, students will gather first-hand practical knowledge about-

i) How to measure dip and strike by using clinometer

ii) Megascopic identification of minerals and rocks

iii) Analysis of tectonic activity from Survey of India 1:50,000 topographical map focusing

- Basin asymmetry factor
- Transverse topographic symmetry factor.

iv) Interpretation of geological maps with

- Uniclinal structure,
- Folds,
- Unconformity,
- Intrusions.

PO-CO Mapping

Course Code: CC 3

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO 15	PO 16
CO1	√	√	×	×	×	√	√	×	√	√	√	×	√	×	×	√
CO2	√	×	×	×	×	√	×	√	×	√	×	√	√	×	×	√
CO3	√	√	√	√	×	×	×	√	√	√	×	√	×	×	×	√
CO4	√	√	√	√	×	√	√	√	√	√	√	×	×	√	√	√
CO5	√	√	√	√	×	√	√	√	√	√	×	×	√	√	√	√
CO6	√	√	√	√	×	√	√	√	√	√	×	×	√	×	√	√
CO7	√	√	√	√	×	√	√	√	√	√	√	×	×	√	×	×
CO8	√	√	√	√	√	√	√	√	√	√	√	√	×	√	√	√

Course Outcomes (COs)
Discipline-specific Course: Honours (H – CC)

CC 4: ECONOMIC GEOGRAPHY
(Credits: 04; Theory-03, Practical: 01)

Course Learning Outcome (CLOs):

Students will

CO 1: Revise the different approaches of Economic Geography and its scope.

CO 2: Acquire knowledge about different economic aspects like goods and services, production, exchange and consumption as well as economic man.

CO 3: Develop concepts about different economic activities like primary, secondary, tertiary, quaternary and quinary.

CO 4: Understand the theories of favourable locational approaches in special reference to Agriculture (after Von Thünen) and industry (after Weber).

CO 5: Learn in detail about different primary activities like agriculture, forestry, fishing, and mining.

CO 6: Learn in detail about different Secondary activities in special reference withclassification of manufacturing industries, special economic zones, and technology parks as well as Tertiary activities like transport, trade and services.

CO 7: Develop understanding in contemporary issues and concept about economic globalization.

CO 8: Acquire knowledge about international trade, role of WTO

CO 9: Enhance knowledge about the emergence and significance of economic blocs in special reference to BRICS

CO10: In Laboratory Course,

Students will

- Learn how to represent gender-wise work participation rate by using bar graph and its interpretation.
- Learn how to construct proportional divided circles to show state-wise variation in occupational structure and its interpretation.
- Prepare crop calendar and its interpretation.
- Develop concept of Time series analysis and its representation in Industrial production of India by moving average.

COs-POs Mapping

Course Code: CC 4

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO 15	PO 16
CO1	√	√	√	√	X	√	√	√	√	√	√	X	√	√	√	√
CO2	√	√	√	√	X	√	√	√	√	√	√	X	√	√	√	√
CO3	√	√	√	√	X	√	√	√	√	√	√	X	√	√	√	√
CO4	√	√	X	X	X	X	X	√	√	√	X	√	√	√	X	X
CO5	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO6	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO7	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
CO8	√	√	√	√	X	√	√	√	√	√	√	X	√	√	√	√
CO9	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO10	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

Course Outcomes (COs)
Skill Enhancement Course (SEC)

GEOH-SEC-01: METHODS IN GEOGRAPHY
(Credits:04)

Course Learning Outcome (CLOs):

After completion of the course, the students will have ability to:-

CO 1: Design primary survey with clear concept about sampling types and strategy on diverse research problems, prepare questionnaire and interview schedule as well as gain proper knowledge about pilot survey and its relevance.

CO 2: Data compilation into master table with special regard to computer assisted field data entry as well as data tabulation into frequency distribution tables coupled with cognizance about statistical analysis of data focusing measures of central tendency and dispersion.

CO 3: Use minor survey instruments like Brunton Compass, Distometer and Smartphone levelling applications with accurate skill and will also be able to analyze the texture of grains by using sieves following proper process.

CO 4: Collect skill to prepare maps and extract flooded areas from satellite images and digital elevation models.

CO 5: Secure comprehensible knowledge with special reference to methods of preparing maps about areal and linear extents of river bank and coastline shift from Survey of India1:50,000topographicalmap.

CO 6: Accumulate sufficient knowledge regarding important methods in Human Geography like,

i) Dominant and Distinctive functions to analyze functional structure,

ii) Ternary diagram to understand occupational patterns,

iii) Preparation of Accessibility map to study the attainability scenario,

iv) Preparation of Flow charts to define transportation situation as related with accessibility status.

