NARAJOLE RAJ COLLEGE

(NAAC Accredited 'B' Grade Govt. Aided College)
NARAJOLE: PASCHIM MEDINIPUR: WEST BENGAL: Pin-721211
E-mail: *arajolerajcollege@rediffmail.com*
Website: *https://www.narajolerajcollege.ac.in*

Programme Specific Outcomes (PSOs)

Geography (Hons.)

The students of Geography (Hons.) will acquire their theoretical, computational and experimental knowledge about the different branches of Geography like Physical Geography, Human Geography, Environmental Geography, Geography of India, Geography of Thought, Practical Geography, Computer application in Geography, etc. by studying this programme. They will attain the quantitative and predictive understanding of Geography in different physical and human phenomena. This programme also opens up the career paths to select in many related and sub-related areas like academics, research, GIS based map consultant, hydrologist GIS and water resource modelling consultant, etc.

After completion of the programme, the graduates will be capable of-

PSO1: Acquiring the knowledge about the different core branches of Geography like Physical Geography, Human Geography, Practical Geography, Environmental Geography, etc.

PSO2: Developing the ability to use skills in Geography and its related domains of practical knowledge for formulating and tackling Geography-related problems.

PSO3: Acquiring their understanding skills about the different experiments of different branches of Geography by designing as well as conducting several experiments in different problems to solve the problem by proper interpretation and analysis of the experimental results and drawing the conclusions by the supporting data.

PSO4: Developing several experiment related tools e.g. statistical techniques for representation of data, summaries, various graph and diagram, and data analysis.

PSO5: Accumulating their knowledge and skills about the applications of GIS and remote sensing techniques for sketch out the problems and explore the spatio-

temporal variation, which can help the planners and policy makers to solve the problem.

PSO6: Attaining a level of proficiency and intellectually in predicting the geographical phenomena by using spatial, computational and remote sensing knowledge and abilities about the applications of computer programming and GIS techniques for solving different problems of Geography as well as global problems.

PSO7: Comprehending and cultivating an understanding of the influence of Geography on the modern society and livelihood patterns with the means of sustainable development.

PSO8: Attaining the quantitative and qualitative understanding of Geography in different theoretical and practical phenomena.

PSO9: Theoretical knowledge and abilities on different GIS and remote sensing software as well as statistical software, etc. that helps them in their higher studies in Geography.

PSO10: Demonstrating professional behaviour such as being objective, unbiased and truthful in all aspects of work and avoiding unethical, irrational behaviour such as fabricating, falsifying or misrepresenting data or committing plagiarism and the ability to identify the potential ethical issues in work-related situations.

PSO11: Developing knowledge and abilities on the use of different measurement instruments and as well as workshops skills.

PSO12: Developing communication skills involving the ability to listen carefully, to read texts and research papers analytically and to present complex information in a concise manner to different groups/audiences of technical or popular nature.

PSO13: Opening the career paths to select a career in many related and sub-related areas like academics, research, GIS based map consultant, hydrologist GIS and water resource modelling consultant etc.

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Programme Specific Outcomes (PSOs)

GEOGRAPHY (General)

The students of Geography (Gen or DSC) will acquire their theoretical and practical basic knowledge about the different branches of Geography like Physical Geography, Human Geography, Environmental Geography, Geography of India, Soil and Biogeography, Economic Geography, Urban Geography, Remote Sensing, Computer Basics, etc. by studying programme. This programme also opens up the career paths to select in many related and sub-related areas like academics, research, computer and space related work etc.

After completion of the programme, the graduates will be capable of-

PSO1: Acquiring the knowledge about the different core branches of Geography like Physical Geography, Environmental Geography, Human Geography, Maps and Diagrams, etc.

PSO2: Developing the ability to use skills in Geography and its related domains of practical field for tackling Geography-related problems.

PSO3: Acquiring their understanding skills about the different practical work of different branches of Geography by the proper solve, interpretation, analysis of the results, and drawing the conclusions by the supporting data.

PSO4: Accumulating their knowledge and skills about the applications of techniques for solving different problems of different branches of Geography, beside the theoretical and practical skills.

PSO5: Comprehending and cultivating a basic understanding of the influence of Geography on the modern society and it's application on our society.

PSO6: Attaining the quantitative and predictive understanding of Geography in different practical and theoretical phenomena.

PSO7: Demonstrating professional behaviour such as being objective, unbiased and truthful in all aspects of work and avoiding unethical, irrational behaviour such as fabricating, falsifying or misrepresenting data or committing plagiarism and the ability to identify the potential ethical issues in work-related situations.

PSO8: Developing proficiency and skill on the set up of different practical instruments and computer basics knowledge.

PSO9: Opening the career paths to select a career in many related and sub-related areas like academics, research, soil and environment related work, space related work, Govt and private sector job in different field, etc.

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Course Outcome

Geography (Hons.)

Semester	I
Title of Course	Geotectonics and Geomorphology (CC-1)
Paper Code	C1T (Theory)
Credits	06
Hours	06 hours/week

The students of Geography (H) of Semester-I will acquire the knowledge about the Earth's tectonic, Earth's interior, Folds and faults, Degradation processes, Different geomorphic agents, Landforms of Karst-Glacial-Aeolian, Models of Davis, Penck, King and Hack by studying this course.

The theory paper (C1T) of this course (CC-1) will be able to learn-

Students who complete this course will be able to learn to explain geotectonic-morphological events on the earth surface with special emphasis on the following topics:

CO1: Proper sketch of the Earth's tectonic, earth in cross-section and structure with different landforms evolution with geological time scale.

CO2: Isostasy and equilibrium of the Earth by Pratt and Airy's models.

CO3: Sketch and label the different plates of the Earth surface and also describe the causes and effects of plate movement.

