

GOA UNIVERSITY
POSTGRADUATE DEPARTMENT OF GEOGRAPHY(In Affiliated Colleges)
REVISED CURRICULUM : M.A./M.Sc. GEOGRAPHY (w.e.f. 2014 – 2015)
Credits Adjusted As per Circular No.2/498/2017-Legal(Vol.XIV)/1023 dated 03rd July 2018.

CORE COURSE OF MA GEOGRAPHY PROGRAMME

| Semesters | Paper Code | Title of the Paper | Credits |
|-----------|------------|--|---------|
| Sem I | GEC001 | Theory: Principles of Geomorphology Practical: Practicals in Geomorphology | 3T+1P |
| | GEC002 | Theory: Principles of Climatology Practical: Practicals in Climatology | 3T+ 1P |
| Sem II | GEC003 | Theory: Principles of Population Geography Practical: Practicals in Population Geography | 3T+ 1P |
| | GEC004 | Theory: Principles of Economic Geography Practical: Practicals in Economic Geography | 3T+ 1P |
| Sem III | GEC005 | Theory: Development of Geographical Thought Practical: Quatitative Approach & Practicals in Statistical Geography | 3T+ 1P |
| | GEC006 | Theory: Fundamentals of Remote Sensing Practical: Practicals in Remote Sensing | 3T+ 1P |
| Sem IV | GEC007 | Theory: Regional Planning & Development Practical: Computer Applications in Geography & Regional Planning | 3T+ 1P |
| | GEC008 | Theory: Fundamentals of Geographic Information System Practical: Practicals in Geographic Information System | 3T+ 1P |

OPTIONAL COURSE OF MA GEOGRAPHY PROGRAMME

| Semesters | Paper Code | Title of the Paper | Credits |
|-----------|------------|--|---------|
| Sem I | GEO001 | Environmental Geography | 4T |
| | GEO002 | Disaster Mitigation & Management | 4T |
| | GEO003 | Fundamentals of Oceanography | 2T |
| | GEO004 | Fundamentals of Soil Geography | 2T |
| Sem II | GEO005 | Geography of Trade & Transport | 4T |
| | GEO006 | Political Geography | 4T |
| | GEO007 | Regional Geography of India | 2T |
| | GEO008 | Urban Geography | 2T |
| Sem III | GEO009 | Coastal Geomorphology | 4T |
| | GEO010 | Fluvial Geomorphology | 4T |
| | GEO011 | Geography of Settlements | 4T |
| | GEO012 | Industrial Geography | 2T |
| | GEO013 | Research Methodology | 2T |
| | GEO014 | Practicals in Cartography Applications | 2P |
| Sem IV | GEO015 | Watershed Management | 4T |
| | GEO016 | Social and Cultural Geography | 4T |

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| | GEO017 | Economic Geography of Globalization | 4T |
| | GEO018 | Tropical Geomorphology | 2T |
| | GEO019 | Teaching Methodology | 2T |
| | GEO020 | Field Techniques and Village Survey | 2P |

OPTIONAL COURSE OF MA GEOGRAPHY PROGRAMME

| Semesters | Paper Code | Title of the Paper | Credits |
|------------------|-------------------|---------------------------|----------------|
| Sem III | GED-001 | Dissertation | 4 |
| Sem IV | GED-002 | Dissertation | 4 |

GOA UNIVERSITY
POSTGRADUATE DEPARTMENT OF GEOGRAPHY(IN AFFILIATED COLLEGES)
GEC001: PRINCIPLES OF GEOMORPHOLOGY

| Units | Topic | Subtopic | Contact Hours |
|--------------|---------------------------|--|----------------------|
| 1 | Geo tectonics | Origin of the Earth, Geological time scale and related topographic and structural evolution. Isostasy: Airy and Pratt Views. Folds and Faults-origin, types and their topographic expressions, Plate Tectonics: plate tectonic processes--sea floor spreading, subduction, orogenesis, earthquakes and volcanism, Geo-magnetism. | 12 |
| | Historical Geomorphology | Definition and history of Geomorphology, Uniformitarianism and Catastrophism, Geomorphic (Cyclic, Graded and Steady) and Spatial Scale, Basic concepts of Geomorphology as postulated by Thornbury. | |
| 2 | Process Geomorphology | General degradational processes: processes of rock weathering and their effects on landforms, Slope development and slope facets; Relationship between longitudinal and transverse slope recession; Geomorphological processes upon slopes. Evolution of landforms by the process – Fluvial, Glacial & Periglacial, Aeolian Karst and Coastal. | 12 |
| 3 | Theories of Geomorphology | Normal cycle of erosion by W.M.Davis, Views of W. Penk on normal cycle of erosion, Cycle of Pediplanation by L.C.King, Dynamic Equilibrium theory by J.T. Hack. | 12 |
| | Applied Geomorphology | Application of geomorphology in planning and development. | |

Credits = 03

Each Credit consists of 12 Contact hours.

Total No of Contact hours 12 X 3= 36.

References:

1. Kale, V. and Gupta, A. 2001: Introduction to Geomorphology, Orient Longman, Kolkata
2. Chorley, R.J. 1969: Introduction to Fluvial Processes, Methuen, London
3. Chorley, R.J., Schumm, S. A. and Sugden, D.E. 1984: Geomorphology, Methuen, London
4. Cooke, R.U. and Warren, 1973: Geomorphology in Deserts, Batsford, London
5. Dayal, P. 1996: Textbook of Geomorphology, Shukla Book Depot ,Patna.

6. Hallam, A. 1973: A Revolution in Earth Science: From Continental Drift to Plate Tectonics, Oxford University Press, London.
7. McCullagh, P. 1978: Modern Concepts in Geomorphology, Oxford University Press, Oxford.
8. Morisowa, M. 1968: Streams, their Dynamics and Morphology, McGraw Hill, New York.

GOA UNIVERSITY
POSTGRADUATE DEPARTMENT OF GEOGRAPHY(In Affiliated Colleges)
GEC001: PRACTICALS IN GEOMORPHOLOGY

| Units | Topic | Subtopic | Contact Hours |
|--------------|--|--|----------------------|
| 1 | Drainage basin and network morphometry Slope analysis Geomorphic mapping | Preparation of contour and drainage map from toposheet, Morphometric analysis. Slope (isotan and isosin) and aspect maps & Hypsometric curve and integral. Geomorphic mapping in the field-process and materials mapping. Size analysis of the sediment samples collected in the field (by sieving). | 12 |
| 2 | Sediment size and shape analysis Field work | Plotting of the weights in different sieves on probability graph. Calculation of mean, median sorting index, skewness & kurtosis. Determination of silt and clay based on settling velocity. Shape analysis using sediment microscope. Measurement of channel cross-sections in the field, Geomorphic map of channel bed, Study of erosional and depositional features in the field | 12 |

Credits = 01

Each Credit consists of 24 Contact hours.

Total No of Contact hours 12 X 2= 24.

References

1. Doorenbos J.(1977) and Pruitt W.O. - Crop water requirement, FAO irrigation and drainage.
2. Frere and Popov (1979)- Agro-Meteorological Crop monitoring and forecasting, FAO plant production Paper No. 17.
3. Lawrence, G. R. P.: Cartographic Methods, Mathur Co. London
4. Monkhouse, F. J. R and: Maps and Diagrams, Wilkinson, H.R. Methuen and Co., London.
5. R. L. Singh & Rana P. B. Singh: Element of Practical Geography, Kalyani Pub. New Delhi (1999)

GOA UNIVERSITY
POSTGRADUATE DEPARTMENT OF GEOGRAPHY (In Affiliated Colleges)
GEC002: PRINCIPLES OF CLIMATOLOGY

| Units | Topic | Subtopic | Contact Hours |
|--------------|--|--|----------------------|
| 1 | Introduction Insolation and Heat Balance | Weather & Climate, Subdivisions of Climatology, Earth`s atmosphere: Physical properties, Chemical composition, Temperature changes, Vertical variations in the composition Electromagnetic spectrum, Factors affecting Insolation, Latitudinal and Seasonal variation of Insolation, Albedo, Green House Effect, Heat Budget | 12 |
| 2 | Temperature, pressure, humidity and wind motion | Temperature: Difference between Heat and Temperature, Horizontal and Vertical distributions, Inversion of temperature, Measurement & units Pressure: Factors affecting air pressure, Pressure changes with altitude, distribution of surface pressure, Pressure measurement and Units Wind: Factors affecting wind, Geostrophic wind, Gradient wind, Wind observation and measurement Humidity: Humidity measurement, Changes of state of water, Factors affecting Condensation, Factors affecting Evaporation Relationship between Temperature, Pressure, Humidity and Wind | 12 |
| 3 | Circulation of the Atmosphere Atmospheric Stability | Wind movement, Global circulation Model, Tri-cellular theory, and Eddy theory. Jet stream and its effect on the surface, Global & Local winds, Effect of wind on weather Stable and Unstable Atmosphere, Factors affecting atmospheric stability, Normal, environmental, dry and wet adiabatic lapse rate, Absolute stability, Absolute instability, Conditional instability, Weather associated with stability an instability | 12 |

Credits = 03

Each credit consists of 12 Contact hours.