COs-POs Mapping

Course Code: SEC 1

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO 15	PO 16
CO1	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO2	√	√	√	√	√	√	√	√	√	√	√	X	X	√	√	X
CO3	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	√
CO4	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	√
CO5	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
CO6	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	X

Course Outcomes (COs)
Skill Enhancement Course (SECB.Sc Major))

GEOH-SEC: ARTIFICIAL INTELLIGENCE
(Credits:04, Theory: 04)

Course Learning Outcome (CLOs):

Students will be able to

CO 1: Define and explain the fundamental concepts of **Artificial Intelligence (AI)** as well as can differentiate AI from human intelligence.

CO 2: Understand the typology of Machine Learning like supervised, unsupervised and reinforcement learning as well as deep learning and neutral network.

CO 3: Learn about Natural language processing (NPL) and computer version.

CO 4: Identify real-world applications of AI in various fields like in healthcare, finance, transportation, customer services and chatbots, education.

CO 5: Analyze the

i) Ethical implication like bias and fairness in AI system,
ii) Social implications of AI in privacy and data protection concerns
iii) And Economic implications of AI on employment and the workforce which can again enhance social inequality.

CO 6: Recognize the potential of AI by implementing and monitoring ethical guidelines and responsible AI practices.

CO 7: Understand the potential of AI to drive innovation and transformation in different domains like generative models and artistic applications.

COs-POs Mapping

Course Code: SEC: Artificial Intelligence

PO/ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO 15	PO16
CO1	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
CO2	√	√	√	√	√	√	√	√	√	√	√	X	X	√	√	X
CO3	√	√	√	√	X	√	√	√	√	√	√	X	X	√	√	X
CO4	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
CO5	√	√	√	√	X	√	√	√	√	√	√	X	X	√	√	√
CO6	√	√	√	√	√	√	√	√	√	√	√	X	X	√	√	X
CO7	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	X

Course Outcomes (COs)
Skill Enhancement Course (SEC B.A Major))

GEOH-SEC: DIGITAL EMPOWERMENT
(Credits:04, Theory: 04)

Course Learning Outcome (CLOs):

After going through this course, the students will secure knowledge about-

CO 1: Basic concept of Digital Literacy and Digital Empowerment.

CO 2: Enhancement of online communication and collaboration skills.

CO 3: Promoting digital citizenship and responsible online behaviour.

CO 4: Ethical considerations in the use of digital technologies.

CO 5: Gaining awareness of digital security risks and implementation of best practices.

CO 6: Skills to communicate and collaborate in cyberspace using social platforms, teaching – learning tools etc.

CO 7: Importance of security and privacy in the digital world and significance of ethical considerations in the cyber world.

CO 8: Skill of using ICT and digital services along with relevant exploration of emerging technologies in daily life.

COs-POs Mapping

Course Code: SEC: Digital Empowerment

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO 15	PO 16
CO1	×	√	√	√	√	√	√	√	√	√	√	×	×	√	×	√
CO2	×	√	√	√	√	√	√	√	√	√	√	×	×	√	√	×
CO3	×	√	√	√	√	√	√	√	√	√	√	×	×	√	√	×
CO4	×	√	×	×	×	×	√	√	√	×	×	×	×	√	√	×
CO5	×	√	√	√	√	√	√	√	√	√	√	×	×	√	√	×
CO6	×	√	√	√	√	√	√	√	√	√	√	×	×	√	√	×
CO7	×	√	√	√	√	√	√	√	√	√	√	×	×	√	√	×
CO8	×	√	√	√	√	√	√	√	√	√	√	×	×	√	√	×

Course Outcomes (COs)
Skill Enhancement Course

GEOH- SEC-02: Environmental Impact Assessment and Environmental Management Planning
(Credits:04, Theory: 04)

Course Learning Outcome (CLOs):

Students will

CO 1: Learn definition and scope of Environmental Impact Assessment (EIA) and Environmental Management Planning (EMP).

CO 2: Acquire knowledge about policy framework for environmental management and legal framework in special reference to Environmental Protection Act and its implementation to protect Air, Water and Forest.

CO 3: Know about the structure of governance and its implementation strategies.

CO 4: Acquire knowledge about concepts and objectives of Environmental Appraisal.

CO 5: Know how to conduct EIA in stages by using Environmental Information System (EIS).

CO 6: Know how to prepare inventory and matrices of EIA.

CO 7: Understand the methodology for EIA like Impact assessment, risk assessment and cost - benefit analysis.

CO 8: Acquire knowledge about the stakeholder's participation in collaboration among local bodies, citizens, relevant experts.

CO 9: Learn the methods of prediction scenarios, how to mitigate it and assessing its alternatives.

CO 10: Develop their cognition about reporting Environmental Impact.

CO 11: Learn how to monitor EI and review it as well as understand the relevance of Environmental audit and its process.

CO 12: Thoroughly learn about two case studies on EIA & EMP

i) Metro rail project and

ii) Highway project.