CO4: Classification, sketch with proper explanation of the different types of folds and faults on the Earth surface.

CO5: Explanation of the relationship between energy and weathering.

CO6: Identification and description with proper sketch of different landforms on the earth surface which is created by different geomorphic agents, i.e. weathering, mass-movements, fluvial, coastal, karst, glacial, and aeolian etc.

CO7: Explanation of the origin of different landforms on the earth surface by the cyclic and noncyclic model of Davis, Penck, and Hack

Semester	I
Title of Course	Cartographic Techniques(CC-2)
Paper Code	C2T (Theory)
Credits	04
Hours	04 hours/week

The students of Geography (H) of Semester-I will acquire the practical knowledge about the Basics of Cartograms, Map, Scale, coordinate system, Geoid and Spheroid, Generating Globe, Map projections, Surveying and survey equipment, Indian topographical mapsby studying this course..

The theory paper (C1T) of this course (CC-1) will be able to learn-

CO1: Classification and description of the principles or properties of different types of maps and projections with their components.

CO2: Identification by the proper location of any place on the Earth surface by the Latitude and Longitude.

CO3: Identification of the characters and differentiate the Geoid, Spheroid and generating globe.

CO4: Familiarity with different surveying instruments i.e. prismatic compass, dumpy level, theodolite, Abney level, and clinometer.

CO5: Studying and analyse of the different keys of old and open series Survey of India topographical maps.

Estd.-1966

Semester	I
Title of Course	Cartographic Techniques (CC-2)
Paper Code	C2P (Lab)
Credits	02
Hours	04 hours/week

The students of Geography (H) of Semester-I will acquire the practical knowledge about the Graphical construction of scales, Projections, Indian topographical map, by hands on computer programming.

CO1: Drawing and using of different types of scales and projections.

CO2: Drawing and interpretation with correlation of different physical and cultural features of Indian topographical maps.

Semester	II
Title of Course	Human Geography (CC-3)
Paper Code	C3T (Theory)
Credits	06
Hours	06 hours/week

The students of Geography (H) of Semester-II will acquire the knowledge about the Elements and approaches of Human Geography, Race and ethnicity, Culture, Societies, Human adaptation to environment, Ackerman model, Demographic transition model, Rural-Urban settlements in India by studying this course.

The theory paper (C1T) of this course (CC-1) will be able to learn-

CO1: Elaborate explanation of the nature, scope, and recent trends of Human Geography and their different approaches.

CO2: Building an idea about space, society and cultural regions, i.e. language and religion.

CO3: Knowing about the evolution of different human societies, i.e. hunting and food gathering, pastoral nomadism, subsistence farming, industrial and urban societies.

CO4: Kknowing about selected human adaptation to environment, i.e. Eskimo, Masai, Jarwa, Gaddi, Santhals.

CO5: Understanding the nature of population growth, distribution, composition of population in terms of age-sex, marital status, family, and economic composition etc.

CO6: Evaluation of the demographic transition model and population – resource regions model (Ackerman).

CO7: social morphology and rural house types in India.

Co8: Different types and patterns of rural-urban settlements.

Semester	II
Title of Course	Cartograms and Thematic Mapping (CC-4)
Paper Code	C4T (Theory)
Credits	04
Hours	04 hours/week

The students of Geography (H) of Semester-II will acquire the knowledge about the Rounding, scientific notation, logarithm and anti-logarithm, log scales, diagrammatic representation by point data- area data, thematic maps by studying this course.

The theory paper (C4T) of this course (CC-4) will be able to learn-

CO1: Student can know and enhanced their skills about different cartograms, and thematic mapping i.e. line, bar, circle, Isopleths, choropleth, Dots, and proportional circles.

CO2: They can know about the different thematic maps, i.e. geomorphological maps, Climatological maps, Land-use land-cover maps, and socio-economic maps.

Semester	II
Title of Course	Cartograms and Thematic Mapping (CC-4)
Paper Code	C4P (Lab)
Credits	02
Hours	04 hours/week

The theory paper (C4P) of this course (CC-4) will be able to learn-

CO1: Learn the use of various instruments like Prismatic Compass and Dumpy Level.

Semester	III
Title of Course	Climatology (CC-5)
Paper Code	C5T (Theory)
Credits	06
Hours	06 hours/week

The students of Geography (H) of Semester-III will acquire the knowledge about the Atmosphere, Isolation, Temperature, Greenhouse effect, Condensation, Air mass, Fronts, Weather, Circulation in the atmosphere, cyclones, Monsoon, Koppen-Thornthwaite-Oliver climatic classification by studying this course.

The theory paper (C5T) of this course (CC-5) will be able to learn-

CO1: Nature, composition and layering of the atmosphere, and also controlling factors of insolation, heat budget.

CO2: Vertical and horizontal distribution of temperature, and also explain the causes and consequences of inversion of temperature, Greenhouse effect and importance of ozone layer.

CO3: Process of condensation and its different forms, and able to Bergeron - Findeisen theory of mechanism of precipitation and Collision theory, General coalescence theory of precipitation.

CO4: Classification the different forms of precipitation.

CO5: Typology, origin, characteristics and modification of Air mass, warm and cold fronts, frontogenesis and frontolysis, weather stability and instability, barotropic and baroclinic condition of atmosphere.

CO6: Planetary winds circulation in the atmosphere, origin and characteristics of jet stream, index cycle and tropical and mid latitude cyclones, monsoon circulation and mechanism with reference to India.

CO7: Koppen, Thornthwaite and Oliver's climatic classification.

Semester	III
Title of Course	Statistical Methods in Geography (CC-6)
Paper Code	C6T (Theory)
Credits	04
Hours	04 hours/week

The students of Geography (H) of Semester-III will acquire the practical knowledge about theImportance and significance of statistics in Geography, Scales of measurement, Collection of data, Sampling, Statistical distribution of data, Central tendency, dispersion, correlation, Regressionby studying this course.