Total No of Contact hours 12X3= 36.

References:

1. Frederick K. Lutgen, Edward Tar buck: "The Atmosphere An Introduction to Meteorology"
Prentice Hall, Englewood Cliffs ,New Jersey 0762 ,1998
2. D. S. Lal: Climatology. Sharda Pustak Bhawan ,11 , University road Allahabad 211002 Edition 2003
3. Trewartha : Introduction to Weather and Climate.
4. H.J. Critchfield (Rep.2010): General Climatology. Prentice Hall, New Delhi
5. Savindra Singh (Rep.2011)Climatology

GOA UNIVERSITY
POSTGRADUATE DEPARTMENT OF GEOGRAPHY (In Affiliated Colleges)
GEC002: PRACTICALS IN CLIMATOLOGY

| Units | Topic | Subtopic | Contact Hours |
|--------------|--|---|----------------------|
| 1 | Temperature Analysis | Processing of observed data to derive maximum, minimum and daily range of temperature. Analysis of upper air data – Tephigram (Temperature-Height diagram) Calculation of relative humidity, dew point and vapor pressure from dry and wet bulb temperature data. | 12 |
| 2 | Rainfall Analysis Water Budget and Discomfort Index | Classification of Koppen and Thornthwaite's Climate, Calculation of seasonal rainfall and annual variability of rainfall. Construction of crop-coefficient curve for any one crop. Calculation of water surplus and water deficit amounts during crop growing season. Computation of Water Requirement Satisfaction index. Discomfort index by Thom's (1959) method. Identification and categorization of heat and cold waves. | 12 |

Credits = 01

Each Credit consists of 24 Contact hours.

Total No of Contact hours 12 X 2= 24.

References:

1. Doorenbos J.(1977) and Pruitt W.O. - Crop water requirement, FAO irrigation and drainage.
2. Frere and Popov (1979)- Agro-Meteorological Crop monitoring and forecasting, FAO plant production Paper No. 17.
3. John F. Mather (1974) - Climatology Fundamentals and Application Oxford University Press.
4. Mather J.R (1974) Climatology, Fundamentals and applications, Mc Graw Hill Book Co, New York.
5. R. L. Singh & Rana P. B. Singh: Element of Practical Geography, Kalyani Pub. New Delhi (1999)
6. Trewartha G.T. : An Introduction to climate Mc-Graw- Hill Book Co. New York.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEO001: ENVIRONMENTAL GEOGRAPHY

| Units | Topic | Subtopic | Contact Hours |
|--------------|---|--|----------------------|
| 1 | Introduction to Environmental Geography Ecosystem and Biodiversity | Environmental Geography-meaning, nature, scope and fundamental concepts, approaches and methods in Environmental Geography, Concept of Ecology, subdivisions and approaches in Ecology Ecosystem concept and components, Habitat and ecological niche, Spatial and temporal dimensions of ecosystem, Abiotic and biotic components, Biodiversity and its conservation | 12 |
| 2 | Environmental degradation | Nature types of degradation-Natural and Anthropogenic degradation, causes and effects of environmental degradation/problems with special reference to the Indian scenario. | 12 |
| 3 | Environmental Pollution Global Warming and Its Impacts | Air pollution, Water pollution, Land Pollution and Noise pollution and its effects. Case studies from India. Global Warming-Ozone layer depletion, and related causes, Green house effect, Impacts of Global warming and measures | 12 |
| 4 | Environmental Management | Environmental planning and policies Trends of environmental policies-Environmental Impact Assessment (EIA). Sustainable development, management of environmental quality. | 12 |

Credits = 04

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 4= 48.

References :

1. Bertalanffy, L. General Systems Theory, George Bragiller New York, 1958.
2. Bodkin, E.: Environmental Studies, Charles E. Merrill Pub. Co., Columbus, Ohio, 1982.
3. Manners, I.R. and Mikesell, M.W.(eds.), Perspectives on Environment, Commission on College Geography, Publ. No. 13, Washington, D.C., 1974.
4. Odum, E.P. : Fundamentals of Ecology, W.B. Saunders, Philadelphia, 1971.
5. Singh, S. : Environmental Geography, Prayag Publications, Allahabad, 1991.

6. Smith, R.L. : Man and his Environment: An Ecosystem Approach, Harper & Row, London, 1992.
7. Strahler, A. N., Geography of man's Environment, John Wiley & Sons Inc. New York
8. Noel Castree, David Demeritt, Diana Liverman & Bruce Rhoads . A Companion to Environmental Geography- A John Wiley & Sons, Ltd., Publication, 2009.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEO002: DISASTER MITIGATION & MANAGEMENT

| Units | Topic | Subtopic | Contact Hours |
|--------------|---|---|----------------------|
| 1 | Introduction hazard & disasters Disaster Zonation of the world | Definition, types of hazards & disaster, Definition, Hazard, Risk and Vulnerability Assessment, Risk and risk assessment. Disaster Zonation of the world in terms of Natural disasters like Earthquakes, Tropical Cyclones, Tsunamis, Avalanches, Mass movements and Landslides, Floods by severity scales, Disasters in India | 12 |
| 2 | Climatic, Geological & Geomorphic Disasters | Earthquakes and Tsunamis- Cause and effects and areas affected by earthquakes and tsunamis Land instability- Cause and affects and areas affected by landslides, subsidence, erosion, deposition | 12 |
| 3 | Man-made Hazards | Types of man induced hazards – physical, chemical, biological, and pollution. Factors contributing to man-made hazards. Physical Hazards - Cause and effects of Landslides, Soil erosion, forest fires, desertification etc. Impact of large river projects such as the Sardar Sarovar, the Tehri Dam etc., impact of excessive irrigation, effects of thermal and hydel power stations. Chemical Hazards -Nuclear Hazards, release of toxic elements in the air, soil and water, oil spills etc. Biological Hazards- Effects of Population growth – its impact on biodiversity, effects of over exploitation of resources, ecological disturbances – such as soil development, hydrological cycle, pollution etc. | 12 |
| 4 | Disaster Management and Measures Strategies of risk reduction | Structural and Nonstructural Measures, Disaster prevention, mitigation, preparedness, response, recovery and rehabilitation Strategies of risk reduction, disaster preparedness, support system, organizations, awareness programs, Disaster Policy and Planning in India, Disaster vulnerabilities of Sikkim: Earthquakes, Flooding and Landslides (to be based on Sikkim examples and | 12 |

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Credits = 04

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 4= 48.

Reference Books :

1. Turk J. (1985) : Introduction to Environmental Studies, Saunders, College Publication, Japan
2. Singh Savindra (2000) : Environmental Geography, Parag Pustak Bhavan, Allahabad
3. Morrisawa M (Ed) (1994) : Geomorphology and Natural Hazards, Elsevier, Amsterdam
4. Hart M. G. (1986) : Geomorphology, Pure and Applied, George Allen and Unwin, London
5. Valdiya K. S. (1987) : Environmental Geology, Tata McGraw Hill, New Delhi
6. Blaikie, P., Cannon, T., Davis, I., et al.: At Risk: Natural Hazards, People's Vulnerability, and
7. Disasters, Routledge, London, 1994.
8. National Center for Disaster Management (NIDM), Atlas, South-East Asia.
9. Paraswamam, S. and Unikrishnan, P.V.: India Disaster Report, Oxford University Press, New Geography Syllabus Page 48 Delhi, 2000.
10. Quarantelli, E.L. (ed.): What is a Disaster? Perspective on the Question, Routledge,

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY(In Affiliated Colleges)
GEO003: FUNDAMENTALS OF OCEANOGRAPHY

| Units | Topic | Subtopic | Contact Hours |
|-------|--|---|---------------|
| 1 | Introduction | Definition and Meaning of Oceanography, Foundation of Modern Oceanography, Contribution of Oceanographers in the subject, Post-war Oceanography, Modern Trends | 12 |
| | Origin of the Ocean Basins and Ocean Floor | Continental Drift, Seafloor Spreading, Plate Tectonics, World Oceans and their formations, Continental Margin, Oceanic Ridges and Rises Abyssal Plains, Oceanic Trenches, Volcanoes, Coral Reefs and Atolls | |
| 2 | Properties of Sea Water | Factors affect temperature on water and distribution, Factors affecting density, Origin and composition of sea salt and residence time, Carbon dioxide and carbonate cycles, Viscosity, Surface tension | 12 |
| | Tides | Tide generating forces, Equilibrium Theory of Tides, Dynamical Theory of Tides, Tides, Neap Tides, Tidal Currents and their Channels, Tidal Bores, Tidal effects in coastal areas | |
| | Ocean Currents | Types of Ocean Currents, geostrophic Currents, thermohaline circulation. Factors responsible for ocean currents, Ocean current in Pacific, Atlantic and Indian Ocean | |

Credits = 02

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 2= 24.