COs-POs Mapping

Course Code: SEC-2

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO 15	PO16
CO1	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO2	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO3	√	√	√	√	X	√	√	√	√	√	√	X	√	√	X	√
CO4	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO5	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO6	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	X
CO7	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	X
CO8	√	√	√	√	X	√	**X**	√	√	√	√	√	√	√	√	√
CO9	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO10	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO11	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO12	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

Course Outcomes (COs)
Skill Enhancement Course

GEO-H-IDC-01: Geomatics and Spatial Analysis

(Credits: 03; Theory-02, Practical: 1)

Course Learning Outcome (CLOs):

This course will enable the student to:-

CO 1: Understand the basic concepts of Cartography, Surveying, Remote Sensing (RS), Geographical Information System (GIS) and Global Navigation Satellite System (GNSS) with their diverse applications in geographical studies.

CO 2: Study the definition, concept, components, classification and application of Scales, Maps, and Projections with special emphasis on properties and uses of simple conical projection and Universal Transverse Mercator (UTM).

CO 3: Learn about the different types of Bearing and the concept of geoid and spheroid withspecialreferencetoWGS-84.

CO 4: Procure the basic concepts of three survey instruments, their features and uses: Dumpy level, Theodolite and lastly, Total Station which is the most updated survey instrument.

CO 5: Obtain fundamental concept about Global Navigation Satellite System (GNSS).

CO 6: Discuss about the definition and principles of Remote Sensing which includes mainly the satellites and sensorswithspecialreferencetospacemissionsundertakenbyIndianSpace Research Organization (IRS) and National Aeronautics and Space Administration in U.S.A(Landsat missions).

CO 7: Develop the skill to understand and interpret the standard false colour composition of satellite images (FCC).

CO 8: Acquire basic knowledge about the principles and significance of supervised image classification.

CO 9: Differentiate between various GIS data structures like spatial and non-spatial, raster and vector with emphasis on metadata.

CO 10: Achieve true knowledge about the basic principles of preparing an attribute table, data manipulation, query operation and overlay analysis in GIS.

CO 11: In laboratory course they can apply specific techniques of cartograms like:-

i) Construction of simple conical projection with one standard parallel,

ii) Traverse survey and plotting UTM coordinates using selected smart phone GNSS application,

iii) Identification of landuse/landcover features from satellite imagery and preparation of inventories,

iv) Detection of change (in area & perimeter) of river bank or coastline shift from multi-dated maps and images.

COs-POs Mapping

Course Code: IDC - 01

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO 15	PO 16
CO1	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	X
CO2	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	X
CO3	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	X
CO4	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	X
CO5	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	X
CO6	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	X
CO7	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	X
CO8	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	X
CO9	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	X
CO10	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	X
CO11	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	X

GRADUATE ATTRIBUTES IN GEOGRAPHY

Some of the Graduate attributes of a graduate in Geography are: -

1. Disciplinary knowledge and skills- Acquiring sound knowledge to understand the major concepts ,theoretical principles and practical applicability in core Geography and its different sub -fields like, Geomorphology, Climatology and climate change, changing perspectives of Human Geography, Pedology, Ecology and Bio- geography, Environmental geography, Forest and wildlife management,Regional Planning, Cartography, Regional Geography, Economic Geography, Philosophy of Geography etc. with special reference to Resource Geography, Research Methodology, Sustainable Geography, Remote Sensing, GIS & GNSS, Hazard management and other related fields of study including broader interdisciplinary sub –fields like Geology, Mathematics, Physics, Chemistry, Life Sciences, Environmental Sciences, Information Technology etc.

2. Skilled Interpreter- Ability to explain complex geographical information in a clear and concise manner in writing as well as ability to express complicated concepts in a simple language for betterunderstanding of the subject.

3. Critical Observer and Analyser- Ability to observe, understand and analyse geographicalphenomena critically.

4. Attitude of Investigation- Ability to ask relevant questions relating to the geographical issues andproblems so that the problem area may be developed properly.

5. Efficient Planner- Capable of formulating proper regional plans on the basis of resource inventoryto solve the problem in question with appropriate planning, implementation and regular monitoring.

6. Team activity- Capable of working efficiently in diverse teams in classroom as well as field basedsituations.

7. Trained professional- Ability to deal with problems related with changing climatic scenario as wellas hazard and disaster management as a skilled professional.

8. Expert Field investigator- Capable of conducting the Field work, the key activity of Geography bycollecting proper primary data to understand and resolve the actual problem for the overall development of the area.

9. Digitally efficient- Capable of using computers for GIS and GNSS studies as well as developingability to utilize appropriate numerical and statistical methods related to Geography.

10. Ethical awareness- Development of demonstrating ability to think and analyse rationally with modern and scientific outlook and identify ethical issues to avoid unethical practices like falsification,committing plagiarism etc. Developing ability to adopt unbiased objectives and following truthful activities in all geographical spheres.

11. Lifelong learners- Capable of self- paced and self- directed learning for personal development aswell as to improve skill and knowledge leading to reskilling in all spheres of geography.

