KUMAUN UNIVERSITY, NAINITAL

DEPARTMENT OF GEOGRAPHY

The Department of Geography is one of the oldest Departments in the region. It has two campuses one at the DSB Campus Nainital and other one is at the SSJ Campus Almora. The Department of Geography D.S.B.Campus Almora was established by the Department of Higher Education, Government of Uttar Pradesh under the Agra University on 19th August, 1951. The Department of Geography at the SSJ Campus Almora was established in 1955 when it came into being as Degree College affiliated to the Agra University. With the establishment of Kumaun University in 1973, it became Constituent College and elevated to the status of University Campus in 1994.campus Almora.

The Department has the honour of organizing Scientific Symposium of 21st International Geography Congress [IGC] of the International Geographical Union [IGU] in 1968; and hosting the first International Summer School on Land Use Studies in association with Aligarh Muslim University in 1965. The Department is equipped with state of art Remote Sensing and Geographic Information System [GIS] Lab. The Department has been playing a very significant role in the creation and dissemination of state-of-art new knowledge in various emerging issues of global to local significance, such as the implementation of the United Nations Sustainable Development Goals [SDGs]; Climate Change Impact, Adaptation and Mitigation; Water, Health, Livelihood and Food Security; Disaster Risk Reduction; Gender Mainstreaming; Natural Resource Management, Green and Resilient Urban Growth, Institutions and Governance with a specific focus on Sustainable Mountain Development in context of the Indian Himalayan Region [IHR]. The Department is promoting wider applications of the emerging and frontier areas of science and technology, particularly Remote Sensing, Geographic Information System [GIS] and Global Positioning System [GPS] both in teaching-learning and research.

The Department of Geography, SSJ Camus Almora was identified by the DST Government of India for Setting-up Centre of Excellence for Natural Resources Database Management in Uttarakhand (COE NRDMS) in 2009. The Objective of this Centre are to conduct advanced research and Master Degree Programme on Geographic Information Science (for more details visit: www.coenrdmsalmora.org). Based on the laboratory infrastructure developed COE NRDMS, the Department started two years Master's Degree Course, viz, MSc in Remote Sensing and GIS having 30 seats. This is a hi-tech and highly job-oriented course having 80% job placement.

Based on its academic performance, this department was identified by the Department of Science and Technology, Government of India for the award under its FIST programme in 2005. Through this FIST award, GIS and RS laboratory was established in the department. The laboratory is well equipped with hi-tech latest GIS/RS software and hardware. Besides specialization in Physical and Human Geography, the department with the help of FIST aided GIS/RS laboratory, two latest papers, viz., GIS & GPS Applications and Remote Sensing Applications have been started at PG level since the academic year 2010-11. The faculty members of the departments have participated in number of national and international conferences, seminars and workshop within the country and abroad, and have published more that 200 research papers, written 10 books, organized more than two dozen workshops to

disseminate newly emerging technologies of Geographic Information Science, known as GI Science. Besides Fulbright Fellow, DST Young Scientist Fellow, CSIR Research Associate ship, the department has produced Scientists, Professors, Readers, Lecturers and Administrative Officers who have worked/working in different parts of our country.

VISION OF THE DEPARTMENT

Geography as a subject is offered at the undergraduate and postgraduate level to Arts, Science, students so as to enhance and apply their knowledge and skills in multidisciplinary areas. Upon graduation, the students will be able to understand the impact of information and Knowledge change in the society. Also, they will be able to appreciate the current usage of in various fields of importance like agriculture, business, and industry. Further, the students will be exposed to the current trends in understand basic physical and Human systems that affect everyday life (e.g. earth-sun relationships, water cycles, wind and ocean currents Population, settlement, Transport).

MISSION OF THE DEPARTMENT

- Prepare students to present themselves effectively in a dynamic knowledge and Technological, era.
- Promote the understanding and application of the spatial organization of society and see Order in what often appears to be random scattering of people and places.
- Enable to have sound knowledge of the theory and practical behind the core subjects
- Facilitate the development and application of problem-solving skills in students.
- After all students socially responsible citizens.

The programme consists of Six Semesters, each with Two Theory Papers and One Practical Course. In Semester-III the Students have to participate in compulsory Survey Camp organized normally outside the University Campus. The theory and practical programmes have been designed in such a way that they help students in attaining the holistic knowledge of the subject and in the overall development the personality that includes physical, intellectual, moral, professional and aesthetic dimensions of human development.

The main objectives of the programme are:

- To acquaint students with the various dimensions of geographical and interdisciplinary knowledge and field realities.
- To develop students' comprehensive understanding of the major concepts, thoughts, and ideas of both conventional and modern streams and branches of Geography and its field applications.
- To expose students to emerging areas of science and technology, such as applications of Remote Sensing [RS], Geographical Information System [GIS], and Global Positioning System [GPS], and help them in building professional competence with in-depth knowledge.
- To sharpen students' critical, creative, liberal, innovative, and scientific thinking in the subject.
- To motivate students in involving in self-reflexivity and lifelong learning.
- To inspire students in integrating different aspects of physical, practical, aesthetic, moral and intellectual dimensions of educations to develop a holistic personality of each student.

- To help the student in becoming responsible citizen for the nation and a sensitive and creative human resource for the society strong value base and ethics.
- To familiarize students with environmental contexts, inclusivity and sustainable development, technology, discussion, professional studies and research.

PROGRAMME OUTCOMES [POs]:

PO1: **Enrichment of Intellectual Ability**: The programme develops students' comprehensive understanding of the various dimensions of geographical and interdisciplinary knowledge and field realities. It acquaints students with the major concepts, thoughts, and ideas of both conventional and modern branches of Geography and interdisciplinary streams of knowledge, and their field applications. It also enriches their analytical, critical, creative faculties.

PO2: **Inculcation of Planning Abilities**: The programme develops effective planning abilities including time management, resource management, delegation skills and organizational skills of students which may develop their leadership qualities.

PO3: **Appropriate Application of Knowledge Methodological Tools**: The programme makes a sincere attempt of familiarizing students with critical knowledge and methodological tools which help them in making applications of new ideas, thoughts, and concepts in the real world.

PO4: **Formation of Professional Identity:** The programme intends to develop professional skills among students that would help them in building their professional identity as well becoming professional leadership from local to global level.

PO5: **Developing Communicative Competence**: The programme intends to develop grammatical and communicative competence among students and make them aware of the nature, form and function of Hindi and English languages. The programme therefore nurtures listening, writing, speaking and reading skills of students which allow them to communicate effectively and improves their access to new knowledge.

PO6: **The knowledge, Knower and Society**: The programme disseminates the fact the conception and distribution of knowledge in any form seems meaningless unless it is seen functioning in a society which is defined by the existence of human beings. Thus, the programme intends to integrate knowledge with the human society and nature. This will help in Creating a Sustainable, Flexible, Enduring and Peaceful Global Society.

PO7: **Environment and Sustainability**: The unprecedented growth and development have disrupted the nature as well as natural resources. In view of this, the programme intends to prepare students to respond to some major issues of environmental conservation and sustainable development.

PO8: **Lifelong Learning**: The programme would motivate and inspire the students to strive on the path of lifelong learning as creation and acquaintance of emerging knowledge and ideas.

PROGRAMME SPECIFIC OUTCOMES [PSOs]

PSO1. Understand the complexities of man and nature relationships.