Reference Books:

1. Basu S.K. (2003) (ed): Handbook of Oceanography, Global Vision, Delhi
2. Davis Richard A. (1972): Oceanography, Addition Wesley Publishing Co.
3. Garrison Tom (1999): Oceanography, Brooks/ Cole Wadsworth, New York
4. Garrison Tom (2004): Essentials of Oceanography. Thompson, Australia
5. Grant Gross M. (1982): Oceanography, Prentice hall, Ince, New Jersey
6. King Cuchlain A. M (1962): Oceanography for Geographers (ED) Edward Arnold
7. Sharma & Vatal (1962): Oceanography for Geographers. Chaitanya Publishing House, Allahabad

8. Thurman Harold V. (1985): Introductory Oceanography. Bell & Howell Co. London
9. Weisberg J. and Howard P. (1974): Introductory Oceanography. McGraw Hill, Kogakusha, Tokyo.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEO004: FUNDAMENTALS OF SOIL GEOGRAPHY

| Units | Topic | Subtopic | Period |
|-------|---|--|--------|
| 1 | Introduction Soil Formation | Importance, Hydrology and soils, Soils and Agriculture, Problems related to soils, Types of soils Factors of soil formation (climate, topography, vegetation), Parent material and soil, Prerequisite for soil formation, Soil Horizons | 12 |
| 2 | Soil Properties & Quality Soil degradation and conservation Soil Distribution | Soil Texture, Soil Structure, Soil Color, Bulk Density, Porosity, Pore Space, Soil Temperature, Permeability, Soil Water, Soil Moisture, USDA soil texture triangle, Acidity and Alkalinity, Soil pH, Soil Colloids, Redox Potential, Cation & Anion exchange, Soil reclamation Salinization, Acidification, Soil fertility decline, Soil contamination, Deforestation, Overgrazing, Incorrect methods of farming, methods of soil conservation World soil distribution, Factors responsible to the distribution of soil | 12 |

Credits = 02

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 2= 24.

Reference Books :

1. Pitty A.F. (1978): Geography And Soil Properties, Methuen and Company Ltd., London.
2. White R.E. (1987): Introduction to The Principles And Practice of Soil Science, Blackwell Scientific Publications, London.
3. Fenwick I. M. and Knapp B.J. (1982): Soils - Process and Response, Unwin Brothers Ltd., The Greshman Press, Surrey.
4. Birkeland P.W. (1999): Soil And Geomorphology, Oxford University Press Inc., New York.
5. Brady N.C. (1984): The Nature And Properties of Soils. Macmillan Publishing Company, New York and Collier Macmillan Publishers, London.
6. Thomas J.B. and Brunsden D (1977): Geomorphology And Time, Methuen and Company Ltd.
7. Bunting B.T. (1969): Geography of Soil, Hutchinson University Library, London.
8. Cruickshank J.G (1972): Soil Geography, David and Charles (publishers) Limited, Newton Abbot.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY(In Affiliated Colleges)
GEC003: PRINCIPLES OF POPULATION GEOGRAPHY

| Units | Topic | Subtopic | Contact Hours |
|-------|---|--|---------------|
| 1 | Population as a Geographic Subject Human Population over Time and Space, Determinants of population growth | Introduction to Population Geography: Development of population geography, population geography in India, contents of population geography, approaches of population geography and interdisciplinary approach, Population geography and demography. World population growth and distribution, overview of population growth and distribution in India. Fertility and mortality: Determinants of Fertility and Mortality, Demographic Transition theory and its relevance. Case Study of India and one of its States. | 12 |
| 2 | Dynamics of Migration: trends and patterns | Importance of Migration, types of migration, cause – effect of migration, Indian migration abroad, recent trends and consequences. Migration theories – Lee, Ravenstein and Zelinsky. | 12 |
| 3 | Population and Resources Population Issues - Global and India | Population versus resources - Under population, overpopulation and optimum population, Malthus theory of population, Malthusian Analysis of Global Crises. Population and environment. China-Population control Policy and consequences, racism, population dynamics of western world, India Billion Plus and Consequences, Population policy, Indian Urbanization, declining gender ratio, women equity and empowerment in India. Changing age structure and Population ageing in India, Human development Index. | 12 |

Credits = 03

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 3= 36.

References:

1. Bose Ashish , India's Billion Plus People -2001 Census Highlights, Methodology and Media Coverage, B R Publishing Corporation, New Delhi,2001
2. Bose, Ashish et. al.: Population in India's Development(1947-2000): Vikas Publishing House, New Delhi 1974.
3. Census of India, India : A State Profile, 2001.

4. Chandna, R.C. Geography of Population : Concept, Determinants and Patterns, Kalyani Publishers, New Delhi 2002.
5. Clarke, John I., Population Geography, Pergamon Press. Oxford 1973.6
6. Mamoria, C.B. India's Population Problem: Kitab Mahal New Delhi 1981
7. Daugherty, Helen Gin, Kenneth C.W. Kammeryir, An Introduction to Population (Second Edition). The Guilford Press, New York, London 1998.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEC003: PRACTICALS IN POPULATION GEOGRAPHY

| Units | Topic | Subtopic | Period |
|-------|--|---|--------|
| 1 | Methods of Population data collection Methods of Calculation of population data | Basic sources of population data, collection and processing of demographic data: Census, sample survey and registration. Processes involved Fertility, Mortality, Population growth and projections (semi average method, Least square method , Exponential population growth), construction of life Tables, population density and concentration index. Dependency ratio, calculation of human development Index. | 12 |
| 2 | Methods of representation of population data Model testing | Pie chart, Age and sex pyramid and types, Trilinear chart, Flow diagram, Choropleth, Proportional circles, Divided proportional circles, level of urbanization. Demographic Transition model, rank size rule, nearest neighbourhood index. Settlement Geography – Rural-urban composition and ratio, Gini's concentration, Primary Index and rank size rule. | 12 |

Credits = 01

Each Credit consists of 24 Contact hours.

Total No of Contact hours 12 X 2= 24.

Reference Books:

1. Bose, Ashish et. al.: Population in India's Development(1947-2000): Vikas Publishing House, New Delhi 1974.
2. Census of India, India : A State Profile, 2001.
3. Chandna, R.C. Geography of Population : Concept, Determinants and Patterns, Kalyani Publishers, New York 2000.
4. Clarke, John I., Population Geography, Pergamon Press. Oxford 1973.
5. Garnier, B.J. Geography of Population Longman, London 1970.
6. Mitra, Asok, India's Population. Aspects of quality and Control Vol. I & II. Abhinav Publication. New Delhi 1978.
7. Premi, M.K. India's Population: Heading Towards a Billion, B.R. Publishing Corporation, 1991.
8. Srinivasan, K. Basic Demographic Techniques and Applications Sage Publications, New Delhi 1998.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEC004: PRINCIPLES OF ECONOMIC GEOGRAPHY

| Units | Topic | Subtopic | Contact Hours |
|-------|-------------------------------------|--|---------------|
| 1 | Introduction to Economic Activities | Scope, content and recent trends in economic geography, relation of economic geography with economics and other branches of social sciences, Location of economic activities and spatial organization of economics, Classification of economies; sectors of economy (primary, secondary and tertiary). | 12 |
| | Agricultural regions | Factors of location of economic activities: physical, social, economic and cultural; Concept and techniques of delimitation of agricultural regions, crop combination and diversification-Von Thunen's model and its modifications. | |
| 2 | Industries | Classification of industries; Resource based and footloose industries, Theories of industrial location- Weber, Losch and Isard; Case studies of selected industries; Iron and Steel, Aluminum, Chemical, Oil refining and Petrochemical, Engineering, Textile etc. | 12 |
| 3 | Transportation | Modes of transportation and transport cost; accessibility and connectivity: international, inter and intraregional; comparative cost advantages. Typology of markets, market network in rural societies, market system in urban economy, role of market in the development of trade and commerce. | 12 |
| | Economic development of India | Regional disparities, Impact of green revolution on Indian economy, Globalization and Indian economy and its impact on environment. | |

Credits = 03

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 3= 36.

References:

1. Berry J.L. Geography of Market Centres and Retail Distribution, Prentice Hall , New York, 1967.
2. Chatterjee, S.P. : Economic Geography of Asia, Allied Book Agency, Calcutta, 1984.
3. Chorley, R.J. and Haggett, P. (ed.): Network Analysis in Geography, Arnold, 1969.