12. National and International perspective- The graduates should prepare themselves during their mostformative years for their appropriate role to contribute towards the national development by reducing regional disparities as well as to highlight our national priorities internationally pertaining to theirfield of interest and future proficiency.

13. Nature is the Laboratory of Geography- Ability to relate with the nature as well as with the environment appropriately for the essential issue of maintaining nature- human co-existence followingthe measures of Sustainable development oriented towards nurturing the balance of ecology and bio sphere.

14. Maintenance of sustainability- Ability to apply the measures of sustainability in all spheres of lifewith genuine dedication.

PROGRAM LEARNING OUTCOMES (POs) IN B.SC. (HONOURS) GEOGRAPHY (NEP)

The graduate students with the Degree of B.Sc. (Honours) in Geography should be able to:-

1. Acquire a fundamental / structured or cogent understanding of the academic field of Geography, itsvarious learning fields and applications in basic Geography like Geotectonics, Climatology, Pedology,Regional Geography, Human Geography, Bio- Geography, Economic Geography, Environmental Geography, Cartography etc. and its linkages with related disciplinary areas / subjects like Geology, Mathematics, Physics, Chemistry, Life Sciences, Environmental Sciences, Information Technology etc.

2. Gather procedural knowledge which creates various types of professionals related to the disciplinary field of Geography, including professionals engaged in research and development,teaching and government / public services.

3. Obtain skills in fields related to one's specialization area within the disciplinary / subject territoryof Geography and most recent as well as emerging developments in the ever-changing field of Geography.

4. Demonstrate the coherent and systematic knowledge in the discipline of geography to deal withcurrent issues, hazard and disaster problems and their solution.

5. Display an ability to read and understand maps and topographic sheets to look at the variousaspects on the space.

6. Cultivate ability to evaluate critically the wider chain of network of spatial aspects from global tolocal level on various time scales as well.

7. Recognize the skill development in Geographical studies program as part of career avenues invarious fields like teaching, research and administration.

8. Understand the relevance of geographical knowledge to everyday life focusing changing climaticscenario as well as ecosystem structure and potential.

9. Get the ability to communicate geographic information utilizing both lecture and practicalexercises.

10. Inculcate the ability to evaluate geographical problems effectively.

11. Exhibit the skill in using geographical research tools including spatial statistics, cartography,remote sensing, GIS, IRNSS and GI Science.

12. Identify and explain the physical and cultural characteristics globally and processes at variedspatio-temporal contexts.

13. Understand human-environment and nature-society interactions as well as various globalenvironmental challenges.

14. Analyse geographic information by using geo-spatial technologies.

15. Respond towards the global and national challenges and initiatives.

16. Based on the field knowledge and advanced technologies, the students should be able to understand the on-going geographical problems in different regions and levels with appropriatepragmatic solutions.

COURSE LEARNING

OUTCOMES (CLO)

COURSE LEARNING OUTCOMES(CLO)
FOR CCF
FOR CORE COURSES (CC)
GEOG-H-CC 05- GEOMORPHOLOGY
(CREDITS-4, THEORY-3, PRACTICAL-1)

Course Learning Outcomes (Cos): -

The students will acquire knowledge about-

1) Concept of time and space in Geomorphology with special reference to Schumm and Lichty's model as well as clear notion about landform ordering focussing Ga scale of Tricart and Haggett.
2) Basic concept about degradational processes with classification of mass wasting and resultant landforms.
3) Clear idea about processes of entrainment, transportation and deposition by different geomorphic agents.
4) Development of river network and landforms on uniclinal, folded, faulted structure as well as on Granites, Basalts, and Lime stones.
5) Detailed discussion about following geomorphic processes and landforms –
   a) Costal
   b) Glacial and glacio-fluvial
   c) Aeolian and fluvio-aeolian.
6) Clear concept about the models on Landscape evolution focusing the views of Davis, Penck, King and Hack along with significance of systems approach.
7) Fundamental concept about anthropogenic role in landform development.
8) In the laboratory course students learn-
   i) Extraction and interpretation of geomorphic features from Survey of India 1:50000 topographical map of plateau region as well as relevant morphometric analysis of the concerned map.
   ii) Construction of hypsometric curve and derivation of hypsometric integer of a drainage basin of plateau region.

COS- POS MAPPING
COURSE CODE: GEOG-H-CC 05- GEOMORPHOLOGY

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PO 13	PO 14	PO 15	PO 16
CO 1	√	√	√	√	√	√	√	√	X	√	√	√	√	√	√	√
CO 2	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
CO 3	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
CO 4	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
CO 5	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
CO 6	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
CO 7	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
CO 8	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

CORE COURSES (CC-06):

(NEP)

CLIMATOLOGY

(Credits: 04; Theory-03,

Practical:01)Course Learning

Outcome (COs):

The students will acquire knowledge about-

CO 1: Understand the elements of weather and climate and its controlling factors like horizontal and vertical distribution of temperature, types, causes and consequences of inversion of temperature.