The theory paper (C6T) of this course (CC-6) will be able to learn-

CO1: Importance and significance of statistics in geography with discrete and continuous data, population and samples, scales of measurement, i.e. nominal, ordinal, interval and ratio, Sources of data.

CO2: Classification and methods of data collection, formation of statistical tables and also knows the parts of an ideal table.

CO3: Need, types and significance of sampling and methods of random sampling, frequency and cumulative frequency, normal and probability of frequency distribution, Central tendency, i.e. Mean, median, mode.

CO4: Concept of partition values, and measures of dispersion range, mean deviation, standard deviation and coefficient of variation with example and law of calculation.

CO5: Concept of Association and correlation and its types.

CO6: Explanation and importance the Spearman's Rank Correlation method and merits and demerits of calculation of rank correlation, Karl Pearson's product moment correlation method Regression, i.e. Linear and nonlinear and time series analysis with moving average.

Semester	III
Title of Course	Statistical Methods in Geography (CC-6)
Paper Code	C6P (Lab)
Credits	02
Hours	04 hours/week

The students of Geography (H) of Semester-III will acquire the practical knowledge about the Construction of data matrix,Central tendency and dispersionSamplingby hands on practical experiments.

The theory paper (C6P) of this course (CC-6) will be able to learn-

CO1: Construct a data matrix with row and column, prepare a frequency table and calculate the measures of central tendency and dispersion and interpreted based on the data set.

CO2: Calculate and draw the histogram and frequency curve.

CO3: Systematic and stratified sampling methods and locate the samples on a map with a short note on methods used from the data matrix.

CO4: Calculate and draw a scatter diagram and regression line and residual from regression would be mapped with interpretation.

Estd.-1966

Semester	III
Title of Course	Geography of India(CC-7)
Paper Code	C7T (Theory)
Credits	06
Hours	06 hours/week

The students of Physics (H) of Semester-III will acquire the knowledge about the Tectonic evolution of India, Indian Climate-Soil-Vegetaion-Agriculture-Population-industry, West Bengal Climate-Soil-Vegetaion-Agriculture-Population-industry,by studying this course.

The theory paper (C7T) of this course (CC-7) will be able to learn-

CO1: Geological evolution with stratigraphic provinces and Physiographic regions of India.

CO2: Characteristics and controlling factors of Indian climate, soil, vegetation in India.

CO3: Distribution, growth, structure, policy race, caste, religion, language, tribes in India.

CO4: Agricultural regions with controlling factors, the influence and consequences of Green revolution, mineral and power resources distribution in India.

CO5: Evolution and distribution of Automobile industries and Information Technology in India.

CO6: Physiographic economic, socio - cultural regions of India, R.L. Singh, P. Sengupta, D.E. Sopher respectively.

CO7: Physiographic divisions and distribution of forest resources, water resource, and rivers of West Bengal.

CO8: Growth and distribution of population, human development and explain the district wise human development index in West Bengal.

CO9: Distribution of major mineral resources, industries in West Bengal.

CO10: Characteristics of agriculture and regional distribution of major crops in West Bengal.

CO11: Regional problems of Darjeeling hills, jangalmahal and sundarban.

Semester	II
Title of Course	Computer Basics and Computer Applications(SSC1)
Paper Code	SEC1T (Theory)
Credits	02
Hours	04 hours/week

The students of Geography (H) of Semester-III will acquire the practical knowledge about the Representation of data, Numbering systems, Binary arithmetic, Reduction techniques, Computation-storing-formatingspeadsheets, Preparation of annoted Diagrams, Internet Surfing by studying this course.

The theory paper (C7T) of this course (CC-7) will be able to learn-

CO1: Concept of Numbering system, Binary Arithmetic, Basic logic Gates, Boolean Logic and Reduction Techniques.

CO2: Calculation of the rank, mean, median, mode, standard deviation, moving averages, sample variation; derivation of correlation, covariance and regression and interpret.

CO3: Calculation and draw the scatter diagram and histogram with interpretation.

CO4: Concept of internet surfing, cloud computing and drive sharing.

Estd.-1966

Semester	IV
Title of Course	Regional Planning and development(CC-8)
Paper Code	C8T (Theory)
Credits	06
Hours	06 hours/week

The students of Geography (H) of Semester-IVwill acquire the knowledge about the Delineation, Planning in India, Tools and techniques of regional planning, Metropolitan concept, Regional Development, Model of Hirschman-Rostov-Friedman, Balanced development by studying this course.

The theory paper (C8T) of this course (CC-8) will be able to learn-

CO1: Focus to differentiate regions and their delineation methods.

CO2: The main idea was to build a concept of regional planning and highlights the principles and objectives of different stages of planning in India.

CO3: Also explain the tools and techniques of regional planning and their needs in metropolitan areas and urban agglomerations.

CO4: Focuses to explain the dissimilarities between growth and development to develop a conceptual framework regional development and its perspective in India.

CO5: The conceptual framework regional development identifies the economic, social and environmental indicators of development.

CO6: The perspective of regional development followed some of the popular theories and models of growth pole and growth centre in the world.

CO7: Ddescribe the concept of regional inequality, disparity and diversity and helps to understand the concept,need and measures for balanced development with reference to India.

Semester	IV
Title of Course	Economic Geography(CC-9)
Paper Code	C9T (Theory)
Credits	06
Hours	06 hours/week

The students of Geography (H) of Semester-IVwill acquire the knowledge about the Approaches to Economic and New economic Geography, Economic man, Theories of choices, Distance and transport costs, Land used model of Von Thunen-Weber, Secondary-tertiary activities,Agricultural systems, GAT, OPEC by studying this course..