4. Dreze, J. and Sen, A. : India-Economic Development and Social Opportunity, Oxford University Press, New Delhi, 1996.
5. Eckarsley, R.(ed.): Markets, the State and the Environment, McMillan, London, 1995.
6. Garnier. B.J. and Delobez, A Geography of Marketing, Longman, London, 1979.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY(IN AFFILIATED COLLEGES)
GEC004: PRACTICALS IN ECONOMIC GEOGRAPHY

| Units | Topic | Subtopic | Contact Hours |
|-------|---|---|---------------|
| 1 | Crop Concentration Crop Diversification Crop Combination Agricultural efficiency | a) Bhatia's method b) Jasbir Singh's modified method a) Gibbs Martins Index b) Bhatia's method a)Maximum Positive Deviation method of Raffiullah(1956) b) Athawale's method of crop combination (1966) c) Aiyar's method a) Sapre and Deshpande b) Calories per head c) Standard Nutritional Units per hectare | 12 |
| 2 | Lorenz Curve Transport Network Models of Spatial Interaction | a) Gini coefficient Graph Theoretical measures of whole transport network, a)Non-ratio measures cyclomatic number diameter b) Ratio measures : Eta, Theta, Iota, Pi c) Measurement of route II) Measures of Individual elements of transport a) Associated number b) Degree of connectivity network c) Dispersion or d) Accessibility Index a) Gravity model b) Potential Population Surfaces c) Breaking Point Theory –Trade area delimitation. d) Law of retail trade gravitation. | 12 |

Credits = 01

Each Credit consists of 24 Contact hours.

Total No of Contact hours 12 X 2= 24.

Reference Books: Economic Geography

1. Hussain M. (1996): Systematic Agricultural Geography, Rawat Publication, Jaipur.
2. Singh Jasbir (1987): Agricultural Geography, Tata McGraw Publication New Delhi.
3. Yeats M.H(1978): An Introduction to Quantitative Analysis in Human Geography New York

4. Chorley R.J. and Hagget P(1971) : Models in Geography, Methuen Co. London.
5. Lloyd and Dickens(1972): Location in Space Theoretical Approach to Economic Geography, Harper and Row Publication London.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEO005: TRADE AND TRANSPORT GEOGRAPHY

| Units | Topic | Subtopic | Contact Hours |
|-------|---|---|---------------|
| 1 | History of Development Approaches & Development and distribution of different modes | Functional Approach, Significance of transportation in world and regional economies, Land ways: Roadways, railways and Pipeline, Waterways: Ocean and inland, Airways Factors associated with their growth, Characteristics and relative significance of different modes of transport. | 12 |
| 2 | Transport network Urban transport | Nodes and routes: Hierarchies, Hinterlands, Models of network changes, Graph theoretic measures, Traffic flow, Gravity models. Transport network and economic development. Growth of urban transportation in developing countries, Transport and environmental degradation, Vehicular pollution and congestion. Alternative transport system in mega cities of India, National highway development and planning in India. | 12 |
| 3 | Trade Trade Theories | Growth of urban transportation in developing countries. Transport and environmental degradation. Vehicular pollution and congestion. Alternative transport system in mega cities of India. National highway development and planning in India. Theory of comparative advantage-Neo-classical theory, Modern theory | 12 |
| 4 | International trade | Trade areas and economic blocks, Various treaties of trade at international level, History and development of International trade. Geographical factors influencing, international trade. Problems and prospects of international trade in globalization | 12 |

Credits = 04

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 4= 48.

Reference Books:

1. Chorley R. J. and Haggett P. (1968): Network Analysis Edward Arnold, London
2. Taffe, E. J. and Gauthier H. L. (1973): Geography of Transportation, Prentice-Hall
3. Sealy (1968): Geography of Air Transportation. Hutchinson University
4. Singh K N (1990): Transport network in Rural Development, Institute of Rural Economic Development, Varanasi.
5. Tolley R. S. and Turton B. J. (1989): Transport system, Policy and Planning Longman Group, Singapore
6. White H.P. and Senior M.L. (1989): Transport Geography, Longman Group, Hongking
7. Bhandari S (1992): Transport and Regional Development, Concept Publication, New Delhi

8. Pande (1991): Transport Geography, Concept Publication, New Delhi
9. Vaidya B C (eds)(1998): Reading in Transport Geography: A Regional Perspective, Devika Publications, New Delhi

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEO006: POLITICAL GEOGRAPHY

| Units | Topic | Subtopic | Contact Hours |
|--------------|--|--|----------------------|
| 1 | Introduction to political Geography Approaches of Political Geography | Definition, Geography & Politics, History & Development of Political Geography. Whittlesey's landscape approach, Functional approach, Centrifugal & centripetal forces, analysis of external functions, Unified Field Theory | 12 |
| 2 | Concept Nation & State Frontiers & Boundaries | Territoriality, State & Nation, State formation. Nation building / Nationalism, Definition of frontiers & boundaries, Distinction between frontiers & boundaries, Genetic, functional & morphological classification of boundaries, Global geostrategic view | 12 |
| 3 | Resource Development & Power Geopolitics | Classification of resources, Resources & National strategy, Resource management & power of Nation. Significance of Indian ocean, Geopolitics of border nations, SAARC, Strategic significance of India | 12 |
| 4 | Political Geography of India | Changing political map of India, Unity in diversity. Stability & instability in state, politics Interstate water & language, Disputes, Problems of border states of India, Emergence of new states. | 12 |

Credits = 04

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 4= 48.

Reference Books :

1. Alexander L.M (1963): World Political Patterns, Ram McNally, Chicago.
2. Political Geography By Sudepta Adhikari, Rawat Publication.
3. Dikshit R.D (1996): Political Geography: A Contemporary Perspective, Tata McGraw Hill, Delhi.
4. Dikshit R.D (1999): Political Geography: A Century of Progress, Sage, New Delhi.
5. De Blij. H. J And Glassner, M. (1968) Systematic political Geography, John Wiley, New York.
6. Pounds N.J.G (1972): Political Geography, McGraw, New York.
7. Taylor, R.J.(1989) Political Geography, Longman UK.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEO007: REGIONAL GEOGRAPHY OF INDIA

| Units | Topic | Subtopic | Contact Hours |
|-------|--|--|---------------|
| 1 | Concept and Bases of regionalization Regional study | Concept of region, regionalization, Basis of regionalization: Geo-political, Physiographic, Climatic, Socio-economic regionalization. Formal and functional region. Natural and Human resources, Resource utilization and developmental disparities, Formal and functional linkages, Environmental perspectives, Problems, Policies and Programmes (Case studies of Macro region: Northern plains, Meso region: Maharashtra plateau and Micro region: West coastal plain). | 12 |
| 2 | Systematic Study Regional Development and Planning Contemporary Issues | Natural region: Sundarban delta, Political region: North east and Jammu and Kashmir , Cultural region: Goa, Metropolitan region: Delhi and NCR. Regions and regional development-Goals and objectives, Green Revolution and its impact, Natural hazards and current issues, River basin linkages, River water dispute, Golden quadrilateral, Gender planning. Indian federalism, Secularism, Contentious borders, Tourism, Food security, Metropolitization in India, (Note: The suggested readings for selected regions maybe given in the class) | 12 |

Credits = 02

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 2= 24.

Reference Books :

1. Centre for Science & Environment (1988) State of India's, Environment, New Delhi.
2. Deshpande C.D. - India ; a regional interpretation ICSSR and Northern book center – 1992..
3. Dreze, Jean & Amartya Sen(ed.) India Economic Development and Social opportunity: Oxford University Press, New Delhi, 1996.

4. Kundu A., Raza Moonis; Indian Economy; the regional Dimension. Spectrum Publisher, New Delhi (1982).
5. Robinson, Francis : The Cambridge Encyclopaedia of India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan & Maldives, Cambridge University Press, London, 1989.
6. Singh R.L.(ed.) : India-A Regional Geography. National Geographical Society, India, Varanasi,1971.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY(In Affiliated Colleges)
GEO008: URBAN GEOGRAPHY

| Units | Topic | Subtopic | Contact Hours |
|-------|---|--|---------------|
| 1 | Urbanization Urban Morphology Urban Classification | <p>Meaning of Urban settlement and urbanization. Criteria used to distinguish urban settlements, Behavioral, structural and demographic concept of urbanization. Brief review of spatial- temporal variations in urbanization in the world, Urbanization curve, Contemporary factors of urbanization.</p> <p>Park and Burgess Model, Homer Hoyt Model. Harris and Ullman Model, and demarcation of CBD.</p> <p>Various approaches to classification, Urban function, Functional classification of towns and cities by C.D. Harris and H. J. Nelson</p> | 12 |
| 2 | Urban Demography Rural-Urban Fringe & City and its Region Contemporary Urban issues & Urban policy and planning | <p>Growth of urban population, Urban explosion in developing countries. Density of population in cities. Age, sex and occupational structure.</p> <p>Concepts of city region and various synonymous terms used. Criteria used to demarcate the city region, Nature of urban influence.</p> <p>Price of land and vertical and horizontal growth of cities, Urban sprawl, Scarcity of housing and growth of Slums, Problems of civic amenities, Urban transport problem, Environmental pollution.</p> <p>Policies of Urban development, Need of city planning, Elements of city plan, Master plan of towns, New towns.</p> | 12 |