CO 2: Learn about process and forms of condensation; mechanism and forms of precipitation as well as Bergeron-Findeisen theory, Collision, and coalescence theory.

CO 3: Learn about the typology, origin, characteristics, and modification of air mass as well as circulation of the atmospheric winds like Planetary winds, jet streams index cycle.

CO 4: Understand the frontogenesis and frontolyzes and atmospheric disturbance like tropical and mid-latitudinal cyclones and thunderstorms.

CO 5: Develop the concept on mechanism of monsoon with special reference to India.

CO 6: Understand the causes and consequences of Climate change in special reference to Greenhouse effect as well as formation, depletion, and significance of the Ozone layer.

CO 7: Comprehend the climatic classification developed by i) Thornthwaite and ii) Oliver.

CO 8: In Laboratory course, the students learn to

i) measure mean daily temperature, air pressure, relative humidity and rainfall with the help of relevant instruments like Six's maximum and minimum thermometer, Barometer, Hygrometer and Rain Gauge respectively.
ii) Interpret Pre-monsoon, Monsoon and Post-monsoon daily weather map of India.
iii) Construction and interpretation of monthly rainfall dispersion diagram (quartile method) as well as water budget.
iv) Construct and interpret hythergraph and climograph (after Taylor)

COS-POS MAPPING
COURSE CODE: CC-06

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	P15	P16
CO1	√	√	√	√	X	√	√	√	X	√	√	√	√	X	√	√
CO2	√	√	√	√	X	√	√	√	X	√	√	√	√	X	√	√
CO3	√	√	√	√	X	√	√	√	√	√	√	√	√	X	√	√
CO4	√	√	√	√	X	√	√	√	X	√	√	√	√	X	√	√
CO5	√	√	√	√	X	√	√	√	√	√	√	√	√	X	√	√
CO6	√	√	√	√	X	√	√	√	X	√	√	√	√	X	√	√
CO7	√	√	√	√	X	√	√	√	√	√	√	√	√	X	√	√
CO8	√	√	√	√	√	X	√	√	X	√	√	√	√	√	√	√

COURSE OUTCOMES (COS)
DISCIPLINE-SPECIFIC COURSE: HONOURS (H – CC)
CC7: SOCIAL GEOGRAPHY
(CREDITS: 04; THEORY-03, PRACTICAL: 01)

Course Learning Outcome (CLOs):

The students will acquire knowledge about-

CO 1: the emergence, evolution, and thematic content of social geography as a discipline.

CO 2: caste, class, urbanisation, industrialisation, and migration impact the spatial distribution of communities and critically analyse them.

CO 3: how social diversity (e.g., language, religion, ethnicity) contributes to the formation of socio-cultural regions.

CO 4: the ability to use indicators like education and health to evaluate development and disparities in different regions.

CO 5: developing insight into contemporary problems such as gender inequality, crime, poverty, marginalization, and deprivation.

CO 6: the existing welfare schemes for the vulnerable section of the society (women, children etc) along with the idea of social segregation setting the example of global north and south.

CO 7: In the Laboratory course, students learn first-hand-

i) instructions to construct and interpret HDI, GDI, and cartograms using real-world data and UNDP methodologies.

ii) skills to prepare questionnaires and analyze socio-economic data related to access to basic amenities in slum or rural areas.

PO-CO Mapping
Course Code: CC 7

POs \ COs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14	PO-15	PO-16
CO 1	√	√	×	×	×	×	×	√	×	√	×	×	√	×	×	×
CO 2	√	×	√	√	×	√	×	√	×	×	×	√	√	×	×	×
CO 3	√	×	√	√	×	√	×	√	×	×	×	√	√	×	×	×
CO 4	√	√	√	√	×	√	×	√	×	√	×	×	×	×	√	×
CO 5	√	√	√	√	×	√	×	√	×	√	×	×	×	×	√	×
CO 6	√	×	√	√	√	√	×	√	×	√	×	√	×	×	√	×
CO 7	√	√	√	×	√	×	√	√	×	√	×	×	×	×	×	×

COURSE LEARNING OUTCOMES (CLO)

CORE COURSES (CC-08): (NEP)

CARTOGRAPHIC TECHNIQUES

(Credits: 04; Theory-03, Practical: 01)

This course will enable the students to develop the knowledge on:

- Basic two types of Coordinate system like Polar and Rectangular as well as angular and linear systems of measurement system to comprehend locational and spatial aspect on the earth surface.
- Basic concepts of bearing: Magnetic and True as well as Whole Circle and Reduced Bearing.
- Concepts of Geoid and Spheroid with special reference to Everest and WGS-84.
- Components and classification of maps and their uses.
- Classification, properties, and uses of different map projections with special reference to Polar Zenithal Stereographic Projection, Simple Conical Projection with one Standard parallel, Cylindrical Equal area projection, Bonne' s Projection and Mercator's Projection as well as UTM system.
- Application of different techniques of thematic mapping and their significance for regional development and decision making.
- In laboratory course the students learn to
    - i) Construction of different types of scales and their applications.
    - ii) Constructions of different map projections and their properties. Accordingly, they learn in first-hand the application of different types of map projections.
    - iii) Different techniques of thematic mapping and its application which can be applied for the purpose of regional development.