PSO2. Integration of Geography with various social and natural sciences.
PSO3. Developing geography as an important professional discipline
PSO4. Identifying new areas for the application of Space and Geo-spatial Sciences.
PSO5. Develop capacity to find solutions to new and emerging risks and challenges that the global society is facing currently.

UNDER GRADUATE (B. A/B.Sc)
SEMESTER COURSE FRAMEWORK

SEMESTER-I (July 2019 onwards)
Geography (B.A/B. Sc)
PAPER I -PHYSICAL GEOGRAPHY (GUGP-101)

Max. Marks: 50
Lecture-04
Term End Exam: 35, Internal Assessment: 15
Learning Outcomes: On completion of the course, the student will be able to:

- This course will familiarize students to the basic understanding of the constituents of Information Technology.
- The intention is to lay the foundation for the core subjects.
- To polish their practical knowledge in office automation tool.
- Describe, Meaning, Scope and Branches of Physical Geography, Explain the Origin of the earth, Interior of the earth, Rocks
- Interpret Origin of continents and ocean basins and related theories, and describe Mountains, Plateau and Plains, Gradational processes, Weathering and Erosion.
- Analyze Composition and structure of atmosphere, Isolation, Vertical and Horizontal Distribution of atmospheric temperature, Pressure and pressure belts, Winds: Planetary, Periodic and Local.
- Describe Ocean bottom topography, Ocean deposits, Salinity, Temperature, Ocean currents, Tides and Coral reefs.

PAPER II- GEOGRAPHY OF ASIA (Excluding India) (GUGP-102)

Max. Marks: 50
Lecture-04
Term End Exam: 35, Internal Assessment: 15
Learning Outcomes: On completion of the course, the student will be able to:

- Describe Structure and relief, Drainage, Climate, Natural vegetation, Soils, Natural regions of Asia
- Analyze Population distribution, Agriculture and agriculture regions, Principal minerals.
- Classify Industries and industrial regions, Transport, Major cities, Sources of power.
- Describe Regions and countries: Japan, China, Pakistan, Indonesia, Iran and Israel.

PAPER III- PRACTICAL (Basic Cartographic) (GUGP-P-103)
Max. Marks: 50

Lecture-06 Practical
Practical: Lab Work- 30, Survey Camp -NA, Viva Voce-10, Record File- 10

Learning Outcomes: On completion of the course, the student will be able to:

- Draw different types of Scales
- Enlarge, reduce and combine different types of maps
- Describe concept, nature and scope of cartography, Globe and maps, Essentials of maps, History of map making, Types and uses of maps, Elements of map reading
- Learn and practice Cartographic representation of relief: Hachures, Contours, Form-line, Spot height, Bench mark, Trig point, Layer tint; Interpolation of contours

SEMESTER-II

PAPER I- GEOMORPHOLOGY (GUGP-201)

Max. Marks: 50
Lecture-04
Term End Exam: 35, Internal Assessment: 15
Learning Outcomes: On completion of the course, the student will be able to:

- Describe Nature and scope of Geomorphology, Dominant contemporary methodologies, The role and nature of time in Geomorphology, Space in Geomorphology
- Describe Models of Landscape Evolution: Davis, Penck, King and A time-independent model of Heck, Deterministic modelling of process-response.
- Analyze Isostasy, Seismicity, Vulcanicity, Tectonic and neo-tectonic landforms
- Describe Mass wasting and associated landforms, Landforms associated with geomorphic agents: surface water, underground water, glaciers, sea waves and winds

PAPER II- GEOGRAPHY OF INDIA (GUGP-202)

- **Max. Marks: 50**
- **Lecture-04**
- **Term End Exam: 35, Internal Assessment: 15**
- **Learning Outcomes: On completion of the course, the student will be able**
- **to:**
- Describe Physical features, Geologic structure, Drainage system, Climate, Natural vegetation, Soils, Natural regions
- Map Agriculture, Crops, Agriculture production, Agriculture regions, Irrigation, Livestock raising and Fishery
- Describe Industries Industrial regions, Minerals and Power resources
- Analyze Population density, distribution and urbanization, Transport, Multipurpose projects, Foreign trade, Regional development and planning

PAPER III- PRACTICAL – (Map Reading and Interpretation) (GUGP-P-203)

Lecture-06 Practical

Practical: Lab Work- 30, Survey Camp -NA, Viva Voce-10, Record File- 10

Learning Outcomes: On completion of the course, the student will be able to:

- Reading and classifying Indian topographical maps
- Interpretation of topographical maps and preparation of base map, index map, drainage map, orographic map
- Interpretation of topographical maps and preparation of land use map, settlement map and transport network map.
- Reading Indian weather maps: Their interpretation and preparation of weather report

SEMESTER-III (July 2019 onwards)

PAPER I- CLIMATOLOGY AND BIOGEOGRAPHY (GUGP-301)

- **Max. Marks: 50**
- **Lecture-04**
- **Term End Exam: 35, Internal Assessment: 15**
- **Learning Outcomes: On completion of the course, the student will be able**
- **to:**
- Describe Nature and scope of climatology, General circulation of the atmosphere, monsoon, Local winds, Humidity, Fog and clouds, Precipitation, Air Masses, Cyclones and anticyclones.
- Classify Climate type and describe their distribution, understand Climate change

Analyze Biosphere and bio-geography-concept, scope and components, Ecosystem concept, component and functioning, Ecology- some conceptual aspects

- Describe Distribution of plants in different ecosystem and ecological conditions, Distribution of animals in different ecosystem and ecological conditions, Environmental degradation.

PAPER II- HUMAN GEOGRAPHY (GUGP-302)

- **Max. Marks: 50**
- **Lecture-04**
- **Term End Exam: 35, Internal Assessment: 15**
- **Learning Outcomes: On completion of the course, the student will be able**
- **to:**
- Define concept of Human Geography and describe Nature and scope of Human Geography, Branches of Human Geography, Concept of man-environment relationship: Determinism, Possibilism and Neo-determinism
- Describe Evolution of man: Classification of races, Characteristics of races and their broad distribution, Human adaptation to the environment: Eskimo, Bushman, Masai, Naga and Tharus
- Map Growth and distribution of population, World pattern: Physical, economic and social factors, Major human agglomerations, Migration: Internal and international
- Describe and Classify Rural settlements: Types and pattern, Uraban settlement: Evolution and classification, Rural houses in India, Cultural regions of the world

PAPER III- PRACTICAL – THEMATIC CARTOGRAPHY (GUGP-P-303)

Lecture-06 Practical
Practical: Lab Work- 30, Survey Camp -NA, Viva Voce-10, Record File- 10
Learning Outcomes: On completion of the course, the student will be able to:

- Represent geographical data by (a) dot method (b) proportional sphere method and circle method.
- Represent climatic data: Climatograph, Climograph and Hythergraph
- Represent economic data: Agriculture land use and production and industrial data, Representation of population data: Growth, distribution and employment
- Describe Drainage ordering, Slope analysis: Wentworth's and Smith's methods

SEMESTER-IV (2016-19)
PAPER I- URBUN GEOGRAPHY (GUGP-P-401)

- **Max. Marks: 50**
- **Lecture-04**
- **Term End Exam: 35, Internal Assessment: 15**
- **Learning Outcomes: On completion of the course, the student will be able**
- **to:**
- Discuss concept of Urban Geography, Urbanism and urbanization, Trends of urbanization in the world
- Describe Towns and culture, Origin and growth of ancient towns, Modern towns and their problems, Site and situation of towns, Urban morphology: Meaning and principles
- Map Urban areas and conurbation, Rural-urban fringe, Umland
- Describe Functional classification of towns, Hierarchy of urban settlement, Town planning: Meaning and principles