Credits = 02

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 2= 24

Reference Books :

1. Carter (1972) : The Study of Urban Geography, Edward Arnold, London.
2. Hall P. (1992) Urban and Regional Planning, Routledge, London
3. Kundu, A. (1992) : Urban Development and Urban Research in India, Khanna Publication.
4. Singh. K. and Steinberg. F.(eds) (1998) : Urban India in Crisis. New Age Interns,
5. Brian.R.K. (1996) : Landscape of Settlement Prehistory to the present, Routledge, London

9. K. Siddharth and S. Mukherji : Cities,. Urbanizations and Urban Systems.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEC005: DEVELOPMENT OF GEOGRAPHICAL THOUGHT

| Units | Topic | Subtopic | Contact Hours |
|--------------|---|---|----------------------|
| 1 | Development of Geography: Ancient Period Development of Geography: Medieval Period | Geography as a science of synthesis, Greek, Roman and Indian Schools of Thought, Contribution of Herodotus, Eratosthenes, Strabo, Ptolemy etc. Scientific explanations: routes to scientific explanations Arab School of thought, Dark age, Age of Discovery, Contribution of Marco Polo, Columbus, Vaso-De-Gama and Captain Cook etc. | 12 |
| 2 | Development of Geography: Modern Period Dualism in Geography | Foundations of modern geography, German, French, British and American schools of thought, Contributions of Kant, Humboldt, Ritter, W. M. Davis, Charles Darwin etc. Systematic & regional geography; physical & human geography, the myth and reality about dualisms, Determinism and possibilism, Neo-determinism, Positivism, behaviourism, postmodernism. | 12 |
| 3 | Geography in 21 st Century Applied Geography | Conceptual and methodological developments and changing paradigms, Scientific methods, Quantitative revolution, Quantification and application of statistical techniques in Geography, Computer applications in geography. Definition, Need and Significance, Applications in Landuse, regional, Rural & urban Planning, Management of resources and Assessment. | 12 |

Credits = 03

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 3= 36.

Reference Books :

1. Hershon, R. (1959) : Perspectives of Nature of Geography, Rand MacNally and Co.
2. Frazier, J. W. (1982) : Applied Geography, Prentice Hall, Englewood Cliffs.
3. Hussain, M. (1995) : Evolution of Geographical Thought, Rawat Pub., Jaipur
4. Coffey, W. J. (1981) : Geography : Towards a general spatial systems approach, Methuen, London

5. Cooke, R. U. and Doornkamp, J. C. (1974) : Geomorphology in Environmental Management, Clarendon Press, Oxford.
6. Singh I. (2006) : Diverse aspect of Geographical Thought, ALFA Publications, New Delhi.
7. Dikshit, R. D. (1997) : Geographical Thought : A Contextual History of Ideas, Pub. By A. K. Ghosh,
8. Prentice – Hall of India Pvt. M 97, New Delhi.

GOA UNIVERSITY

POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY(IN AFFILIATED COLLEGES)

GEC005: QUATITATIVE APPROACH & PRACTICALS IN STATISTICAL GEOGRAPHY

| Units | Topic | Subtopic | Contact Hours |
|-------|---|--|---------------|
| 1 | Frequency Distribution & Sampling and data collection: Measures of Central Tendency: | Introduction to statistics, frequency & cumulative frequency distribution, Graphical & Diagrammatic representation. Census, sample, advantages of sampling, sampling methods, random numbers. Concept, Requisites, Mean, median & mode, merits and demerits. Quartiles, deciles and percentiles. (for grouped and ungrouped data) | 12 |
| 2 | Measures of Dispersions & Skewness and Kurtosis Correlation and Regression Analysis (Properties and Interpretation) Introduction to probability : | Concept, Requisites, absolute and relative measures of dispersion, properties, consistency, combined variance. Moments, Concept, measures of skewness and kurtosis Bivariate Data, Cause and relation, Scatter diagram, Karl Pearson's correlation coefficient. Rank correlation: Spearman's and Kendal's rank correlation coefficient Sample space, event, set, random experiment, and concept of probability, addition & multiplication theorem. | 12 |

Credits = 01

Each Credit consists of 24 Contact hours.

Total No of Contact hours 12 X 2= 24.

References:

1. David Unwin, Introductory Spatial Analysis, Methuen, London, 1981.
2. Gregory, S. Statistical Methods and the Geographer, Longman, London, 1978.
3. Hammond R and P. S. McCullagh Quantitative Techniques in Geography : An Introduction, Clarendan Press, Oxford, 1974.
4. John P.cole and Cuchlaine A. M. King: Quantitative Geography, John Wiley, London, 1968.
5. Johnston R.J. : Multivariate Statistical Analysis in Geography, Longman, London, 1973.
6. Koutsoyiannis :Theory of Econometrics, Macmillan, London, 1973.

7. Maurice Yeats :An introduction to Quantitative Analysis in Human Geography, MacGraw Hill, New York, 1974.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY(In Affiliated Colleges)
GEC006: FUNDAMENTALS OF REMOTE SENSING

| Units | Topic | Subtopic | Contact Hours |
|--------------|--|--|----------------------|
| 1 | Introduction to Remote Sensing & Satellites Electro-magnetic Radiation | Concept of Remote Sensing, Types of Remote Sensing, Advantage & Disadvantage, Applications in Geography, Polar orbital & Geostationaty satellites, Sensors and platforms Electro-magnetic Radiation (EMR) Concept, Electro-magnetic spectrum and its components, EMR Interactions with Earth's Atmosphere and Surface features. | 12 |
| 2 | Resolution and Spectral Signatures Satellite Data Products & Image Interpretation | Concept of Resolution, swath and Image Pixel, Types of Resolution, Spectral information in satellite image, Spectral Signature Curve Concept of False Color Composite (FCC) and True Color Composite Satellite Data Products of Indian Remote Sensing, National Aeronautics and Space Administration and European Space Agency, Digital Height Products, Elements of Image Interpretation | 12 |
| 3 | Introduction Aerial photography Introduction to Photogrammetry | Aerial photography & types of aerial photos, Concept of Anaglyph & Stereo imaging spectroscopy, Aerial survey planning. Concept of 3D vision, Digital and traditional Photogrammetry, Types of Photogrammetry, Photogrammetric Measurements | 12 |

Credits = 03

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 3= 36.

Reference Books:

1. **Mandatory:** Thomas M. Lillesand and Ralph W. Kefer, Remote Sensing and Image Interpretation, John Wiley & sons, New York, 1994.
- Reference:**
2. Barrett E.C. and L.F. Curtis : Fundamentals of Remote Sensing and Air Photo Interpretation, Mcmillan, New York, 1992.
3. Compbell J. : Introduction to Remote Sensing, Guilford, New York, 1989.
4. Curran, Paul J : Principles of Remote Sensing, Longman, London, 1985.

5. Luder D: Aerial Photography Interpretation : Principles and Application, McGraw Hill, New York, 1959.
6. Pratt W.K. Digital Image Processing. Wiley, New York,1978.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEC006: PRACTICALS IN REMOTE SENSING

| Units | Topic | Subtopic | Contact Hours |
|-------|--|---|---------------|
| 1 | Data Representation Spectral Signatures Image Interpretation | Representation of Raster and Vector format, Band combinations , Color Composites, Identification of features using False Color Composite. Representation of pixel data in the form of spectral signature curve, Identification of features using spectral differences Interpretation of satellite image: Landsat TM, Resourcesat, Quickbird, Landsat Thermal Band | 12 |
| 2 | Image Classification & Change Detection Aerial Stereoscopy Accessing Web Resources | Generating landuse map using satellite image classification techniques, Accuracy Assessment, Area calculations, Change Detection in landuse pattern. Arrangement of stereo pairs, Feature identification and interpretation Downloading free satellite data: Landsat TM, ASTER, SRTM | 12 |

Credits = 01

Each Credit consists of 24 Contact hours.

Total No of Contact hours 12 X 2= 24.

Reference Books:

1. **Mandatory:** Thomas M. Lillesand and Ralph W. Kefer, Remote Sensing and Image Interpretation, John Wiley & sons, New York, 1994.