COs-POs Mapping
Course Code:CC-08

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	P15	P16
CO1	√	√	√	√	√	√	√	√	X	√	√	√	X	√	√	√
CO2	√	√	√	√	√	√	√	√	X	√	√	√	X	√	√	√
CO3	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	√
CO4	√	√	√	√	√	√	√	√	X	√	√	√	X	√	√	√
CO5	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	√
CO6	√	√	√	√	√	√	√	√	X	√	√	√	X	√	√	√
CO7	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	√

Course Learning Outcomes (CLO)

Core Courses (CC-09): (NEP)

HYDROLOGY and OCEANOGRAPHY

(Credits: 04; Theory-03, Practical: 01)

The students will acquire knowledge about-

CO1: The physical and biological role on Global Hydrological cycle and its system approach.

CO2: Controlling factors of different hydrological phenomenon like run-off and ground water recharge and discharge and their circulation.

CO3: Principles of water harvesting and watershed management focusing on drainage basin as a hydrological unit.

CO 4: Physical and chemical properties of ocean water with special reference to the distribution and determinants of temperature and salinity.

CO 5: Ocean circulation, water mass, T-S diagram and wave and tides.

CO 6: Types and causes of sea level changes and its implications.

CO 7: Classification of marine resource and their sustainable utilization and issues related to pollution of ocean water.

CO 8: In laboratory course they can acquire knowledge on-

i) Construction and interpretation of rating curve, hydrographs and unit hydrographs,
ii) Construction and interpretation of monthly rainfall dispersion diagram, climatic water budget and Egrograph,
iii) Construction of Ombrothermic graph and Hyetograph,
iv) Construction of Theissen polygon from precipitation data.

COS-POS MAPPING
COURSE CODE: CC-09

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	P15	P16
CO1	√	√	√	√	X	√	√	√	X	√	√	√	√	X	√	√
CO2	√	√	√	√	X	√	√	√	X	√	√	√	√	X	√	√
CO3	√	√	√	√	X	√	√	√	X	√	√	√	√	X	√	√
CO4	√	√	√	√	X	√	√	√	X	√	√	√	√	X	√	√
CO5	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO6	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO7	√	√	√	√	√	√	√	√	X	√	√	√	√	√	√	√
CO8	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

COURSE LEARNING OUTCOMES(CLO)
FOR CCF
FOR CORE COURSES (CC)
GEOG-H-CC 10- CULTURAL AND SETTLEMENT GEOGRAPHY
(CREDITS-6, THEORY-3 , PRACTICAL-3)

Course Learning Outcomes (Cos): -

After completion of the course, the students will have ability to: -

1) Gather sufficient knowledge about definition, scope and content of cultural geography.
2) Basic concept about components and structure of culture.
3) Secure clear concept about the following elements-
   a) Cultural hearths and realms,
   b) Cultural diffusion,
   c) Diffusion of major world religions and languages,
   d) Cultural segregation, diversity and integration
4) Obtain true concept about evolution and morphology of rural settlements.
5) Procure comprehensible cognizance regarding rural house type of India highlighting the role of social segregation.
6) Achieve true perception about following dimensions of urban settlements –
   a) Evolution
   b) Metropolitan concept
   c) Concept of megalopolis
   d) Concept of conurbation and agglomeration
7) Access actual concept of urban morphology with special reference to the models of Burgess, Hoyt and Harris & Ullman.
8) In laboratory course, students will learn –
   i) The skill of mapping language distribution of India
   ii) The required skill of representing cartograms showing roof materials used in rural houses in any state of India in the Census years 1991, 2002 and 2011.
   iii) Accessibility mapping using detour index from Survey of India 1:50000 topographical maps.
   iv) Nearest neighbor analysis from Survey of India 1:50000 topographical maps of plain region.

Cos- POs Mapping

Course code: GEOG-H-CC 10- CULTURAL AND SETTLEMENT GEOGRAPHY

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PO 13	PO 14	PO 15	PO 16
CO 1	√	√	√	√	√	√	√	√	X	√	√	X	√	X	√	√
CO 2	√	√	√	√	X	√	√	√	X	√	√	√	√	X	X	√
CO 3	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO 4	√	√	√	√	√	√	√	√	√	√	√	√	√	X	X	√
CO 5	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
CO 6	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
CO 7	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
CO 8	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

CC 14: HAZARD MANAGEMENT
(Credits :06, Theory-04, Practical-02)

Course learning outcome (COs):

This course will enable the student to:

CO 1: Understand processes and impact of disaster.

CO 2: Understand both the natural and man-made disaster and human negligence in context of environment.