PAPER II- ENVIONOMENT GEOGRAPHY (GUGP-P-402)

- **Max. Marks: 50**
- **Lecture-04**
- **Term End Exam: 35, Internal Assessment: 15**
- **Learning Outcomes: On completion of the course, the student will be able**
- **to:**
- Define Concept, Scope and evolution of Environmental Geography, Environment, Man and environmental processes
- Describe Ecosystem: Food chains, Trophic levels and Productivity, Energy flow, Circulation of element and Geo-biochemical cycle
- Describe Ecosystem services, Biomes, Bio-diversity, Soil system, Man and climate
- Interpret Environmental degradation, Environmental events and hazards, Environmental pollution, Environmental conservation and planning

PAPER II- WORLD REGIONAL GEOGRAPHY (EXCEPT ASIA) (GUGP-P-402-(b))

- **Max. Marks: 50**
- **Lecture-04**
- **Term End Exam: 35, Internal Assessment: 15**
- **Learning Outcomes: On completion of the course, the student will be able to:**

- Explain Meaning and scope of Regional Geography, Regions and regionalism, Globalization and WTO, Population-environment and sustainable development
- Describe Europe: A geographical introduction, Physical structure, Economic and demographic pattern, Regional study of United Kingdom
- Describe North America: A geographical introduction, Physical structure, Economic and demographic pattern, Regional study of United States of America
- Describe Latin America: A geographical introduction, Physical structure, Economic and demographic pattern, Regional study of Brazil

PAPER III- PRACTICAL- SURVEYING (GUGP-P-403)

Max. Marks: 50
Lecture-06 Practical
Practical: Lab Work- 30, Survey Camp -NA, Viva Voce-10, Record File- 10
Learning Outcomes: On completion of the course, the student will be able to:

- Describe Fundamentals of Surveying: Objects, Primary divisions of survey, Classification
- Perform Surveying by Prismatic Compass: Radiation, Intesection, Close Traverse, Open Traverse, and Correction of bearing
- Perform Plane Table Surveying: Radiation, Intesection, Close Traverse, Open Traverse, Resection by two point and three-point problems
- Measure height/depth by Indian Pattern Clinometer

SEMESTER-V (July 2019 onwards)

PAPER I- EVOLUTION OF GEOGRAPHICAL THOUGHTS (GUGP-501)

- **Max. Marks: 50**
- **Lecture-04**
- **Term End Exam: 35, Internal Assessment: 15**
- **Learning Outcomes: On completion of the course, the student will be able to:**

- Define and analyze concept and purpose of Geography, Science and philosophy of Geography, The basic concepts of Geography, Techniques and tools in Geography, Different branches of Geography, Aspects of study and Relationship with other Sciences
- Describe Geography in classical times: Greek and Roman Geographers, Contribution by Arab Geographers, Renaissance, Eighteenth century Geography, Classical period of Geography
- Discuss Formulation of scientific Geography, Schools of thought; German, French, Environmental determinism, possibilism, Neo-determinism and probabilism, British, American and former Soviet Union
- Describe Dualism in Geography, Dichotomism of scientific and regional Geography; Unity in Geography, Recent Trends in Geography

PAPER II- OCEANOGRAPHY (GUGP-502(a))

- **Max. Marks: 50**
- **Lecture-04**
- **Term End Exam: 35, Internal Assessment: 15**
- **Learning Outcomes: On completion of the course, the student will be able to**

- Define concept, scope and development of Oceanography, describe Distribution of water over the globe
- Map Relief of the ocean floor, Continental drift and ocean floor spreading, Composition of sea water
- Discuss Temperature in oceans, Salinity, density and water masses in oceans, Marine deposits
- Map and analyze Coral landforms, Waves and tides, Ocean currents, Marine life

PAPER II- AGRICULTURAL GEOGRAPHY (GUGP-502(b))

- **Max. Marks: 50**
- **Lecture-04**
- **Term End Exam: 35, Internal Assessment: 15**
- **Learning Outcomes: On completion of the course, the student will be able to**

- Define Nature, scope, significance and development of Agriculture Geography, describe Approaches to the study of Agricultural Geography: Commodity, systematic, regional, behavioural and recent approaches etc., Origin and dispersal of agriculture
- Describe Determinants of agricultural land use: Physical, economic, social, and technological, Land holding and land tenure systems, Agricultural efficiency Concepts, Techniques and Methods of measurements; Methods of delimiting crop combination, cropping pattern, crop concentration, intensity of cropping, degree of commercialization, diversification and specialization
- Explain Theories of Agriculture Geography, von Thunen's theory (model) of agricultural location and its recent modifications, Demarcation of Agricultural regions, Whittlesey's classification of agricultural regions; Land use and land capability
- Describe Regional pattern of productivity in India, Green Revolution, White Revolution, Food deficit and food surplus regions; World pattern of Agriculture: Subsistence agriculture, Commercial farming, Plantation agriculture, Mixed agriculture, State, collective and cooperative farming

PAPER II- POPULATION GEOGRAPHY (GUGP-502(c))

- **Max. Marks: 50**
- **Lecture-04**
- **Term End Exam: 35, Internal Assessment: 15**
- **Learning Outcomes: On completion of the course, the student will be able to**

- Describe Nature, Scope and Development of Population Geography; Source and Types of Population Data: Census, Sample Survey and Vital Registration System; Theories of Population: Classical and Modern
- Analyze World Population: Growth, Causes and Consequences; Factors Affecting Population Distribution; Demographic Transition Theory; Migration Types and Determinants
- Discuss Population Characteristics: fertility and Mortality; Age and Sex Structure; Occupational Structure; Human Resource Development and Human Development Index; Urbanization
- Map Population Resource Region of India; Population Growth and Distribution in India; Density Types; Population Problems and Population Policy in India

PAPER III- PRACTICAL- POJACTION (GUGP-P-503)

Max. Marks: 50
Lecture-06 Practical
Practical: Lab Work- 30, Survey Camp -NA, Viva Voce-10, Record File- 10
Learning Outcomes: On completion of the course, the student will be able to:

- Define and understand of map projection, Necessity of map projections, Mathematical method of drawing projection, Classification of map-projections
- Construct map projections: Simple conical projection with one and two standard parallels, Bonne's projection, Polyconic projection
- Construct Cylindrical projections: Equidistant and Equal area cylindrical projections, Mercator's, Gall's stereographic projection
- Construct Zenithal Projections: Polar zenithal equidistant, Equatorial zenithal equidistant, Polar zenithal equal-area, Equatorial zenithal equal area

SEMESTER-VI (July 2019 onwards)
PAPER I- ECONOMIC GEOGRAPHY (GUGP-601)

- **Max. Marks: 50**
- **Lecture-04**
- **Term End Exam: 35, Internal Assessment: 15**
- **Learning Outcomes: On completion of the course, the student will be able to**

- Define concept, aim and scope of economic geography, Resources, classify resources, describe conservation and concepts, Economic landscapes
- Analyze Primary production, Vegetation & forest economy, Soil resources, Mineral resources, Power resources, describe Resource conservation
- Define and map Agricultural regions, describe Principle crops, Theory of agriculture location, Theory of industrial location and industrial regions, Major industries
- Describe World transportation, International trade, patterns and trends, Major trade blocks, Globalization and developing countries