Reference:

1. American Society of Photogrammetry : Manual of Remote Sensing. ASP Falls Church, V.A. 1983.
2. Barrett E.C. and L.F. Curtis : Fundamentals of Remote Sensing and Air Photo Interpretation, Mcmillan, New York, 1992.
3. Compbell J. : Introduction to Remote Sensing, Guilford, New York, 1989.
4. Curran, Paul J : Principles of Remote Sensing, Longman, London, 1985.
5. Hord R.M. : Digital Image Processing of Remotely Sensed Data, Academic, New York, 1989.
6. Luder D: Aerial Photography Interpretation : Principles and Application, McGraw Hill, New York, 1959.
7. Pratt W.K. Digital Image Processing. Wiley, New York,1978.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY(In Affiliated Colleges)
GEO009: COASTAL GEOMORPHOLOGY

| Units | Topic | Subtopic | Contact Hours |
|-------|------------------------------------|--|---------------|
| 1 | Introduction Coastal systems | Components of coastal systems processes, sediment transport Morphology, Stratigraphy, Spatial and temporal scales in coastal Geomorphology, Coastal classification – Genetic and Morphological. | 12 |
| 2 | Coastal Processes Sea level | Waves: Definition, wave length, wave height, amplitude, depth, period, fetch, frequency, Types of waves, Process of shoaling, wave breakers Currents: Currents – and its types Tides: Equilibrium Theory of tides, semidiurnal, diurnal, spring, and neap tides. Amphidromic point, co – tidal lines, coastal tides, tides in bays and estuaries. Mechanism of Transgression, Regression, Relative and eustatic sea level changes sea level change, Causes and consequences Coastal Fluvial-dominated. | 12 |
| 3 | Coastal environments | Fluvial dominated: Coastal deltas: Classification, formation, Environments morphology delta plain, Wave-dominated: Process, Formation and morphology of erosional and depositional landforms. Tide-dominated: Introduction: Estuaries and mud flats: morphology and Hydrodynamics Biotic environments: Mangroove swamps and salt marshes, Corals and coral reefs | 12 |
| 4 | Applied Coastal Geomorphology | Current coastal issues: Sea level rise, Storm hazard management, Coastal erosion Wetlands, Kharlands, Estuarine reclamation, Salt intrusion and subsidence of coastal aquifers. | 12 |

Credits = 04

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 4= 48.

Reference Books:

1. Davis J L (1980): Geographical variation in coastal development, Longman, New York
2. Embelton and Thornes (1979): Process in geomorphology, Arnold, London
3. Hails J and Carr A (1975): Nearshore sediment dynamics and sedimentation, Wiley, London
4. Karlekar Shrikant (1993): Coastal geomorphology of Konkan, Aparna Publication, Pune
5. Masselink G, Hughes M G (2003): Introduction to coastal processes and geomorphology, Arnold, London

6. Pethick John (1984): An Introduction to coastal geomorphology, Arnold Heinemann, London
7. Tooley M M and Shennan I (1987): Sea level changes, Basil Blackwell, Oxford, U K

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEO010: FLUVIAL GEOMORPHOLOGY

| Units | Topic | Subtopic | Contact Hours |
|--------------|--|--|----------------------|
| 1 | Introduction to Fluvial Geomorphology Fundamentals of river mechanics | Fluvial Geomorphology and Geography; hydrological cycle and sub cycle, drainage pattern evolution; limits of drainage development; channel changes with time. Types of flow and flow discrimination; forces acting in channels; Low regimes; sediment load of streams. Sediment transport; competent velocity; lift force; critical tractive force. | 12 |
| 2 | Hydraulic geometry | Hydraulic geometry of streams at a station and down-stream; channel thalweg; causes of concavity; channel patterns, equilibrium profile - straight, meandering and braided. | 12 |
| 3 | Channel Morphology | Drainage basin - form and process; drainage basin morphometry; Morphometric interrelations. Denudation Concept of grade - graded profile, dynamic equilibrium Landforms of fluvial erosion - erosional processes Landforms of fluvial deposition - depositional processes, Bedrock and alluvial, Channel cross section, patterns, gradient | 12 |
| 4 | Applied Fluvial Geomorphology | Human adjustment to flood plain, alluvial fans and deltaic environments (case studies). Effects of reservoirs on fluvial systems. Remote sensing and GIS application to fluvial environments | 12 |

Credits = 04

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 4= 48.

References:

1. Chorley R.J. (ed) Introduction of Fluvial Processes Methuen & Co., London, 1973.
2. Coates D.R. and Vitek J.I. Thresholds in Geomorphology. George Allen Unwin, London 1980.
3. Gregory K.J. 'River Channel Changes' John Wiley & Sons, New York, 1977.
4. Kingston D. Fluvial Forms and Processes Edward Arnold, London, 1984.
5. Leopold C.B. et.al.: Fluvial Processes in Geomorphology; Freeman, London 1964.

6. Morisawa M.(ed.) Fluvial Geomorphology. George Allen & Unwin, 1981.
7. Gleick, P.H. (ed.): Water in Crisis Oxford University Press, New York 1993.
8. Morisawa M: 'Streams - Their Dynamics and Morphology' McGraw Hill, New York, 1968.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEO011: GEOGRAPHY OF SETTLEMENTS

| Units | Topic | Subtopic | Contact Hours |
|--------------|---|---|----------------------|
| 1 | Introduction Settlement Patterns | Evaluation of Settlement Geography, Evaluation of Population Geography, Changes in the approaches to the study of Settlement. Various patters of Settlement. Effects of technology on shelter and pattern from Neolithic to Modern period. | 12 |
| 2 | Growth and Distribution | Various factors affecting settlement site, size, distribution, Depression and nucleation, factors affecting dispersion and nucleation- Methods of the measuring, degree of dispersion. Factors affecting growth of settlements-System of land division, water rights system of agriculture, land tenancy system | 12 |
| 3 | Morphogenesis of Rural Settlements And Transformation | Social, Cultural, Economic organization within villages. Functional growth, Socio-economic transformation in rural areas. | 12 |
| 4 | Rural House Types Settlement Patterns | Primitive, Vernacular and Modern high rise, Physical, Social, Cultural and Economic factors affecting rural house types. Size, functional use and architectural style. Building material Various patters of Settlement. Effects of technology on shelter and pattern from. Neolithic to Modern period | 12 |

Credits = 04

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 4= 48.

Reference Books:

1. Beaujeu Garnier J. – Geography of Poluation, Longman Group Ltd.
2. Chandna R. C. (Rep.2010) – A Geography of Population, Concepts, Determinants and Patterns, Kalyani Publishers, New Delhi
3. Clark J. I. (1973) – Population Geography, Pergamon Press Ltd., Oxford
4. Clark J. I. Geography of Population Approaches and Applications, Pergamon Press Ltd., Oxford
7. Mishra, R.S.: Economics of Growth and Development , Somaiya Publication Pvt. Ltd.
8. Bhende Asha and Kanitkar T. – Principles of Population Studies, Himalaya Publishing House, Bombay.993

9. Singh R. L. – Readings in Settlement Geography. The National Geographical Society of India.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEO012: INDUSTRIAL GEOGRAPHY

| Units | Topic | Subtopic | Contact Hours |
|-------|---|--|---------------|
| 1 | Introduction Industrial Location Models and concept | Definition, Nature, Scope, Manufacturing and Regional economics. Geographical, Economical, Political, Socio-cultural, Characteristics of centralization, Characteristics of decentralization Weber's model, Losch's model, Greenhut's model, Israd's model, Agglomeration of industries, Industrial Linkages | 12 |
| 2 | Locational Analysis and distribution Industrial regions of India | Iron and steel, Cotton textile, Automobile, Chemical industries Nature of industrial regions in, India, Regional development of, Industries, Locational factors for industries, Characteristics of industrial regions | 12 |

Credits = 02

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 2= 24

Reference Books:

1. Alexaderson, G. (1967): "Geography of Manufacturing", Prentice Hall, New Jersey
2. Alexander, J.W. (1973 : " Economic Geography", Prentice Hall, New Jersey
3. Estall and Buchanan (1969): "Industrial Activity and Economic Geography"
4. Smith, David, M, (1971): "Industrial Location- An Economic Geographical Analysis", John Wiley and Son, New York.
5. Miller, E.C. (1977): "Manufacturing-A study of Industrial Location", Penn State University, University Park, U.S.A.
6. Shaw, E.B. (1979): "An Anglo-America- A Regional Geography"
7. Riley, R.C. (1973: Industrial Geography, Progress Publication, Moscow
8. Watts, H.D. (1989): Industrial Geography, Longman Group Ltd. Hong Kong
9. Carlo Ghezzi, Mehdi Jazayeri and Dino Mandriali (2003) : Fundamentals of Software Engineering" , Pearson Edu. Pte. Ltd. New Delhi
10. Richard, E. Fairley () : "Software Engineering- Concepts" Tata Mc-Graw Hill Publishing Company, New Delhi.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEO013: RESEARCH METHODOLOGY

| Units | Topic | Subtopic | Contact Hours |
|--------------|--|---|----------------------|
| 1 | Introduction to Research Methods of Data Collection Sampling Methods | Research and its types, Research process and steps, Essential components of Literature Review, definition of problem, Objectives & strategies of research Types of data collection and classification, designing questionnaires and schedules, digital organization of data, preprocessing Probability sampling, random sampling, systematic sampling, stratified sampling and cluster sampling Non-probability sampling, quota sampling | 12 |
| 2 | Data Analysis Multivariate Analysis Report writing | Statistical measures and their significance: Central tendencies, variation, skewness, Kurtosis, time series analysis, correlation and regression, Testing of Hypotheses: Chi Square, ANOVA Multiple Regression, Factor Analysis, Multi-Criteria Analysis Pre writing considerations, Format of report writing, Abstract Writing, Synopsis Writing, Thesis writing, Chapterization, Format of publications in research journals. | 12 |

