importance and components- sarvodaya social order – Gandhian life style

- Gandhian experiments in education in South Africa and India- Basic Education (Nai Talim), Goals of education
- Importance of Crafts, medium of education, role of state in primary education, views on higher education, women's education

Unit V

Peace Studies and Conflict Resolution

- Origin and Meaning of Peace. Approaches to peace- Indian concept of peace. Peace in different cultures and religious traditions – Nature and scope of peace studies, Characteristic features of peace studies.
- Meaning of Violence personal, structural and cultural violence. Importance of Peace education in promoting a culture of peace. Nature and goals of peace education
- Meaning and nature of conflict. Conflict analysis as a key step to conflict resolution. Approaches to conflict resolution-Negotiations, Facilitated Problem Solving, Mediation
- Conflict Transformation Ideas of Galtung and John Paul Lederach, Culture and Conflict Resolution
- Gandhian approach to peace and conflict transformation, Learning from Gandhi's Satyagraha Campaigns (Champaran, Salt Satyagraha, Kheda, Ahmedabad), Role of Shanti Sena . Building peace from belowthe role of reconciliation and forgiveness in conflict resolution. Examples of Truth and Reconciliation Commissions.

Unit VI - Gandhi and the modern world

- Problems related to human survival -Ecological crisis- Depletion of resources sustainable energy – climate change, reckless urbanization, increase in violence, sanitation , nuclear arms races, piling up of court cases,
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food security and Gandhian responses to such crises

- Gandhian legacy in India- Vinoba Bhave and Jayaprakash Narain's contributions, Panchayat Raj and the 73rd and 74th amendments, the emergence of voluntarism and cooperatives in India- Chipko & Apiko Movements, Narmada Bacchao Antholan, Baliapal Movement, Koodankulam movement, Ralegaon Siddhi, Hari Vallabh Parikh, Irom Sharmila, Nilpu Samaram
- Gandhi's global legacy : Martin Luther King Jr., Petra Kelly, Lanza Del Vasto, Cesar Chavez, Aung San Su Chi, Nelson Mandela
- Nonviolent Action worldwide: Khudai Kidmatgars, Tiannmen square, Philippines, Arab Spring,
- Organic Farming movement, Gandhian insights on leadership and management, ADR movement

10. Geography

Unit I Concepts in Geography

Module 1.

 Geography – meaning, definition, nature and scope –Concepts, theories, Laws and models in Geography– Branches and Approaches

Module 2.

 Development of Geographical thought – Classical, medieval and modern periods – Founders of modern geographical thought

Module 3.

 Traditions in Geography – Dualism and Dichotomies – Paradigms - Modern concepts and trends in Geography – Quantitative revolution – Spatial, Location and System Analysis.

Module 4.

 Foundation in Human Geography – Principles of Human Geography-Approaches; Determinism, Possibilism, Neodeterminism, man-environment relations;

Forms of human adaptation to the environment.

Module 5.

 Cultural regions – Stages of human development, major human races, major languages and religions of the world – cultural regions; Heartland and Rimland theories

Unit II Physical Geography

Module 1.

- Geomorphology: Origin of earth theories and concepts, Geochronology and Geological timescale, Continental drift theory, Isostacy, Plate Tectonics, Sea floor spreading, Tetrahedron theory, Convection current hypothesis, Palaeomagnetism.
- Endogenic process -earthquake, volcanism, Mountain building theories – folding and faulting - Concept of slope- exogenic process
 extra terrestrial process, Mass movements, Weathering and Denudation. Agents of denudation- river, glacier, sea, wind, ground water, Cycle of erosion- Concepts and theories of W.M. Davis and Penk.
- Formation and classification of rocks and soils.

Module 2.

 Oceanography: Major Oceans – bottom relief of major oceans, Composition of Sea Water, Salinity, Temperature and density – Movements of ocean Water- Waves, Tides, Currents, Ocean deposits.

Module 3.

- The composition and structure of atmosphere-distribution of temperature and pressure insolation heat budget of the earth General circulation of atmosphere planetary winds, seasonal winds, local winds, cyclones and anticyclones, jetstreams.
- Atmospheric moisture, humidity, condensation – clouds - types, fog-types, precipitation-types of precipitation, air masses and fronts-formation and classification.

• Climatic classification-Koppen and Thornthwaite, ozone depletion, Elnino, LaNino, southern oscillations, Climate change and global warming.

Module 4.

 Biogeography – Ecosystem, Habitat, Biomes, community, Ecotone and ecological niche. Energy: Energy sources, energy flow, food chains and food webs. Biodiversity-Hotspots, Major biomes- distribution and characteristics. Conservation of biodiversity. Conservation methods-national parks, sanctuaries, biosphere reserves.

Unit III Resource Geography

Module 1.

 Economic Geography – Resources, meaning, classification, Major resources – Natural and human resources.

Module 2.

 Economic activities – primary, secondary and tertiary, Industries – Industrial regions of the world – Industrial location theories Weber and Losch– Transport and Trade.

Module 3.

 Agricultural Geography – Origin and development of agriculture, Approaches, Factors affecting agriculture, Models in Agricultural geography – agricultural regionalization –techniques and methods – land use and land capability classification

Module 4.

 World agricultural regions – Agricultural regions of India – Revolutions in agriculture and recent trends – Problems and prospects of Indian agriculture

Module 5.

 Population Geography - sources of population data - components of population
 - Distribution and growth of population population problems and policies.