PAPER II- REGIONAL PLANNING AND DEVELOPMENT (GUGP-602(a))

- **Max. Marks: 50**
- **Lecture-04**
- **Term End Exam: 35, Internal Assessment: 15**
- **Learning Outcomes: On completion of the course, the student will be able to**

- Define Regional concept in geography; Concept, Scope and purpose of Regional planning, classify regions
- Describe Regional Planning: Planning process - sectoral, temporal and spatial dimensions; short term and long-term perspective planning, Indicators of development and their data sources, measuring levels of regional development and disparities, Planning for a region's development and multi-regional planning in a national context
- Describe Regional development strategies: Concentration vs. dispersal, Case studies for plans of developed and developing countries, Regional planning in India, Regional development in India: problems and prospects, Regional disparities: causes and consequences

- Analyze Concept of Multi-level planning: Decentralized planning; people's participation in the planning process, Concept and approaches of urban development, Landscape ecology and sustainable urban development, Application of remote sensing and Geographic Information System in Development Planning

PAPER II- POLITICAL GEOGRAPHY (GUGP-602(b))

- **Max. Marks: 50**
- **Lecture-04**
- **Term End Exam: 35, Internal Assessment: 15**
- **Learning Outcomes: On completion of the course, the student will be able to**

- Define basic concepts and scope of Political Geography; Describe Politics, Geopolitics; History and Development, Approaches of Political Geography.
- Discuss Concept of Nation, State and Nation-State; Geographic Characteristics of States: Size, Shape, Location, Cores and Capitals; Nation Building/Nationalism; Define Frontier and Boundaries; Differentiate Between Frontier and Boundaries; classify Boundaries and describe their Role and Importance in States Functioning.
- Describe Global Geo-politics; Interpret Mahan, Mackinder, Spykman and Seversky with Other Views Related to Heartland and Rimland.
- Describe Political Geography of India; Resource Development and Power Politics; Geopolitical Study of Indian Ocean; Political Geography of SAARC Region; Electoral Geography.

PAPER II- GEOGRAPHY OF TOURISM (GUGP-602(c))

- **Max. Marks: 50**
- **Lecture-04**
- **Term End Exam: 35, Internal Assessment: 15**
- **Learning Outcomes: On completion of the course, the student will be able to**

- Define fundamental Concepts, classify Tourism; Describe Resources and Infrastructure for Tourism
- Assess Physical, Economical, Social and Cultural Impacts of Tourism; Describe Concept of Ecotourism, and New Emerging Trends in Tourism
- Discuss Tourism Marketing; Describe the Tourist Product, Tourism Circuits, Tour Agencies Describe Globalization and Tourism; Tourism in India; Resource and Growth; National Tourism Policy in India; Tourism Organizations. Tourism in Uttarakhand: Policies and

PAPER III- PRACTICAL- STATISTICAL TECHNIOUES AND GEOINFORMATICS (GUGP-P-603)

Max. Marks: 50
Lecture-06 Practical
Practical: Lab Work- 30, Survey Camp -10, Viva Voce-05, Record File- 05
Learning Outcomes: On completion of the course, the student will be able to:

- Elucidate Types of data, Collection of data, Methods of sampling, Measures of central tendency
- Analyze Measures of dispersion, Correlation Coefficient

- Explain Components of remote sensing, Platform and sensors Ground truth, Elements of image interpretation; Image processing techniques: Visual and digital, Geometric and Radiometric corrections, Restoration; Enhancement and Classification: supervised and unsupervised
- Perform Geo-referencing, explain Spatial and Non-spatial data; Raster and Vector models for geographic data representation, Linkages and Matching, Principal Functions of GIS; Data Capture; Geographic Analysis; Scanning System; Data Conversion, Data Base Management System (DBMS); Geo-Relational Data Model; Topological Data Structure; Attribute Data Management; Relational Database - Concepts and Model, Digital Elevation Model (DEM)

POST GRADUATE (M. A/M.Sc)
SEMESTER COURSE FRAMEWORK

SEMESTER-I (2019 Onwards)
Code: 101 (GM P-CCM –i)
PAPER I- ADVANCED PHYSICAL GEOGRAPHY

Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- The students will be familiar with the earth's interior.
- Develop an idea about earth movements and the related topography.
- Acquire knowledge about different types of rock and their origin. Influence of the rocks on land form and topography.
- Getting familiar with the concept of hydrology
- Understanding the processes of erosion, deposition and resulting landforms.
- This course will familiarize students to the basic understanding of the constituents of Information Technology.
- The intention is to lay the foundation for the core subjects.
- To polish their practical knowledge in office automation tool.
- Describe, Meaning, Scope and Branches of Physical Geography, Explain the Origin of the earth, Interior of the earth, Rocks
- Interpret Origin of continents and ocean basins and related theories, and describe Mountains, Plateau and Plains, Gradational processes, Weathering and Erosion.
- Analyze Composition and structure of atmosphere, Isolation, Vertical and Horizontal Distribution of atmospheric temperature, Pressure and pressure belts, Winds: Planetary, Periodic and Local.
- Describe Ocean bottom topography, Ocean deposits, Salinity, Temperature, Ocean currents, Tides and Coral reefs

SEMEST ER –I
Code: 102 (GM P-CCM –ii))
PAPER II- NATURAL RESOURCE MANAGEMENT

Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- Describe ecological processes, including human impacts that influence ecosystems change, natural succession and the future sustainability of natural resources.
- Characterize natural resources and be able to quantify at least one of these resources.
- Envision desired future conditions in an area to achieve a set of natural resource-related objectives, prescribe management actions needed to achieve those objectives, and evaluate success of these actions.

- Describe how the use, management and allocation of natural resources are affected by: laws, policies, economic factors (both market and non-market), and characteristics (including demographic, cultural, ethnic, and "values" differences) of private and public resource owners and users.
- Communicate effectively, orally and in writing, with audiences of diverse backgrounds.
- Work effectively with, and within, interdisciplinary and diverse groups to resolve management problems and achieve management objectives.

SEMESTER – I
Code: 103 (GMP-CCM – iii)
PAPER III- ADVANCED GEOGRAPHY OF INDIA

Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- Identifying and explaining the Indian Geographical Environment, from global to local scales.
- Applying geographical knowledge to everyday living.
- Applying knowledge of global issues to a unique scientific problem.
- Showing an awareness and responsibility for the environment and India.
- Evaluating the impacts of human activities on natural environments special reference to India
- Students will get an introduction to the main regions of the India in terms of both their uniqueness and similarities.
- Students will be exposed to historical, economic, cultural, social and physical characteristics of India.
- Students will learn the relationships between the global, the regional and the local, particularly how places are inserted in regional and global processes.
- In addition to the ability of understanding and reading maps, students will develop cartography skills and will be able to create maps on their own.
- Students will be introduced to demographic, social and cultural attributes such as migration, social relations and cultural identity.