The theory paper (C9T) of this course (CC-9) will be able to learn-

CO1: Under the concepts of economic geography, describe the meaning, concepts and approaches to economic geography.

CO2: Another related concept is economic man, theories of choices, economic distance and transport costs.

CO3: These concepts built a basic knowledge about various economic systems. The economic activities are mainly primary, secondary and tertiary.

CO4: The learner known importance, distribution and problems of agriculture, forestry, fishing and mining; the importance, distribution and problems of cotton textile, iron and steel; and the importance and problems of transport, trade and services.

CO5: This paper built a broad idea of the agricultural systems in the light of tea plantation in India and mixed farming in Europe.

CO6: Also helps to understand the international agreements and trade blocs of GATT and OPEC.

Semester	IV
Title of Course	Environmental Geography (CC-10)
Paper Code	C10T (Theory)
Credits	04
Hours	04 hours/week

The students of Geography (H) of Semester-IVwill acquire the knowledge about the Environmental studies, Stages of civilization, system approach, ecosystem, pollution and degradation of environment, Waste management, Environmental programmes and policies by studying this course.

The theory paper (C10T) of this course (CC-10) will be able to learn-

CO1: The environmental geography deals with three perspectives- to build the conceptual framework on environment, studies environmental problems with suitable examples and suggests management techniques in different problem areas.

CO2: The conceptual framework means the concept, structure and functions of an ecosystem. CO3: Also specified the Geographers' approach, perspective and different stages of civilization on environmental studies.

CO4: The environmental problems broadly discussed on land, water and air pollution and degradation; and local, regional and globalof environmental problems.

CO5: The knowledge on the causes and problemsenvironment gives a clear definition towards the need for environmental protection.

CO6: The environmental protections are guided by various management strategies to minimize the land, water and air pollution and degradation.

CO7: The urban area is the main vulnerable area where the environment is degraded day by day compare to rural area.

CO8: Thus, the core paper discussed the local, regional and global level environmental programmes and policies to maintain environmental sustainability.

Semester	IV
Title of Course	Environmental Geography (CC-10)
Paper Code	C10P (Lab)
Credits	02
Hours	04 hours/week

The students of Geography (H) of Semester-IVwill acquire the knowledge about the a project file, comprising one exercise each is to be submitted by hands on practical experiments.

The theory paper (C10P) of this course (CC-10) will be able to learn-

CO1: The practical knowledge of environmental studies directly assessing the environmental quality based on common geographical methods. Firstly, the learners prepared a questionnaire to resume perception of local peoples on the studies of environmental problems. Secondly, they prepare a check-list for environmental impact assessment of an urban and industrial area.

CO2: Under the inquiry of environmental quality assessment, they learn how to inquire soil and air quality. The soil quality parameters like pH and NPK are tested in using field kit. CO3: They learn to assess the air quality based on CPCB and WBPCB data.

Estd.-1966

Semester	IV
Title of Course	Research Methods (SEC2)
Paper Code	SEC2T (Theory)
Credits	02
Hours	02 hours/week

The students of Geography (H) of Semester-III will acquire the practical knowledge about the Geographic enquiry, Data collection, Data analysis, Structure of a research report by studying this course.

The theory paper (SEC2T) of this course (SEC2) will be able to learn-

CO1: The learners can build their knowledge on literature review, research objectives and hypothesis and various steps involving research process.

CO2: They able to classify the data according to their nature and sources.

CO3: They also learn how can the data are collected by prepared a sample questionnaires and other inventories.

CO4: Lastly, they learn the about the characteristics to report research thesis by maintaining proper formats. Particularly this course helps to develop a mindset to starts a future journey of research.

Semester	V
Title of Course	Field Work and Research Methodology (CC-11)
Paper Code	C11T (Theory)
Credits	04
Hours	04 hours/week

The students of Geography (H) of Semester-V will acquire the knowledge about theResearch in Geography, Literature review, research materials and methods, Techniques of writing scientific reports, Field techniques and tools, Post-field tasks by studying this course.

The theory paper (C11T) of this course (CC-11) will be able to learn-

CO1: It describes the meaning, types and significance of research in geography.

CO2: It helps to build knowledge the concepts of literature review, research problem, objectives and hypothesis and research materials and methods.

CO3: The current core paper also identifies suitable techniques of writing a good scientific report.

CO4: The topics of fieldwork helps how to select a study area and objectives for the preparation of field report and draw a clear understanding about the role and significance fieldwork in Geographical studies.

CO5: But the field work involves data collection based on the sampling techniques. Thus, it is very important to know the suitable tools and techniques for data collection by survey method or any other method.

Semester	V
Title of Course	Field Work and Research Methodology (CC-11)
Paper Code	C11P (Lab)
Credits	02
Hours	04 hours/week

The students of Geography (H) of Semester-V will acquire the knowledge about the Research in Geography, Literature review, research materials and methods, Techniques of writing scientific reports, Field techniques and tools, Post-field tasks by studying this course.

The theory paper (C11P) of this course (CC-11) will be able to learn-

CO1: Moreover, it the first step gains knowledge and concept of research by which they can progress their journey of higher education.

CO2: In this particular portion of the core paper each of the students will prepare an individual field report to explore the geographical problems of the mouza or municipal area. CO3: The entire work was based on both primary and secondary data showing mouza wise or municipal word wise distribution.

CO4: The report should be hand written in English on A4 size paper in candidate's own words suggesting some useful recommendations to solve the problems. Moreover, in this portion the students are experience with the process of field data collection and research steps.

Semester	V
Title of Course	Remote Sensing and GIS (CC-12)
Paper Code	C1TT (Theory/ Lab)
Credits	04
Hours	04 hours/week

The students of Geography (H) of Semester-V will acquire the practical knowledge about the Remote Sensing, IRS, IRS LISS-3, TM, OLI data, LULC GIS, GNSS, and Waypointsby studying this course.