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Module 6.

 Population dynamics – Fertility, Mortality and Migration - laws of migration – Concepts of optimum, over and under population – Demographic transition theory – Theories of population (Malthus, Ricardo, Marx) – Population resource regions.

Unit IV

Urban and Regional Planning

Module 1.

 Regional Planning – concepts, types, regions and approaches.

Module 2.

 Growth Pole – polarisation and spread effect, growth foci concept in regional planning. levels and regional planning – district, block, panchayath, watershed planning and people's participation in planning.

Module 3.

 Regional Growth – economic base concept, inter intra regional planning, regional imbalance and levels of development. five year plans and urban development programmes.

Module 4.

• Definitions of Urban centers, process and factors of urbanization Classification of urban centers based on size and function.

Module 5.

 Urban morphology, Urban land use models
 CBD – Christaller's central place theory and Losch theory. Urban housing, slums & fringe development

Unit V

Geography of India

Module 1.

• Location, Unity in Diversity, Physiography, Climate, Drainage, Soil and Natural Vegetation

Module 2.

 Major Crops and Irrigation – Irrigation and Types, Crops-Rice, Wheat, Sugarcane,

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Cotton, Jute, Tea, Coffee, Groundnut, And Coconut.

Module 3.

• Fisheries, Mineral and Power Resources; Industries-Iron and Steel, Textiles, Sugar, Cement, Paper, Chemicals an Fertilizers, Industrial regions.

Module 4.

• Trade, Transportation and Demographic Characteristics.

Module 5

• Kerala-Physical Setting, Demography, Agriculture, Minerals, Industries, Tourism, Transportation.

Unit VI Geoinformatics

Module 1.

• Cartography: Concept– Maps – Types – Uses, Characteristics, Map projection – Types.

Module 2.

 Phases of cartographic processes – Map compilation – Generalization – symbolization, map design and layout – Map reductions and enlargements.

Module 3.

Remote sensing:- Process of Remote sensing

 EMR characteristics, Electromagnetic spectrum, Atmospheric window , Spectral reflectance curves – Vegetation, soil and water , Types of remote sensing, Platforms.

Module 4.

• Aerial Remote Sensing - Photogrammetry – Aerial Photograph and Types– Scale – Camera – Lens – Film - Relief displacement and correction, Image parallax, Stereoscopic plotting instruments -orthophotos - Flight Planning.

Module 5.

 Satellite Remote Sensing –Satellites and their characteristics– Orbits, Swath, Nadir – Sensors and types, Sensor Resolutions– Scanning - Satellite programmes of USA, Russia, France and India.

Module 6.

 Elements of Image Interpretation, Digital Image Processing: Rectification, Geometric correction, Radiometric correction, Noise removal, Image enhancement and classification – Application – GPS.

Module 7.

 GIS; - Concepts and components of GIS, Analog and digital map, Sources of spatial data, Functions of GIS. Data model - Raster and vector - Spatial data structure -Database, DBMS and functions - Relational data base models - Concept of SQL and metadata - Linking of spatial and attribute data.

Module 8.

 Methods of data input- Data editing –Edge Matching and Rubber Sheeting. Data Analysis: Measurement of length, perimeter and area-Queries-Buffering-Neighbourhood functions – Overlay – Raster overlay and vector overlay-Surface and network analysis -Web GIS.

11. Geology

Unit I

Module 1. Physical Geology

- Earth and the Solar system Origin of the Earth Different popular hypotheses. Geochronology and Age of the earth dimensions of the earth.
- Internal structure of the earth Basic concepts of seismology - heterogeneity of the earth's crust - physico-chemical and seismic properties of the earth's interior - Density distribution within earth.
- Earth's magnetic field changes in magnetic field - origin of geomagnetic field -Geomagnetism - Palaeomagnetism-Magnetic anomalies - Magnetic reversals.
- Thermal history of the earth-Heat within the earth Geothermal gradient and heat flow.

- Gravity of the earth gravity measurements - gravity anomalies - concept of geoid and spheroid. Concept of Isostasy.
- Earthquakes types, causes and effects. Prediction of earthquakes.

Module 2. Geomorphology

- Geomorphic principles and processes. Cascading process system - solar energy cascade. Theories of Uniformitarianism, Catastrophism and Gradualism. Denudation, sediment cascade, transported load in rivers, rate of erosion over space and time. Influence of climate and structure on geomorphic processes and landforms. Morphogenetic landforms.
- Evolution of landforms Models of landscape evolution by Davis, Penck and King. Geographical cycle Treppen concept Pediplanation cycle.
- Landforms relation of igneous activity, structure and lithology to landforms.
- Hill slopes processes and evolution.
- Fluvial geomorphology: drainage basin morphometric analysis of drainage basins fluvial processes and landforms.
- Concept of rejuvenation and interruption in the evolution of landforms.
- Coastal geomorphology: Coastal processes and associated landforms.
- Desert geomorphology: Aeolian process and associated landforms.
- Glaciers and glacial processes glacial landforms; Glaciation.
- Concepts of Monocyclic, Polycyclic and Polygenetic landforms.
- Coral reefs: types and significance.
- Soils: formation, classification, soil profile. Soils of India and Kerala.
- Brief idea of the geomorphic features of the Indian sub-continent and Kerala.

Module 3. Planetary Geoscience

• Milky Way and the solar system. Big bang theory and formation of the planetary systems. Members of the solar system. Orbital characteristics of planets. General

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