SEMESTER –I
Code: 104 (GMP-EC–i)
PAPER IV (a)-SOIL GEOGRAPHY

Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- Define soil and understand the importance of soil.
- Apply math, science, and technology in the field of soil resource Engineering
- They will learn some strategies of soil resource management

- Explain why plants need soil.
- Be familiar with how soil layers are formed.
- Explain moisture retention capabilities of the three major soil particles.
- List and describe functions of soil.
- Describe ways soil can be enriched

SEMESTER – I
Code: 105 (GMP-EC - ii)
PAPER IV (b)-GEOGRAPHY OF TOURISM

Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- Understand and explain how the different geographies of tourism are created, maintained, and utilized in the modern world.
- Evaluate the impacts of tourism on present and future economies, cultures, societies, and physical environments.
- Define fundamental Concepts, classify Tourism; Describe Resources and Infrastructure for Tourism
- Assess Physical, Economical, Social and Cultural Impacts of Tourism; Describe Concept of Ecotourism, and New Emerging Trends in Tourism
- Discuss Tourism Marketing; Describe the Tourist Product, Tourism Circuits, Tour Agencies
- Describe Globalization and Tourism; Tourism in India; Resource and Growth; National Tourism Policy in India; Tourism Organizations. Tourism in Uttarakhand: Policies and

SEMESTER –I
Code: 106 (GMP –EC–iii)
PAPER IV (c)-INTEGRATED MOUNTAIN DEVELOPMENT WITH SPECIAL REFERENCETO THE INDIAN HIMALAYA

Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- The epistemography of mountains as a research theme,
- The biogeography of mountain biodiversity,
- The geoecology of mountain societies,
- The case studies of water usage in orobiomes,
- The advances in ethnoecology research and mountain cultures,
- The urbanization of mountain areas and associated environmental impacts,

- The influence of globalization in socioeconomic scenarios of mountains, and
- The pathways for sustainable mountain development.

SEMESTER – I

Code: 107 (GMP - CCm –i):
DISSERTATION (MINOR)

Total Marks Allotted for Dissertation: 25
Evaluation by External Examiner: 10
Evaluation by Internal Examiner: 10
Viva – Voce Examination: 05
Learning Outcomes:

- Apply knowledge and develop skills further in quantitative and/or qualitative research procedures
- Research and process primary and/or secondary datasets for analysis (this may involve field research)
- Demonstrate ability to synthesise information and analytically process data
- Effectively time manage research progress to become an efficient independent learner
- Summarise key findings for presentation to academics and peers (poster format)
- Produce a final thesis within the allocated word limit which holistically presents findings in a well-structured, academically professional and self-critical format

SEMESTER – I

Code: 108 (GMP - CCm–ii):
SEMINAR/ PRESENTATION

Total Marks: 25

- Distinguish the multiple senses of a text (literal and beyond the literal).
- Identify and understand assumptions, theses, and arguments that exist in the work of authors.
- Evaluate and synthesize evidence in order to draw conclusions consistent with the text. Seek and identify confirming and opposing evidence relevant to original and existing theses.
- Ask meaningful questions and originate plausible theses.
- Critique and question the authority of texts, and explore the implications of those texts.

SEMESTER – I

Code: 109& 110 (GMP - P-i & P-ii)
PRACTICAL-: TOPOGRAPHICAL ANALYSISAND INTERPRETATION OF GEOLOGICAL MAPS (Pi); ANDFIELD SURVEY (Pii)

Term End Exam: Marks: 60
Record Work: Marks: 10
Viva Voce: Marks: 10
Field Survey: Marks: 20

- Reading and classifying Indian topographical maps
- Interpretation of topographical maps and preparation of base map, index map, drainage map, orographic map
- Interpretation of topographical maps and preparation of land use map, settlement map and transport network map.
- Reading Indian weather maps: Their interpretation and preparation of weather report

SEMESTER – II (2019 Onwards)
Code: 201 (GMP-CCM – i)
PAPER I- ADVANCED GEOMORPHOLOGY

Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- Describing human-environment, and nature-society interactions as well as global human and environmental issues.
- Identifying and explaining the planet's human and physical characteristics and processes, from global to local scales.
- . Evaluating the impacts of human activities on natural environments.
- Applying knowledge of global issues to local circumstances to evaluate the local effects of the issues.
- Showing an awareness and responsibility for the environment.

SEMESTER – II
Code: 202 (GMP-CCM-ii)
PAPER II- URBAN ENVIRONMENT AND PLANNING

Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- Students will acquire a solid base of knowledge in the principles and practices of learning, including urban spatial structure, local public finance, and economics of development, infrastructure provision, and globalization.
- Students will develop the skills necessary for the effective practice of planning, including its purpose, meaning and history; methods that envision future change; elements of plans; adoption, administration, and implementation of plans; speaking for the disadvantaged; laws and policies of environmental planning.
- Students will develop the values necessary for the effective practice of planning, including problem-solving skills; research skills; written, graphical, and oral skills; computational skills; collaboration with peers; meeting professional standards; forecasting and scenarios; implementation of plans; working with diverse communities.

- Students will learn the values and ethical standards affecting the practice of planning, including the values of justice, equity, fairness, efficiency, order, and beauty; the values of fair representation and equal opportunity; and respecting complex legacies.

SEMESTER – II
Code: 203 (GMP-CCM – iii)
PAPER III -EVOLUTION AND DEVELOPMENT OF GEOGRAPHICAL THOUGHT
Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- Main objectives of this course are to acquaint the students with the philosophy.
- Also teach the 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.
- Students will acquire an understanding of and appreciation for the relationship between geography and culture.

SEMESTER – II
Code: 204 (GMP-EC – i)
PAPER IV (a)- REMOTE SENSING APPLICATIONS
Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- Students will demonstrate knowledge of the foundations and theories of geographic information systems (GIS) and use the tools and methods of GIS.
- Students will demonstrate their knowledge of physical geography and the methods and techniques for observing, measuring, recording and reporting on geographic phenomena.
- Students will demonstrate their competence to work individually and as a team to develop and present a client-driven GIS solution.
- Student will be familiar with modern techniques in Geography.
- Students will be prepared to apply their skills in professional careers

SEMESTER – II
Code: 205 (GMP-EC – ii)
PAPER IV (b)-WORLD REGIONAL GEOGRAPHY
Max. Marks: 100
Term End Exam. Marks: 75

Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- Understand the use of maps/geo-technologies to explain geographic phenomena and patterns as they relate to world regions and their interrelationships.
- Apply geographic concepts to the study of regions or a specific region.
- Be able to compare and contrast human and physical patterns and their variations over space.
- Develop an appreciation of the complexities of regional and global environmental and socio-economic problems.
- Understand the concept of globalization and be able to place local issues in their global and historical context.
- Understand human-environment interactions in various regions around the world.
- Students completing the course will perform the outcomes listed below.
- Identify the major areas of the physical earth on which they live and the peoples with whom they must share the earth.
- Recognize the natural forces that effect the earths' form and function.
- Utilize accurate vocabulary in describing the earth's geography.
- Interpret current events in the light of the geography of the earth.
- Identify and describe the earths' regions in terms of population, culture, environment, geopolitical framework, and economic development

SEMESTER – II
Code: 206 (GMP-EC - iii)
PAPER IV (c)-BASES OF HYDROLOGY

Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- At the end of the semester students will different physical aspects of water as a natural resource.
- They will learn some strategies of water resource management.
- Learn Also about the conservation of water.
- Students can compute critical flow and critical depth in floodplain hydraulics.
- Students can delineate watersheds and stream polylines from digital elevation data.
- Students comprehend the physics of water flow and mass (e.g., solute) transport processes, can represent those processes with mass, momentum and energy conservation equations, and apply those equations in assessing water quantity and quality in surface- and ground-water systems.
- Students comprehend statistical, analytical and numerical methods and associated limitations of modeling hydrologic flow and transport processes, and can apply quantitative models towards the analysis of water quantity, quality and management problems.