CO 3: Gain a perspective of disasters and various dimensions of disaster management.

CO 4: Have comprehensive knowledge of various natural and manmade disasters in India.

CO 5: Examine the response and mitigation measures of disasters.

CO 6: Acquire knowledge on concepts, types, classification method, causes, impacts, distribution and mapping of disasters in India.

CO 7: Understand the man-made disasters and human negligence in the context of environment.

CO 8: Secure knowledge about approaches to hazard study focussing risk perception, vulnerability assessment and hazard paradigms.

CO 9: Bring awareness about the preparedness, mitigation and processes of disaster risk reduction.

CO 10: Appreciate the responses and mitigation measures of disasters in India with special reference to resilience and capacity building.

CO 11: Procure the techniques of hazard mapping by data and geospatial techniques.

CO 12: Acquire in depth knowledge for different hazard specific study focussing West Bengal and India like-

a) Earthquake,
b) Landslide,
c) Land subsidence,
d) Tropical cyclone,
e) Fire,
f) Biohazard.

CO 13: In the laboratory course the students will prepare a group project report on any hazard from West Bengal (as enlisted in the syllabus) incorporating a preparedness plan.

COS -POS MAPPING
COURSE CODE: CC11

Pos/COs	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	√	√	√	√	√	√	√	√	√	√
CO 2	√	×	√	√	√	√	√	√	√	√
CO 3	√	√	√	√	√	√	√	√	√	√
CO 4	√	√	√	√	√	√	√	√	√	√
CO 5	√	√	×	√	√	√	√	√	√	√
CO 6	√	×	×	√	√	√	√	√	√	√
CO 7	√	√	√	√	√	√	×	√	√	√
CO 8	√	×	√	√	√	√	√	√	√	√
CO 9	√	√	×	√	√	√	√	×	√	√
CO 10	√	√	×	√	√	√	√	√	√	√
CO 11	√	×	√	√	√	√	√	√	√	√
CO 12	√	×	√	√	√	√	√	√	√	√
CO 13	√	×	√	×	√	√	√	√	√	√

Course Learning Outcomes (CLO)

Core Courses (CC-12): (NEP)

Cartograms, Thematic Mapping and Surveying

(Credits: 04; Theory-03, Practical: 01)

Course Learning Outcome (COs):

At the end of this course the students are expected to acquire the knowledge about fundamental mapping techniques and its applications like:

CO 1 Choosing of natural and log scale to represent different types of data and its interpretation.

CO 2 Theoretical knowledge of geodetic and plane surveying by using Prismatic Compass, Dumpy level, Theodolite, Abney level and Total Station.

CO3 How to read the different types of Geological maps like uniclinal, folded structures and its interpretation.

CO4 Preparation and interpretation of land use and land cover maps,

CO 5 Preparation of Socio-economic maps and their interpretation.

CO 6 Gather information about the Principal National agencies like NATMO, GSI, NBSSLUP, NHO and NRSC.

CO 7 In field survey and laboratory courses they learn in first hand:

i) Traverse survey by Prismatic compass.
ii) Profile survey by using Dumpy level.
iii) Height determination in triangulation method by using Theodolite.
iv) Cross-section profile drawing in uniclinal and folded structure in Geological maps.

COS-POS MAPPING
COURSE CODE: CC12

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	P15	P16
CO1	√	√	√	√	√	√	√	√	X	√	√	√	X	√	√	√
CO2	√	√	√	√	√	√	√	√	X	√	√	√	X	√	√	√
CO3	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	√
CO4	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	√
CO5	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	√
CO6	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	√
CO7	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	√

COURSE LEARNING OUTCOMES (CLO)CORE COURSES (CC-13): (NEP)

SOIL AND BIOGEOGRAPHY

(Credits: 04; Theory-03, Practical: 01)

Course learning outcome (COs):

After completion of the course, the students will have ability to:

CO 1: Acquire clear concept about factors of soil formation along with Physical as well as Chemical properties of soil.

CO 2: Understand the origin and characteristics of soil profile.

CO 3: Articulate knowledge of soil erosion and degradation with special reference to anthropogenic activities.

CO 4: Learn the basic concept and principles of soil and land capability classification.

CO 5: Understand the concept of Ecosystem, Ecology, Bio-sphere, Biome, Community and Ecotone along with classification of World Biomes.

CO 6: Obtain concept about trophic structure, Food chain, Food Web as well as Energy flow in the Ecosystem.

CO 7: Gather knowledge regarding Bio-geo chemical cycles.

CO 8: Articulate knowledge of Bio diversity

CO 9: Procure conscious knowledge about Deforestation.

CO 10: In the laboratory course the students will get an opportunity to determine

A) Soil reaction (pH),

B) Soil salinity,

C) Textural classification of soil.

D) Access statistical methods to determine Plant species diversity,

E) Time series analysis of Biodiversity data.