The theory paper (C12T) of this course (CC-12) will be able to learn-

CO1: But there is need to understand nature and principles remote sensing.

CO2: Clear knowledge on remote sensing satellites, sensor, their resolutions and their applications are basis of such analysis and interpretation.

CO3: Thus, this core paper help to develop above knowledge and the students are able to classify satellite image and prepare a landuse land cover map.

CO4: The preparation of landuse land cover map is done with the help of geographical information systems (GIS) software.

CO5: The GIS has raster and vector data. The core paper also helps to develop other useful concepts regarding the prepare attribute tables, data manipulation, overlay analysis, GNSS positioning and waypoint collection.

Semester	V
Title of Course	Remote Sensing and GIS (CC-12)
Paper Code	C1TP (Lab)
Credits	02
Hours	04 hours/week

The students of Geography (H) of Semester-V will acquire the practical knowledge about the project file, comprising one exercise each is to be submittedby hands on practical experiments.

The theory paper (C12P) of this course (CC12) will be able to learn-

CO6: In the present core paper, the students are learning, how to prepare a map using QGIS / ArcGIS software. Few steps are involving for the purpose of the preparation of a map.

CO7: Firstly, they learn geo-referenced a map or a scanned image, digitize the image, prepare a vector layers and formed a thematic map.

CO8: They also learned the methods of image pre-processing and correction, after that they Classify satellite image and prepare a land use land cover map.

Estd.-1966

Semester	V
Title of Course	Hydrology and Oceanography(DSE-1)
Paper Code	DSE1T (Theory)
Credits	06
Hours	06 hours/week

The students of Geography (H) of Semester-V will acquire the knowledge about the Global hydrological cycle, Run off cycle, Drainage basin, Groundwater, ocean floor, T-S Diagram, Wave and Tide, salinity, Temperature, Coral reefs, Marine resources, sea level change by studying this course.

The theory paper (DSE1T) of this course (DSE1) will be able to learn-

CO1: The students are also able to explain run off cycle and controlling factor of run off, infiltration, evapotranspiration and the occurrence and storage of ground water and the controlling factors of recharge, discharge and movement of water.

CO2: In the portion of oceanography describe the origin characteristics of major relief features of the ocean floor; physical and chemical properties of ocean water; the processes and effects air - sea interactions; ocean circulation, wave and tide, formation; classification and threats of coral reef; marine resources and its sustainable utilisation; and types and causes of sea level change.

CO3: Moreover, in this DSE paper gives knowledge about water resource and the processes involves water body. It helps to understand the geographical phenomena and geographical process.

Semester	V
Title of Course	Resource Geography(DSE-2)
Paper Code	DSE2T (Theory)
Credits	06
Hours	06 hours/week

The students of Geography (H) of Semester-V will acquire the knowledge about the Natural resources, Resources Utilization and significances, Resource depletion, Sustainable development, Mineral resources, Metallic and Non-metallic, conventional and Non-conventional, Limits to Growth, by studying this course.

The theory paper (DSE2T) of this course (DSE2) will be able to learn-

CO1: It is exploring the significance of resources in the backbone of economic growth and development. To learn about the forest, water, and fossil fuels resource depletion and its problems.

CO2: The above knowledge gives an idea about the objectives and goals of suitable resource development and can highlights suitable approaches for resource utilization.

CO3: The students are also studding distribution, utilisation, problems and management of metallic (Iron ore, Bauxite, copper), non-metallic mineral (Limestone, Mica, Gypsum) and energy resources.

CO4: Apart from that they able to discuss the theories of limits to growth and the concept of resource sharing and can describe what means the contemporary energy crisis and future scenario.

Semester	VI
Title of Course	Evolution of Geographical Thought(CC-13)
Paper Code	C13T (Lab)
Credits	06
Hours	06 hours/week

The students of Geography(H) of Semester-VIwill acquire the knowledge of Development of Geography, Dark Age, Age of Discovery, Exploration, Concept of modern geography, Transitio from cosmography to scientific Geography, Foundation of modern Geography and Recent Trends by studying this course.

The theory paper (C13T) of this course (CC13) will be able to learn-

CO1: The students are able to describe the contributions of Greek, Chinese, and Arab, German and Indian geographers in the pre-modern geography.

CO2: To learn the contributions of ancient and scientific geographer's in geography help to understand the development process in study of earth.

CO3: The core paper also guided to study the contributions of Germany, France, Britain and United States of America geographer's in geography and the contributions of Richthofen, Hettner and Ratzel as modern geographers.

CO4: Finally explore the changing concept of space in geography and geographical studies in the 21st Century. Moreover, these above knowledge gives up a broad idea about the trends and changing concept of space in geography and geographical studies in the 21st Century.

Semester	VI
Title of Course	Disaster Management(CC-14)
Paper Code	C14T (Theory)
Credits	04
Hours	04 hours/week

The students of Geography(H) of Semester-VI will acquire the knowledge about the Hazards and disasters, Vulnerability assessment, Resilience and capacity building, Hazards mapping, Earthquake, Landslide, cyclone, Fire by studying this course.

The theory paper (CC14T) of this course (CC14) will be able to learn-

CO1: The students are also learning how protect the hazards and disasters by the means of resilience and capacity building.

CO2: The paper also helps to experience with the data and techniques used for hazard mapping.

CO3: However, this core paper is also analysing about the factors, vulnerability, consequences and management of earthquake, landslide, and cycle and forest fire.

CO4: The above for disaster are very dangerous in terms of the nature of destruction. Moreover, the studies on hazard and disaster in geographer's perspective and to learn how to react on hazard and disaster are the prime concern in the paper.