- Students comprehend basic water properties and can measure basic physical and biochemical aspects of water associated with hydrologic processes.
- Students comprehend the hydrologic cycle and related major water quantity and quality challenges and their relevance to human health and well-being, ecosystems, and the food supply.

SEMESTER – II

Code: 207 (GMP - CCm –i):
DISSERTATION (MINOR)

Total Marks Allotted for Dissertation: 25
Evaluation by External Examiner: 10
Evaluation by Internal Examiner: 10
Viva – Voce Examination: 05
Learning Outcomes:

- Apply knowledge and develop skills further in quantitative and/or qualitative research procedures
- Research and process primary and/or secondary datasets for analysis (this may involve field research)
- Demonstrate ability to synthesise information and analytically process data
- Effectively time manage research progress to become an efficient independent learner
- Summarise key findings for presentation to academics and peers (poster format)
- Produce a final thesis within the allocated word limit which holistically presents findings in a well-structured, academically professional and self-critical format

SEMESTER – II

Code: 208 (GMP - CCm–ii):
SEMINAR/ PRESENTATION

Total Marks: 25

- Distinguish the multiple senses of a text (literal and beyond the literal).
- Identify and understand assumptions, theses, and arguments that exist in the work of authors.
- Evaluate and synthesize evidence in order to draw conclusions consistent with the text. Seek and identify confirming and opposing evidence relevant to original and existing theses.
- Ask meaningful questions and originate plausible theses.
- Critique and question the authority of texts, and explore the implications of those texts.

SEMESTER – II

Code: 209& 210 (GMP - P-i & P-ii)
PRACTICAL-: Quantitative Techniques and Cartographic Representation of Geographical Data (GMP-P-i) &(ii) Field Survey (GMP-P-ii)

Term End Exam: Marks: 60
Record Work: Marks: 10
Viva Voce: Marks: 10
Field Survey: Marks: 20

- Keeping in view the nature of data and purpose of study, students would be able to make a rational choice amongst listed various statistical methods.
- Demonstrate understanding of basic concepts of probability and statistics embedded in their courses.
- Show proficiency in basic statistical skills embedded in their courses.
- Students shall know how to organize, manage, and present data.
- Students shall know how to organize, manage, and present data.
- Demonstrate ability to write reports of the results of statistical analyses giving summaries and conclusions using nontechnical language.

SEMEST ER –III
Code: 301 (GM P-CCM –i))
PAPER I- ENVIRONMENTAL MANAGEMENT AND SUSTAINABLE DEVELOPMENT

Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- provide definitions of environment, management, systems and organisations in relation to environmental management
- describe organisations as systems and their role in environmental management
- understand the usefulness of systems thinking in relation to environmental management in organisations
- explain how environmental management can be used as environmental protection and how organisations can define and manage risk.
- Demonstrate an understanding of comprehensive systemic analysis across both physical and behavioral dimensions involving society, the environment, and the economy.
- Define sustainability and assess the ways that sustainability topics are approached by a diversity of academic disciplines.
- Identify how globalized processes impact socioecological systems.
- Analyze the role of environmental sustainability in the promotion of comprehensive justice and equity.
- Apply critical thinking skills to provide sustainable solutions and build resilient communities.
- Utilize the appropriate methodological tools to analyze and address specific research questions.
- Articulate a comprehensive world view that integrates diverse approaches to sustainability.

- Understand the basic theoretical concepts and methodologies of both the physical and social sciences.
- Learn how to solve large-scale problems using a multitude of tools and approaches.
- Understand the basic sustainability concepts of homeostasis, carrying-capacity, cradle-to-grave recycling, evolutionary processes, inter-generational debt, socio-political adaptation, climate change, ecosystem services, and environmental justice—and understand the relationships between them.
-

SEMEST ER –III
Code: 302 (GM P-CCM –ii)
PAPER II- AGRICULTURAL GEOGRAPHY AND AGROECOSYSTEM MANAGEMENT

Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- Define Nature, scope, significance and development of Agriculture Geography, describe Approaches to the study of Agricultural Geography: Commodity, systematic, regional, behavioural and recent approaches etc., Origin and dispersal of agriculture
- Describe Determinants of agricultural land use: Physical, economic, social, and technological, Land holding and land tenure systems, Agricultural efficiency Concepts, Techniques and Methods of measurements; Methods of delimiting crop combination, cropping pattern, crop concentration, intensity of cropping, degree of commercialization, diversification and specialization
- Explain Theories of Agriculture Geography, von Thunen's theory (model) of agricultural location and its recent modifications, Demarcation of Agricultural regions, Whittlesey's classification of agricultural regions; Land use and land capability
- Describe Regional pattern of productivity in India, Green Revolution, White Revolution, Food deficit and food surplus regions; World pattern of Agriculture: Subsistence agriculture, Commercial farming, Plantation agriculture, Mixed agriculture, State, collective and cooperative farming

SEMESTER – III
Code: 303 (GMP-CCM – iii)
PAPER III- RURAL DEVELOPMENT PLANNING

Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- demonstrate knowledge and understanding of past and contemporary issues pertaining to rural development and livelihoods, including different definitions of rurality, as well as theories and frameworks for understanding urban and rural livelihoods and development, and the interaction between the two in developing countries;
- apply their knowledge and understanding, and problem-solving abilities, to independently identify rural development issues from a geographical perspective;
- demonstrate an ability to critically and systematically integrate knowledge, to analyse and assess complex phenomena and issues in the fields of rural development and rural livelihoods;
- critically analyse the empirical and theoretical connections between rural development;
- identify and analyse specific urban and rural development needs; and
- demonstrate an ability to clearly present and discuss conclusions, and the arguments behind them, orally and in writing.

SEMESTER –I

Code: 104 (GMP-EC–i)

PAPER IV (a)- CLIMATE CHANGE, IMPACTS AND ADAPTATION IN HIMALAYA

Max. Marks: 100

Term End Exam. Marks: 75

Internal Assessment Marks: 25

Lecture-04 par week

Learning Outcomes: On completion of the course, the student will be able to:

- understand the physical basis of the natural greenhouse effect, including the meaning of the term radiative forcing
- know something of the way various human activities are increasing emmissions of the natural greenhouse gases, and are also contributing to sulphate aerosols in the troposphere
- demonstrate an awareness of the difficulties involved in the detection of any unusual global warming ‘signal’ above the ‘background noise’ of natural variability in the Eath's climate and of attributing (in whole or in part) any such signal to human activity
- understand that although a growing scientific consensus has become established through the IPCC, the complexities and uncertainties of the science provide opportunity for climate sceptics to challenge the Panel's findings.
- understand the current evidence for global warming
- model and apply the techniques of ‘measuring’ the Earth's temperature
- understand the current warming in relation to climate changes throughout the Earth's history
- explain factors forcing climate change, and the extent of anthropogenic influence
- assess the ‘best predictions’ of current climate models.