COS-POS MAPPING
COURSE CODE:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	P15	P16
CO1	√	√	√	√	X	√	√	√	X	√	√	√	√	√	√	√
CO2	√	√	√	√	X	√	√	√	X	√	√	√	√	√	√	√
CO3	√	√	√	√	X	√	√	√	X	√	√	√	√	√	√	√
CO4	√	√	√	√	X	√	√	√	X	√	√	√	√	√	√	√
CO5	√	√	√	√	X	√	√	√	X	√	√	√	√	√	√	√
CO6	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO7	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO8	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO9	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO10	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√

COURSE LEARNING OUTCOMES (CLO)CORE COURSES (CC-14): (NEP)

INDIA AND WEST BENGAL

(Credits: 04; Theory-03, Practical: 01)

Course learning outcome (COs):

After completion of the course, the students will have ability to: -

CO 1: Understand the physical and climate related profile of the country.

CO2: Study the resource endowment and its spatial distribution and utilization for sustainable development.

CO 3: Synthesize and develop the idea of regional dimensions.

CO 4: Gather complete perception about population profile of the country with special reference to some tribal population.

CO 5: Obtain proper knowledge about agricultural regions coupled with the concept of Green revolution, white revolution and its consequences.

CO 6: Acquire detailed knowledge about the distribution and utilisation of mineral and power resources like iron ore, coal, petroleum and natural gas.

CO 7: Attain actual awareness about industrial development in relation to Automobile and information technology

CO 8: Secure thorough knowledge about physiographic and economic regionalization of India following R.L. Singh and P. Sengupta respectively.

CO 9: Acquire complete knowledge about the following aspects of West Bengal-

i) Physical and demographic perspectives,

ii) Various dimensions of resources,

iii)Development of SEZs and changing pattern of industrialization in West Bengal.

iv)Different aspects of Demography of West Bengal,

v)Regional issues highlighting Darjeeling Hills as physiographic region, Sundarban as an ecological region and Haldia as Industrial region.

CO 10: In the laboratory course, the students will get an opportunity to attain skills to

i) Compute and interpret the graphical representation of annual trend of manufacturing goods over any two decades from India or west Bengal

ii) Learn to compute Composite Index to compare developed and backward states of India.

iii) Change in mean centre of population of West Bengal over any three census years.

COS-POS MAPPING
COURSE CODE:CC-14

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	P15	P16
CO1	√	√	√	√	X	√	√	√	X	√	√	√	√	√	√	√
CO2	√	√	√	√	X	√	√	√	X	√	√	√	√	√	√	√
CO3	√	√	√	√	X	√	√	√	X	√	√	√	√	√	√	√
CO4	√	√	√	√	X	√	√	√	X	√	√	√	√	√	√	√
CO5	√	√	√	√	X	√	√	√	X	√	√	√	√	√	√	√
CO6	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO7	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO8	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO9	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√
CO10	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√

COURSE OUTCOMES (COS)
DISCIPLINE-SPECIFIC COURSE: HONOURS (H – CC)
CC15: REMOTE SENSING, GIS AND GNSS
(CREDITS: 04; THEORY-03, PRACTICAL: 01)

Course Learning Outcome (CLOs):

The students will acquire knowledge about-

CO1 - concepts of Remote Sensing, Geographical Information System and Global Navigation Satellite System (GNSS) and their applicability in geographical studies.

CO2 - the various successful space missions undertaken by Indian Space Research Organization in India and National Aeronautics and Space Administration in U.S.A.

CO3 - the skill to interpret the satellite imageries with the help of the interpretation keys and understanding the standard false colour composition of those images.

CO4 - various data structures to efficiently represent the imageries onto the Geographical Information System which is necessary for complex analysis in sustainable development.

CO5 - the theoretical concepts of attribute table, manipulation, query buffer and vector overlay analysis as preparations for practical part.

CO6 - manual measurements of length and area using GNSS data and its utility in geographical studies.

CO7 - Using Q-GIS software to georeference any raster image, digitize different features and administrative boundaries, attach data and create thematic maps, followed by image enhancement, supervised classification and preparing reflectance libraries of LULC features present in a satellite imagery, vector overlay analysis and lastly, graphical plotting of waypoints collected by GARMIN e-trex 10.

PO-CO MAPPING
COURSE CODE: CC 15

POs \ COs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14	PO-15	PO-16
CO 1	√	×	√	×	×	×	×	√	×	×	×	×	×	×	×	×
CO 2	√	×	√	×	×	×	×	√	×	×	×	×	×	√	×	×
CO 3	√	×	√	√	√	×	√	√	×	√	×	×	√	√	×	×
CO 4	√	√	√	√	×	√	×	√	×	√	×	√	√	√	√	×
CO 5	√	√	√	√	×	√	√	√	×	√	×	√	√	×	√	×
CO 6	√	×	√	×	√	×	√	√	×	√	×	×	×	√	√	√
CO 7	√	√	√	√	√	×	√	√	×	√	×	×	×	√	×	√