CO5: In this paper each of the students will prepare an individual field report by choosing any of the one mentioned disaster.

Semester	VI
Title of Course	Disaster Management (CC-14)
Paper Code	C14P (Lab)
Credits	02
Hours	04 hours/week

The students of Geography(H) of Semester-VI will acquire the knowledge about the An individual project report based on any one case study incorporation a preparedness plan in the vicinity of the students by hands on practical experiments.

The theory paper (CC14P) of this course (CC14) will be able to learn-

CO1: This work gives a field base knowledge how the local people are living such disaster-prone areas. The objectives of this work should follow to locating such areas and suggest some useful recommendations to minimize the risk of these disasters.

Semester	VI
Title of Course	Soil and Biogeography(DSE-3)
Paper Code	DSE3T (Theory)
Credits	06
Hours	06 hours/week

The students of Geography (H) of Semester-VI will acquire the practical knowledge about the Factors of soil formation, Soil properties, Soil erosion and degradation, Soil classification, Biosphere, ecosystem, Bio-geochemical cycles, Bio-divrsity,by studying this course.

The theory paper (DSE3T) of this course (DSE-3) will be able to learn-

CO1: In the portion of soil geography, describe the effecting factors and process of soil formation, like the origin, development and characteristics of soils -Lateritic, Podzol and Chernozem soil.

CO2: It is also signifying the role and significance of physical as well as chemical properties soil.

CO3: Classify soil according to genetic and USDA classification methods.

CO4: The topics of biogeography give a broad definition about environment and environmental processes maintaining the sustainability of the nature.

CO5: The students are able to know the concepts of biosphere, ecosystem, biome, eco-tone, community and ecology; geographical extent and characteristics of tropical rain forest, taiga and grassland biome; and salient features of bio-geochemical cycles with special reference to carbon dioxide and nitrogen. The above concepts help to understand the definition, types, threats and conservation measures of bio diversity.

Semester	VI
Title of Course	Agricultural Geography(DSE-4)
Paper Code	DSE4T (Theory)
Credits	06
Hours	06 hours/week

The students of Geography (H) of Semester-VI will acquire the knowledge about the Agricultural Geography, Approaches, affecting factors, land use model Von Thunen, Role of irrigation, Problems of agriculture, food security,USDA, Globalization and agriculture by studying this course.

The theory paper (DSE4T) of this course (DSE-4) will be able to learn-

CO1: The various concept meanslocation and characteristics of intensive subsistence, extensive commercial and plantation agriculture; the concept of crop combination and cropping pattern; concept of gross and net cropped area, crop rotation; agricultural productivity and diversity.

CO2: It is also help to understand world agricultural systems and controlling factors; the agricultural problems in South Asian countries; classify lands accordingly USDA method; describe the problems of agriculture with special reference to South Asian countries and discuss the agricultural globalization in India.

CO3: Moreover, it gives knowledge on agricultural process and how it is implemented in the world as well as India.

Estd.-1966

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Course Outcome

Geography (GE)

Semester	I
Title of Course	Disaster Management (GE-1)
Paper Code	GE1T (Theory)
Credits	06
Hours	06 hours/week

The students of other science subjects (H) of Semester-I will acquire the knowledge about the Hazards, disasters, Risk and Vulnerability, Disaster management, Earthquake and Tsunami, Flood and drought, Soil erosion, Mitigation to Disasters by studying this course.

The theory paper (GE1T) of this course (GE-1) will be able to learn –

CO1: Definition, concepts, distinguishes of Hazards and Disasters; Risk and Vulnerability; and also classification of hazards.

CO2: Causes and consequences of hazards, i.e. Physical, economic and cultural
CO3: Role of National and international organizations in disaster management.

CO4: Causes, Impact, Distribution and Mapping of Earthquake, Tsunami, Landslides, Flood, drought, soil erosion, accidental release of toxic chemicals.

CO5: Response and Mitigation to disasters in institutional set up, i.e. NDMA and NIDM.

CO6: Indigenous knowledge and community based disaster management, do's and don'ts during and post disasters.

CO7: Emerging approaches to different disaster management.

CO8: Regional perspectives of hazards in India with reference to dimension, causes, consequences and remedial measures in Hills/coasts, terrorism.

CO9: Knowing about the national and international policies for disaster management.

CO10: Understanding the role of geospatial technology, i.e. RS, GNSS, and GIS in disaster management.

Semester	II
Title of Course	Geospatial Technology(GE-2)
Paper Code	GE2T (Theory)
Credits	06
Hours	06 hours/week

The students of other science subjects (H) of Semester-IIwill acquire the practical knowledge about the development of geospatial technology, Significance of WGS84 and UTM, Spatial technology, Remote Sensing, IRS, Georeferencing maps and images, Vegetation indices, GIS, GNSS, DEM, SRTM, Google Earth and Google Map by studying this course.

The theory paper (GE2T) of this course (GE-2) will be able to learn –

CO1: Scope and components of geospatial technology and it's historical development.

CO2: Concept and significance of spheroid, ellipsoid and projection system with WGS84 and UTM.

CO3: Data types and structures in spatial technology, Principles of land – based surveying, and Classification of remote sensing platforms, sensors and resolution with IRS (Resource-sat and Carto-sat) and Landsat system.

CO4: Principles of geo-referencing of maps and images, and image enhancement, band combination with rotation and Vegetation indices.

CO5: Classification and preparation of thematic maps and images, and also able to Raster to vector conversion, preparation and manipulation of GIS data, spatial modelling and overlay analysis.

CO6: Preparing DEMs from optical and RADAR sensors, and also integration of different components of spatial technology, and development of web-based spatial platforms with reference to Bhuvan and Google Earth /Google Map.