SEMESTER – III
Code: 305 (GMP-EC - ii)
PAPER IV (b)- SOCIAL AND CULTURAL GEOGRAPHY

Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- Students will develop a solid understanding of the concepts of "space," "place" and "region" and their importance in explaining world affairs.
- Students will understand general demographic principles and their patterns at regional and global scales.
- Students will be able to locate on a map major physical features, cultural regions, and individual states and urban centers.
- Students will understand global and regional patterns of cultural, political and economic institutions, and their effects on the preservation, use and exploitation of natural resources and landscapes.
- Understand the nature, scope, and concept, relationship between culture and social environment, and right of information act.
- To examining the cultural complex and traits of culture and its concepts.
- Evolution to civilization and various cultural development and cultural system according to religion, language and geography, and global cultural changes.
- To study the origin and growth of culture and agriculture and its basic concepts.
- Understand the concept of space and social process and present status.
-

SEMESTER –III
Code: 106 (GMP –EC–iii)
PAPER IV (c)- GLACIAL GEOMORPHOLOGY

Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- Identifying, interpreting, and applying appropriate methods of geologic dating such as early methods of index fossils and stratigraphic sequences and recent methods using radioactive isotopes to determine how many years ago a given rock sample was formed.
- Identifying the major physical events in each of the geologic eras such as the building of mountain chains and the shifting of entire continents.
- Explaining how geologic structures are a dominant control in the evolution of various landforms.
- Evaluating how a geomorphic process controls the development of distinctive landforms.
- Differentiating between monocyclic landscape and multicycle landscape.
- Indicating the age of most of the world's features and the reason for the common age.

- Analyzing how the development of present day land forms have been influenced by climatic changes and geological activity of the Pleistocene.

SEMESTER – III

Code: 307 (GMP - CCm –i):
DISSERTATION (MINOR)

Total Marks Allotted for Dissertation: 25
Evaluation by External Examiner: 10
Evaluation by Internal Examiner: 10
Viva – Voce Examination: 05
Learning Outcomes:

- Describe a relevant area of career development, career coaching, coaching or work-related learning studies.
- Identify research methods.
- State research questions.
- Identify literature for review.
- Critically analyse and evaluate the knowledge and understanding in relation to the agreed area of study.

SEMESTER – III

Code: 308 (GMP - CCm–ii):
SEMINAR/ PRESENTATION

Total Marks: 25

- In terms of **content**, students will be able to show competence in identifying relevant information, defining and explaining topics under discussion
- Students will be able to judge when to speak and how much to say, speak clearly and audibly in a manner appropriate to the subject, ask appropriate questions, use evidence to support claims, respond to a range of questions, take part in meaningful discussion to reach a shared understanding, speak with or without notes, show depth of understanding, demonstrate breadth of reading, use primary and secondary sources, show independence and flexibility of thought, help discussions to move forward, show intellectual leadership and effective time management.
- Students will demonstrate that they have paid close attention to what others say and can respond constructively. Through listening attentively, they will be able to build on discussion fruitfully, supporting and connecting with other discussants.
- Students will develop persuasive speech, present information in a compelling, well-structured, and logical sequence, respond respectfully to opposing ideas, show depth of knowledge of complex subjects, and develop their ability to synthesize, evaluate and reflect on information.

- Through asking appropriate questions, students will demonstrate their understanding of discussions and spark further discussion.
- Students will be able to reach across diverse disciplines to apply theories, methods and knowledge bases from multiple fields to a single question or problem. They will be able to integrate schools of thought from several established fields into their discussion of a topic in order to show a well-rounded understanding.
- Students will engage with important questions that stimulate discussion and debate. While there is a great deal of diversity of subject matter in CSEM, many of the courses focus on ethical, cultural, and moral questions, on questions that enable students to reflect on themselves and on their place in society, and on questions that serve a public or civic purpose.
- Students will engage with works that are widely held to be significant in the field of study, while recognizing cultural diversity and the ever-changing nature of what is regarded as important.

SEMESTER – III

Code: 309& 210 (GMP - P-i & P-ii)

PRACTICAL-: SURVEYING AND MAP PROJECTION (Pi); AND FIELD SURVEY (Pii)

Term End Exam: Marks: 60
Record Work: Marks: 10
Viva Voce: Marks: 10
Field Survey: Marks: 20

- To learn drawing of Scale Diagram for representing geographical data.
- Skill of drawing of map, grapes, diagrams scale.
- Get skill of Drawing of projection.
- Aquaria knowledge of map making techniques.
- To understand to choose of projection according purpose of making maps.

SEMESTER – IV (2019 Onwards)

Code: 401 (GMP-CCM – i)

PAPER I- ADVANCED GEOGRAPHY OF UTTARAKHAND

Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- Understand the location, geostrategic importance, characteristics of size of Uttarakhand
- To examine the physiographic features of Uttarakhand
- To understand climatic variations, types of soil and vegetation and their problems.

- To extract and understand the natural resources, energy and mineral resources
- Understand to agricultural activities, patterns, regions, problems and prospect, and some important issues related to Uttarakhand.

SEMEST ER –IV
Code: 402 (GM P-CCM –ii)
PAPER II- POPULATION GEOGRAPHY AND HUMAN RESOURCE DEVELOPMENT

Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- Understand the Nature and Scope of Population Geography and their evolution, significance and approaches for the study.
- Understand the Sources of Population Data and History of World Population and some factors responsible for world population and data sources for study.
- To understand the fundamental Concepts Related to Population such as density, over, optimum & under population, fertility, mortality and population for future perspectives.
- To review and understand the subject matter with the help of Theories of Population
- Fundamental/Basic Statistical Analysis using Statistical Software MS-Excel
- Understand the Population Movement, Migration and some causes, consequences and its effects.
- Understand the Nature and Scope of Settlement Geography Characteristics of Rural and Urban Settlements according to Indian Census and nature, scope, evolution and study methods.
- Understand the history of population
- Understand the types of data
- Study of distribution and density of population.
- Get knowledge of population theories

SEMESTER – IV
Code:403 (GMP-CCM – iii)
PAPER III- BIOGEOGRAPHY

Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- To introduce the student to the concept of biogeography.
- To introduce the components, interpretation and application of biogeography.
- Interaction between living organisms and non-living organisms.
- Living organisms with climate and physical environment.
- Know about biogeochemical cycle.

- To describe main theories underlying biogeographical research.
- To describe the historical factors that influence current species distributions.
- To describe processes such as extinctions, biological invasions, and dispersal in explaining biogeographical patterns
- To apply biogeographical concepts to a wide range of environmental problems

SEMESTER –IV
Code: 404 (GMP-EC–i)
PAPER IV (a)- INTEGRATED WATERSHED MANAGEMENT

Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- Understand the fundamentals concepts related to watershed, significances of watershed development, demarcation of watershed, types of watershed according to area and shape
- Study about the physical parameters of watershed, channel geometry and basi morphology.
- Understand the hydrological parameters, rainfall, aerial precipitation, evaporation and transpiration, infiltration, run off and drainage.
- Understand the watershed development planning and sample of watershed management and planning for appropriate development of watershed management for water conservation and development.

SEMESTER – IV
Code: 405 (GMP-EC - ii)
PAPER IV (b)- GIS AND GPS APPLICATIONS

Max. Marks: 100
Term End Exam. Marks: 75
Internal Assessment Marks: 25
Lecture-04 par week
Learning Outcomes: On completion of the course, the student will be able to:

- To Develops Skill of soil and water analysis techniques.
- To Suggests fertilizers to the crops according soil analysis.
- Understand the introduction of GIS software's special reference of ILWIS, to examining the types of GIS software and applications, introduction of menu, tools, page layout and setting, scanning image, import of image in the software.
- To study and understand the image registration and its analysis done in software.
- To understand and prepare the topology of point, line and polygon and understand non spatial data analysis.
- To prepare the different kinds of map using GIS software and also create the profile of relief representation.
- To understand the GPS and its functions, work, types and components for filed survey and make project report using both GPS and GIS software.