Credits = 02

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 2= 24

References

1. Montgomery, Douglas C. (2007), 5/e, Design and Analysis of Experiments, (Wiley India)
2. Montgomery, Douglas C. & Runger, George C. (2007), 3/e, Applied Statistics & Probability for Engineers (Wiley India)
3. Kothari C.K. (2004), 2/e, Research Methodology- Methods and Techniques (New Age International, New Delhi)

4. Krishnaswamy, K.N., Sivakumar, Appa Iyer and Mathiranjana M. (2006), Management Research Methodology; Integration of Principles, Methods and Techniques (Pearson Education, New Delhi)
5. Hira, D.S. System Simulation, S. Chand of Co., New Dehli

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY(In Affiliated Colleges)
GEO014: PRACTICALS IN CARTOGRAPHY APPLICATIONS

| Units | Topic | Subtopic | Contact Hours |
|-------|---|--|---------------|
| 1 | Fundamentals of Cartography Map Reading | Introduction to Cartography, Basics of Map, Fundamentals of direction, scale, types, sources. Elementary Geodesy: Coordinate systems and transformations. Spheroid and Geoid. Geocentric Datum, datum and map projections. 3D coordinates transformations Elements of map reading and Interpretation of Toposheets, Relief features and profiles. Reduction and enlargement of maps | 12 |
| 2 | Thematic Cartography Interpolation Computer Cartography | Characteristics of geographical phenomena – Symbolizing spatial data, Visual Graphics and thematic maps, Principles of color perception, models and methods. Color scheme for Univariate choropleth and chorochromatic and choroschematic maps, proportional symbol mapping Interpolation methods for smooth continuous phenomena, Isopleth Mapping Map making using computer graphics programs, Using Google Earth for mapping geographical features, Map Layouts | |

Credits = 02

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 2= 24

References

1. ESRI. 2004. ESRI Cartography: Capabilities and Trends. Redlands, CA. White Paper
2. Imus, D. and Dunlavey, P. 2002. Back to the Drawing Board: Cartography vs the Digital Workflow. MT. Hood, Oregon.
3. Kraak, Menno-Jan and Allan Brown (2001): Web Cartography – Developments and prospects, Taylor & Francis, New York, ISBN 0-7484-0869-X.
4. MacEachren, A.M. (1994). Some Truth with Maps: A Primer on Symbolization & Design. University Park: The Pennsylvania State University. ISBN.

5. Slocum, T. (2003). Thematic Cartography and Geographic Visualization. Upper Saddle River, New Jersey: Prentice Hall. ISBN 0-130-35123-7. Wilford, John Noble (2000). The Mapmakers. Vintage Books. ISBN 0-375-70850-2.
6. Terry A. Slocum (1999): Thematic Cartography and Visualization, Prentice Hall, New Jersey

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEC007: REGIONAL PLANNING & DEVELOPMENT

| Units | Topic | Subtopic | Contact Hours |
|-------|--|--|---------------|
| 1 | Concept and Types of regions | <p>Regional concept in geography, conceptual and theoretical framework, merits and limitations for application to regional planning and development; changing concept of the region from an inter-disciplinary view-point, concept of space, area and locational attributes.</p> <p>Types of regions, Formal and functional, uniform and nodal,, regional hierarchy; special purpose region, in the context of planning.</p> | 12 |
| 2 | Regional study: Systematic Study | <p>Physical regions, resource regions, regional divisions according to variations in levels of socio-economic development; Special purpose regions: river valley regions, metropolitan regions, Problem regions-hilly regions, tribal regions, regions of drought and floods.</p> <p>Approaches to delineation of different types of regions and their utility in planning. Planning process – sectoral, temporal and spatial dimensions; short-term and long term perspectives of planning.</p> <p>Planning for a region’s development and multi-regional planning in a national context. Indicators of development and their data sources, measuring levels of regional development and disparities – case study of India.</p> | 12 |
| 3 | Regional Development and Planning | <p>Regional Policies in the Indian Five Year Plans, experience of Regional Planning in India</p> <p>Regional Development and Planning Strategies – Concentration versus dispersal (growth versus development)- case studies for plans of developed and developing countries, Regional development in India- problems and prospects.</p> | 12 |
| 4 | Concept of Multi-level planning & decentralized planning | <p>Concept of Multi-level planning; decentralized planning; peoples participation in the planning process; Panchayati Raj system; role and relationship of Panchayati Raj Institutions(Village Panchayat, Panchayat Samithi and Zilla Parishad) and administrative structure(Village, Block</p> | 12 |

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|--|--|----------------|--|
| | | and District). | |
|--|--|----------------|--|

Credits = 03

Each Credit consists of 12 Contact hours.

Total No of Contact hours 12 X 3= 36.

References:

1. Bhat, L.S. : Regional Planning in India, Statistical Publishing Society, Calcutta, 1973.
2. Bhat, L.S. et al : Micro-Level Planning: A Case Study of Karnal Area, Haryana, K. B. Publications, New Delhi, 1976.
3. Christaller, W.: Central Places in Southern Germany, Translated by C.W. Baskin, Prentice Hall, Englewood Cliffs, New Jersey, 1966.
4. Friedmann, J and Alonso, W. : Regional Development Policy – A case Study of Venezuela, M.I.T. Press Cambridhge, Mass, 1966.
5. Glikson, Arthur: Regional Planning and Development, Netherlands Universities foundation for International Co-operation, London, 1955.
6. Gosal, G.S. and Krishan, G. : Regional Disparities in Levels of Socio-Economic Development in Punjab, Vishal Publications, Kurukshetra, 1984.
7. Government of India, Planning Commission: Third Five Year Plan, Chapter on Regional Imbalances in Development, New Delhi, 1961.
8. Johnson, E.A.J. : The Organisation of Space in Developing Countries, Harvard University Press, Cambridge, 1970.
9. Kuklinski, A.R. (ed.): Growth Poles and Growth Centres in Regional Planning, Mouton, The Hague. 1972.
10. Kundu, A. and Raza, Moonis: Indian Economy-The Regional Dimension, Spectrum Publishers, New Delhi, 1982.
11. Losch, A.: The Economics of Location, University Press, Yale, New Haven, 1954.
12. Misra, R.P. : Regional Planning: Concepts, Techniques and Policies, University of Mysore, Mysore, 1969.
13. Misra, R.P. and Others (editors) : Regional Development Planning in India-A Strategy, Institute of Development Studies, Mysore, 1974.
14. Myrdal, G.: Economic Theory and Under-Development Regions, Gerald Duckworth, London, 1957.
15. Richardson, H.W. : Regional Economics, Weidenfeld and Nicolson, London, 1969.
16. Sundaram, K.V.(ed.): Geography and Planning, Essays in Honour of V.L.S. Prakasa Rao. Concept Publishing Co. New Delhi, 1985.
17. Glasson : Introduction to regional planning.

GOA UNIVERSITY

POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)

GEC007: COMPUTER APPLICATIONS IN GEOGRAPHY & REGIONAL PLANNING

| Units | Topic | Subtopic | Contact Hours |
|--------------|---|---|----------------------|
| 1 | <p>Introduction to Computer System</p> <p>Geographic Data Management</p> <p>Geographic Data Analysis</p> | <p>Concept of Computer, Software & Hardware, System and Application Software, Current generation computers and their configuration</p> <p>Concept of Database & Relationships, Database Management System, Queries and Report generation, Database organization rules</p> <p>Geographic Data analysis with Microsoft Excel : Central Tendency, Deviation, Data Skewness, Correlation analysis and Trends, Estimation using regression analysis, Time Series Analysis</p> | 12 |
| 4 | <p>Geographic Data Representation</p> <p>Presenting Geographic Analysis</p> <p>Internet applications in geography</p> | <p>Representation of Geographic Data in chart or graph form: Histogram, Bar and line graphs, Pie charts, Scatter Plots, scatter grams, Trend lines,</p> <p>Representation of Geographic Data in map form: Using windows paint brush to make 2D maps using tabular data</p> <p>Using Microsoft PowerPoint to present geographic analysis, Adding graphs, maps, animation & videos to presentation, managing presentation time</p> <p>Finding Geographic data on internet: Tabular data, graphs & charts, Maps and Toposheets, Working with Google earth maps and annotations</p> | 12 |

Credits = 01

Each Credit consists of 12 Contact hours.

Total No of Contact hours 12 X 2= 24.