Semester	III
Title of Course	Rural Development (GE-3)
Paper Code	GE3T (Theory)
Credits	06
Hours	06 hours/week

The students of other science subjects (H) of Semester-IIIwill acquire the knowledge about the Urban and rural sectors economy, Paradigms and need of Rural Development,Area based approach to rural development, Target group approach to rural development, PURA, SJSY, MNREGA, Panchayati Raj System, NRHM, JananisurakshaYojana etc.by studying this course.

The theory paper (GE3T) of this course (GE-3) will be able to learn –

CO1: Economic interdependence of urban and rural sectors.

CO2: Theories of rural development by Lewis and Myrdal, and "Big push" theory of development, also able to Gandhian approach to rural development.

CO3: Concept of agriculture and allied sectors, seasonality and need for expanding non- farm activities.

CO4: Concept of Rural Co –operatives and agricultural marketing, also explain the drought prone area based programmes to rural development with PMGSY, SJSY, MNREGA, and Jan DhanYojana.

CO5: Elementary education and primary health care and micro credits are developed, and Concept of Panchayati Raj System.

CO6: Policies and programmes to rural development, some rural infrastructural development programmes, some rural development programmes for Women and children in own country.

Semester	IV
Title of Course	Climate Change: Vulnerability and Adaptations(GE-4)
Paper Code	GE4T (Theory)
Credits	06
Hours	06 hours/week

The students of other science subjects (H) of Semester-IVwill acquire the practical knowledge about Science of climate change with geological time scale, Evidences and factors of climate change, Greenhouse gases and Global Warming, EMS, Heat balance, Impact of climate change, Kyoto protocol, COP, Indian national action plan, Awareness and Action Programmes by studying this course.

The theory paper (GE3T) of this course (GE-3) will be able to learn –

CO1: Origin, scope and trends of climate change, and also understanding the climate change with reference to the Geological time scale.

CO2: Students can learn the evidences and factors of climate change. They will also get to know about the greenhouse gases ad global warming.

CO3: Develop an idea about EMS, atmospheric window, and heat balance of the earth atmosphere.

CO4: Detailed study of vulnerability risk factors related to climate change.

CO5: Acquire knowledge about role of different global initiatives to climate change mitigation, i.e. Kyoto Protocol, Carbon trading, clean development mechanism, COP, Climate fund. Learn the significant and evolution of role of local and global organisations.

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Course Outcome

Geohraphy (DSC)

Semester	I
Title of Course	Physical Geography (DSC-1A)
Paper Code	DSC1AT (Theory)
Credits	06
Hours	06 hours/week

The students of Geography (G) of Semester-I will acquire the knowledge about the Components of Earth System, atmosphere, Climatic Classification, plate tectonics, cyclic and noncyclic model of Davis, Penck, and Hackby studying this course.

Physical Geography (DSC-1A) events on the earth surface with special emphasis on the following topics:

CO1: Definition and Scope, Components of Earth System.

CO2: Heat Balance of the atmosphere, Global Circulation Pattern, Tropical Cyclones, Monsoon, Koppen Climatic Classification.

CO3: Sketch and label the different internal structure of earth based on seismic evidence, plate tectonics and its associated features.

CO4: Explanation of the Fluvial Cycle of Erosion according to Davis and Penck.

CO5: Hydrological Cycle, Ocean Bottom Relief Features, Tides and Currents.

Semester	II
Title of Course	Human Geography (DSC-1B)
Paper Code	DSC1BT (Theory)
Credits	06
Hours	06 hours/week

The students of Geography (G) of Semester-II will acquire the practical knowledge about Human Geography, space and society, Population growth and demographic transition theory, by studying this course.

The theorypaper (DSC1BT) of this course (DSC-1B) provides the student with-

CO1: Elaborate explanation of the definition, nature, major subfields, contemporary relevance.

CO2: Distinguish between space and society and cultural regions; race; religion and language

CO3: Population growth and demographic transition theory.

CO4: World population distribution and composition (Age, Gender and Literacy).

CO5: Different types and patterns of rural settlements; classification of urban settlements; trends and patterns of world urbanization.

Semester	III
Title of Course	Maps and Diagrams with Cartographic Techniques (DSC-1C)
Paper Code	DSC1CT (Theory)
Credits	06
Hours	06 hours/week

The students of Geography (G) of Semester-I will acquire the practical knowledge about the Graphical construction of scales, Projections, Indian topographical map, by hands on computer programming.

Students who complete this course (DSC-1C) will be able to learn –

CO1: Maps types, elements and there uses.

CO2: Drawing and using of different types of map scale i.e. Plain or comparative and also able to application and reading distances on a map.

CO3: Draw the Circle, Square and Pie graph and Age-Sex Pyramid, Dependency Ratio, Population Density by Choropleth, Distribution by Dot and Sphere, and Symbols, Dots, Choropleth, Isopleth and Flow Diagrams, Interpretation of Thematic Maps.

CO4: Nature and classification of map projections.

CO5: Drawing, principles, theories, and Criteria for Choice of Projections; Construction and Properties of select Map Projections i.e. Conical projection with two standard parallel, Cylindrical Equal Area, Polar Zenithal Stereographic, Zenithal Gnomonic Polar Case, Mercator's Projection, and Bonne's Projection.

CO6: Concepts and Principles of Angles, Bearing and Azimuths, Traversing, Radiation, Intersection.

CO7: Familiarity with surveying instruments of prismatic compass and preparation of land use maps by open and closed traverse; computations of compass traverse-included angle, area of traverse and levelling by dumpy level with construction a profile.

CO8: In this paper each of the students will prepare an individual field report by choosing any of the socio-economic problems.

CO9: This work gives a field base knowledge how the local people are living such disaster-prone areas. The objectives of this work should follow to locating such areas and suggest some useful recommendations to minimize the socio-economic problems.