SEMESTER –IV

Code: 406 (GMP –EC–iii)

PAPER IV (c)- DISASTER MANAGEMENT

Max. Marks: 100

Term End Exam. Marks: 75

Internal Assessment Marks: 25

Lecture-04 par week

Learning Outcomes: On completion of the course, the student will be able to:

- Describe the four phases of emergency management and the role each of them plays in managing and mitigating a disaster.
- Delineate the role terrorism plays on society and how it impacts public policy and decision making
- Demonstrate the skills needed to effectively manage a disaster scene.
- List the resources needed and how to obtain those resources effectively mitigate disaster damage
- Describe the various emergencies in public health and the organization needed to reduce the threat to the public and mitigate pain and suffering of society
- List the psychological damage caused by disasters to both the civilian and the first responder and how to mitigate the effects of those disasters
- Recognize and identify the needs for an effective training program in emergency management
- Identifythe core requirements to effective planning
- Demonstrate how to perform a risk analysis
- Describe the effective way to make decisions and problem solve during an emergency
- Prepare students to be future leaders in the Emergency Response fields
- List the methods of communication during a disaster and the reasons for using each one
- Have the graduate be an affective member of the incident command team at a disaster or crisis.
- Meet the Presidential Directive of having employees in emergency service professions trained in the Incident Management System

SEMESTER – IV

Code: 407 (GMP - CCm –i):
DISSERTATION (MAJOR)

Total Marks Allotted for Dissertation: 75
Evaluation by External Examiner: 25
Evaluation by Internal Examiner: 25
Viva – Voce Examination: 25
Learning Outcomes:

- encourage deeper understanding of the knowledge, skills and attributes required to earn a credential (degree), which could support:
- potential students in making decisions about what program / degree may most suit their goals and expectations;
- current students by making often implicit expectations more explicit
- graduates in describing their skills to potential employers;
- employers in recognizing the skills an applicant would possess, as a graduate of that program; and
- support students and supervisors in determining areas where a student is meeting or has yet to meet learning outcomes required by their program and develop / modify growth plans accordingly;
- help students to take ownership over their learning and recognize how their coursework, professional development, independent work, and other experiences can help them to develop and integrate knowledge and competencies necessary for success in their field as well as meet the requirements of their program;
- increase clarity of how program outcomes and assessment are aligned.

SEMESTER – IV

Code: 408 (GMP - CCm–ii):
SEMINAR/ PRESENTATION

Total Marks: 25

- In terms of **content**, students will be able to show competence in identifying relevant information, defining and explaining topics under discussion
- Students will be able to judge when to speak and how much to say, speak clearly and audibly in a manner appropriate to the subject, ask appropriate questions, use evidence to support claims, respond to a range of questions, take part in meaningful discussion to reach a shared understanding, speak with or without notes, show depth of understanding, demonstrate breadth of reading, use primary and secondary sources, show independence and flexibility of thought, help discussions to move forward, show intellectual leadership and effective time management.
- Students will demonstrate that they have paid close attention to what others say and can respond constructively. Through listening attentively, they will be able to build on discussion fruitfully, supporting and connecting with other discussants.

- Students will develop persuasive speech, present information in a compelling, well-structured, and logical sequence, respond respectfully to opposing ideas, show depth of knowledge of complex subjects, and develop their ability to synthesize, evaluate and reflect on information.
- Through asking appropriate questions, students will demonstrate their understanding of discussions and spark further discussion.
- Students will be able to reach across diverse disciplines to apply theories, methods and knowledge bases from multiple fields to a single question or problem. They will be able to integrate schools of thought from several established fields into their discussion of a topic in order to show a well-rounded understanding.
- Students will engage with important questions that stimulate discussion and debate. While there is a great deal of diversity of subject matter in CSEM, many of the courses focus on ethical, cultural, and moral questions, on questions that enable students to reflect on themselves and on their place in society, and on questions that serve a public or civic purpose.
- Students will engage with works that are widely held to be significant in the field of study, while recognizing cultural diversity and the ever-changing nature of what is regarded as important.

SEMESTER – IV

Code: 409& 410 (GMP - P-i & P-ii)

(i) Surveying, Interpretation of Geological Maps and Spatial Analysis (GMP-P-i) &(ii) Field Survey (GMP-P-ii)

Term End Exam: Marks: 60
Record Work: Marks: 10
Viva Voce: Marks: 10
Field Survey: Marks: 20

- Understand the different surviving techniques.
- Knowledge about preparation of layout.
- Understand the socio-economic condition of the villages.
- Acquire knowledge of preparation of drawing of profile with the help of Dumpy level, Telescopic Alidade, Abney level and Sextant.

Ph.D. Programme

In both the campuses the department conducts Ph.D.Programmes. For Ph.D. programme as per the UGC norms the student has to clear the six months Rerearch Moehodology course. The detail structure of the Research Methodology is given below.

PAPER –I Research Methodology

Total Marks: 100
Internal Marks: 25
External Marks: 75

- Examining the introduction of research, motivation in research, types of research, significance of research, research process and criteria of good research.
- To understand the research problems, selecting research problems, literature review and to study the hypothesis, its types, sources, formation of hypothesis and utility of hypothesis in scientific research.
- To understand the research design, need, features, basic principal and developing of research plan, and sampling design and its basic types, steps, characteristics of sampling design.
- Study about type's data and methods of data collection and study the processing and analysis of data using different statistical methods.
- Understand the interpretation and report writing, techniques, precaution of interpretation, layout of research report, types of reports and oral presentation mechanics of writing a research report.

PAPER –II Recent Advances in Subject (Geography)

Total Marks: 100
Internal Marks: 25
External Marks: 75

- outline the nature of geographical concepts and the enquiry approach, and explain their significance in geographical learning
- explain modes of creativity and the stages of the 'creative' process in geographical teaching and learning
- define controversial issues and explain their significance in geographical education
- relate personal views of teaching and learning to those presented
- Use different resources and approaches to support students' learning.

PAPER –III Dissertation

Total Marks: 100
Internal Marks: 25
External Marks: 75

- encourage deeper understanding of the knowledge, skills and attributes required to earn a credential (degree), which could support:
- potential students in making decisions about what program / degree may most suit their goals and expectations;
- current students by making often implicit expectations more explicit
- graduates in describing their skills to potential employers;
- employers in recognizing the skills an applicant would possess, as a graduate of that program; and
- support students and supervisors in determining areas where a student is meeting or has yet to meet learning outcomes required by their program and develop / modify growth plans accordingly;
- help students to take ownership over their learning and recognize how their coursework, professional development, independent work, and other experiences can help them to develop and integrate knowledge and competencies necessary for success in their field as well as meet the requirements of their program;
- increase clarity of how program outcomes and assessment are aligned.

Doctor of Philosophy (PhD) program learning outcomes

- Students will have met the objectives for learning outcomes in an undergraduate Discipline relevant to their graduate field of study.
- Students will be able to summarize major themes and current research problems in their area of specialization.
- Students will be able to communicate the major tenets of their field and their Work orally and in writing for students, peers and the lay public.
- Students will be able to identify areas where ethical issues may arise in their work Or discipline, and articulate strategies for dealing with ethical issues in the profession.
- Students will be able to explain and identify open problems and areas needing Development in their fields.
- Students will have carried out and presented an original work of research in their discipline.