Semester	III
Title of Course	Remote Sensing (SEC-1)
Paper Code	SEC1T (Theory)
Credits	02
Hours	02 hours/week

The students of Geography (G) of Semester-III will acquire the knowledge about remote sensing, energy sources, standard false colour composites, LULC by studying this course.

Students who complete this course (SEC-1) will be able to learn –

CO1: Basic concepts of remote sensing.

CO2: Basic concepts of energy sources, interactions with atmosphere, sensing systems, data products, resolutions: spatial, spectral, and radiometric and temporal.

CO3: Principles of preparing standard false colour composites.

CO4: Principles of image interpretation and feature extraction and preparation of inventories of land use land cover (LULC) features from satellite images.

Semester	IV
Title of Course	Environmental Geography (DSC-1D)
Paper Code	DSC1DT (Theory)
Credits	06
Hours	06 hours/week

The students of Geography (G) of Semester-IV will acquire the knowledge about Environmental Geography, Human-Environment Relationship, New Environmental Policy of India by studying this course.

Students who complete this course (DSC-1D) will be able to learn –

CO1: Environmental Geography: Concepts and Approaches; Ecosystem – Concept and Structure; Ecosystem Functions.

CO2: Human-Environment Relationship in Equatorial, Desert, Mountain and Coastal Regions.

CO3: Environmental Problems and Management: Air Pollution; Biodiversity Loss; Solid and Liquid Waste.

CO4: Environmental Programmes and Policies: Developed Countries; Developing Countries.

CO5: New Environmental Policy of India; Government Initiatives.

Estd.-1966

Semester	IV
Title of Course	Regional Planning and Development (SEC-2)
Paper Code	SEC2T (Theory)
Credits	02
Hours	02 hours/week

The students of Geography (G) of Semester-IV will acquire the knowledge about regional planning of India, Regionalization, DVC, NITI by studying this course.

Students who complete this course (SEC-2) will be able to learn –

CO1: Concept, need, and types of regional planning.

CO2: Characteristics and delineation of planning region.

CO3: Regionalization of India for planning spatial reference to agro ecological zones.

CO4: Models for regional planning: growth pole theory; core periphery model and growth foci concept in Indian context.

CO5: Backward regions and regional plans- special area development plans in India; DVC-The Success Story and the Failures; NITI Aayog.

Semester	V
Title of Course	Geography of India (DSE-1A)
Paper Code	DSE1AT (Theory)
Credits	06
Hours	06 hours/week

The students of Geography (G) of Semester-V will acquire the practical knowledge about Geography of India by studying this course.

Students who complete this course (DSE-1A) will be able to learn –

CO1: Location, structure and relief, drainage, climate of the physical setting.

CO2: Size and growth of population since 1901, population distribution, literacy, sex ratio.

CO3: Settlement system - rural settlement types and patterns, urban pattern.

CO4: Resource base – livestock i.e. cattle and fisheries, power i.e. coal, and hydroelectricity, minerals i.e. iron ore and bauxite, and economy – agriculture i.e. rice, wheat, sugarcane, groundnut, cotton; industries i.e. cotton textile, iron-steel, automobile, transportation modes i.e. road and rail.

Estd.-1966

Semester	V
Title of Course	Remote Sensing and GPS based Project Report (SEC-3)
Paper Code	SEC3T (Theory)
Credits	02
Hours	02 hour/week

The students of Geography (G) of Semester-V will acquire the practical knowledge about Remote Sensing and GPS based Project Report by hands on practical experiments.

Students who complete this course (SEC-3) will be able to learn –

CO1: Definition, development, platforms and types of remote sensing.

CO2: Principles, types and geometry of the aerial photography.

CO3: Principles, EMR interaction with atmosphere and earth surface; satellites i.e. Landsat and IRS, and sensors of the satellite remote sensing.

CO4: Interpretation and application of remote sensing of Land use and Land Cover, and Global Positioning System (GPS) also its principles and uses.

Semester	VI
Title of Course	Economic Geography (DSE-1B)
Paper Code	DSE1BT (Theory)
Credits	06
Hours	06 hours/week

The students of Physics (G) of Semester-VI will acquire the knowledge about the economic geography, Locational theories, different activities by studying this course.

Students who complete this course (DSE-1B) will be able to learn –

CO1: Definition, approaches and fundamental concepts of economic geography; patterns of development.

CO2: Locational theories of agriculture and industrial, Von Thunenand Weber respectively.

CO3: Characteristics of different primary activities i.e. intensive subsistence farming, commercial grain farming, plantation, commercial dairy farming, commercial fishing, and mining mainly iron ore, coal and petroleum.

CO4: Characteristics of different secondary activities i.e. cotton textile industry, petro-chemical industry, and major manufacturing regions.

CO5: Characteristics of different tertiary and quaternary activities of the modes of transportation, patterns of international trade, and information and communication technology industry.

Semester	VI
Title of Course	Field Techniques and Survey based Project Report (SEC-4)
Paper Code	SEC4T (Theory)
Credits	02
Hours	02 hour/week

The students of Geography (G) of Semester-VI will acquire the practical knowledge about Remote Sensing and GPS based Project Report by hands on practical experiments.

Students who complete this course (SEC-4) will be able to learn –

CO1: Role, value and ethics of field-work in geographical studies.

CO2: Defining the field and identifying the case study of Rural either Urban or Physical or Human or Environmental.

CO3: Merits, demerits and selection of the appropriate technique; observation of participant or non-participant.

CO4: Questionnaires i.e. open or closed or structured or non-structured; interview with special focus on focused group discussions; space survey i.e. transects and quadrants, constructing a sketch.

CO5: Aims and objectives, methodology, analysis, interpretation and writing the field report.

CO6: Each student will prepare an individual report based on primary and secondary data collected during the field work.