Mandatory Reference Books:

1. D.J.Unnwin & J.A. Dawson(1987): Computer Programming for Geographers, Longman, London.

Reference

2. Monmonier, M.S.(1982) : Computer Assisted cartography, Prentice Hall.

3. David J. Maguire (1989) : Computers in Geography, Longman scientific & Technical, London.
4. Paul M. Mather (1993): Computer application in geography John Wiley & Sons, New York U.S.A.
5. Cole & King (1968): Quantitative Geography.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEC008: FUNDAMENTALS OF GEOGRAPHIC INFORMATION SYSTEM

| Units | Topic | Subtopic | Contact Hours |
|-------|---|---|---------------|
| 1 | Introduction to GIS Geospatial Data | Definition, Components of GIS, Advantage over traditional map making, Interdisciplinary approach of GIS Sources of Geographical data, Storage formats for geospatial data (Raster & Vector), Advantages and disadvantages of using raster and vector formats, other formats | 12 |
| 2 | Types of GIS & GIS software Data visualization & Integration | Types: Desktop GIS, Web GIS, Mobile GIS Softwares: Proprietary GIS (ESRI ArcGIS, Map Info, and Global Mapper) and Open source GIS (Quantum GIS, Grass and Saga GIS) Representation of Geospatial data, Layout formats, Color Combination & Standardizations, Visualizing data on: GIS portal and Google Earth, Integrating GIS and Google Earth. | 12 |
| 3 | Applications of GIS Global Positioning System (GPS) | Case studies on the use of GIS in following fields; Watershed management, Land cover dynamics, socio-cultural settings, Transportation, mining, Environmental Impact Assessment, Land capability & suitability study Introduction to GPS, GPS receivers, Handheld GPS receivers, DGPS, GPS Accuracy and applications of global positioning system | 12 |

Credits = 03

Each Credit consists of 12 Contact hours.

Total No of Contact hours 12 X 3= 36.

Mandatory Reference Books:

- 1: Burrough P.A. Principles of Geographic information Systems for Land Resource Assessment Oxford University Press, New York, 1986.

Reference

1. Fraser Taylor D.R. Geographic information Systems Pergamon Press, Oxford, 1991.
2. Maquire D.J.M.F. Goodchild and D.W. Rhind(eds.) Geographic information Systems: Principles and Application. Taylor & Francis, Washington. 1991.

3. Mark S.Monmonier. Computer-assisted Cartography. Prentice-Hall, Englewood Cliff, New Jersey, 1982.
4. Peuquet D.J. and D.F. Marble, Introductory Reading in Geographic Information Systems. Taylor & Francis, Washington, 1990.
5. Star J and J. Estes, Geographic Information Systems: An Introduction, Prentice Hall, Englewood Cliff, New Jersey, 1994.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEC008: PRACTICALS IN GEOGRAPHIC INFORMATION SYSTEM

| Units | Topic | Subtopic | Contact Hours |
|-------|---|---|---------------|
| 1 | Geospatial Data Access Digitization Attribution | Accessing existing data into GIS, Creating multiple copies, re-projecting vector and raster files, Saving Projects, Symbology Creating vector layers in GIS, Basic and Advanced editing, Topology building, Correction methods Creating and modifying tables, attaching attribute information to vector layers, using field calculators, calculating ratios | 12 |
| 2 | Data Retrieval Vector Operations GPS Survey | Querying: Attribute Queries and Location Queries, Saving query outputs and preparation of maps Basic vector operations: Merge, Dissolve, Intersect, union, Clip, Erase and spatial join Handling GPS receiver, taking waypoints, Importing GPS points in GIS software, attribute attachment | 12 |

Credits = 01

Each Credit consists of 24 Contact hours.

Total No of Contact hours 24 X 1= 24.

Reference Books:

- 1. Mandatory:** Burrough P.A. Principles of Geographic information Systems for Land Resource Assessment Oxford University Press, New York, 1986.
- 2. Reference**
 - i. Fraser Taylor D.R. Geographic information Systems Pergamon Press, Oxford, 1991.
 - ii. Maquire D.J.M.F. Goodchild and D.W. Rhind(eds.) Geographic information Systems: Principles and Application. Taylor & Francis, Washington. 1991.
 - iii. Mark S. Monmonier. Computer-assisted Cartography. Prentice-Hall, Englewood Cliff, New Jersey, 1982.
 - iv. Peuquet D.J. and D.F. Marble, Introductory Reading in Geographic Information Systems. Taylor & Francis, Washington, 1990.
 - v. Star J and J. Estes, Geographic Information Systems: An Introduction, Prentice Hall, Englewood Cliff, New Jersey, 1994.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEO015: WATERSHED MANAGEMENT

| Unit | Topic | Subtopic | Contact Hours |
|------|---|---|---------------|
| 1 | Introduction to Watershed Management Groundwater | Concept of watershed, watershed delineation, size and shape, Physical parameters of watershed – stream order, slope, length, a real landuse measurement and data source, Terrain analysis Movement of Groundwater, Factors affecting movement of groundwater, aquifers, Aquitard porosity, permeability, and sources of ground water, Ground water recharge | 12 |
| 2 | Issues related to watershed | Soil Erosion, Soil Salinity, Siltation, Runoff, Deforestation, Water Scarcity, Groundwater depletion, Flooding etc. | 12 |
| 3 | Watershed Management Practices Water conservation and harvesting | Erosion control measures for non-agricultural lands, Contour and Staggered Trenching, Gully Control Structures, Sediment Retention Structures, Gully and Ravine Reclamation, Bunding, Check Dams, Loose boulder Dams Methods, Potential, Assessment. Treatment of Catchments, Small Storage Structures, Planning Earth Dams, Agronomic measures in soil and water conservation problem and techniques of soil water conservation, Rainwater Harvesting, Rooftop Harvesting | 12 |
| 4 | Watershed Management using GIS | GIS as a Watershed Tool, Water supply, water quality Assessment, Groundwater assessment, drought management issues and problems. Floodplain, Flood inundation mapping etc. | 12 |

Credits = 04

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 4= 48.

References:

1. Mutreja K.N. (1987) – Applied Hydrology, Tata Mckraw Hill.
2. Tideman E.M. (1996) – Watershed Management : Guidelines for Indian conditions, Omega, N. Delhi 1996.
3. Todd D.K.(1959) - Ground Water Hydrology, John wiley, New York.
4. Pereira H.C. (1973) – Land use and water Resources Cambridge University Press, Cambridge

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEO016: SOCIAL AND CULTURAL GEOGRAPHY

| Unit | Topic | Subtopic | Contact Hours |
|------|--|--|---------------|
| 1 | Introduction Philosophical Bases and Concepts | Definitions, Early Contributions, Subject Matter, Conceptual and Methodological approaches, Trends and Development Positivism, Humanism, Idealism, Phenomenalism, Existentialism, Structuralism and Radicalism, Origin and diffusion of Culture | 12 |
| 2 | Space and Society | Individual's space, Intimate, Personal, Social and Public Space, Theoretical space – organic, perceptive and symbolic space, Interaction and social relations | 12 |
| 3 | Social Groups | Primary and Secondary Groups, Group in Society, Social Structure, Models of Assimilation and Segregation, Industrialization, Migration, Urbanization, Modernization, Globalization and Sanskritization | 12 |
| 4 | Social – Culture Regions | Cultural Diversities, Role of Race, Religion, Cast, Ethnicity, Tribe and Language and Dialect, Level of Education, Economic Activity, Class, Power, Transformation and Change, Cultural regions of the World and India | 12 |

Credits = 04

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 4= 48.

References:

1. Anand Aijazuddin (1999) : Social Geography, Rawat Publications, New Delhi
2. Bulsara, J. F. (1970) : Patterns of Social Life in Metropolitan Areas, Popular Prakashan, Bombay
3. Censys of India (1974) : Economic and Socio-Cultural Dimensions of Rationalization Census Centenary, Monograph No. 7, Govt. of India, New Delhi
4. Coates, B. E. et. al. (1977) : Geography and Inequality, Oxford University Press, London
5. Jordon and Lester, G. (1995) : The Human Mosaic, Harper and Row, New York
6. Orang, Mike (1998) : Cultural Geography. Routledge Publication, London
7. Dubey, S. C. (1991) : Indian Society, national Book Trust, New Delhi

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEO017: ECONOMIC GEOGRAPHY OF GLOBALIZATION

| Unit | Topic | Subtopic | Contact Hours |
|------|--|--|---------------|
| 1 | Changing Economic Geography | The uneven geographies of globalization, Perspectives of globalization, Globalization and the development of the world economy, Contemporary processes of economic globalization, Patterns of global inequality | 12 |
| 2 | Changing geographies of multinational Corporation (MNC) | Changing geography of FDI, Understanding the emergence of MNC, The embedded geographies of MNCs: the continuous influence of home countries on MNCs strategies, The impact of MNCs on Host region | 12 |
| 3 | Geographies of New service Economy The changing global economic geography | The nature and scope of service sector, Growth of services, Global patterns of trade and investment services, Business and financial services and world cities, Digitization and the internet economy, Globalization and the geographical dispersal of services. The rise of Asia: China, India, Regional Developments and Economic- political implications. Impact of Globalization on Developing Countries. | 12 |
| 4 | Globalization and India | The Impact of Trade Liberalization on Employment: Performance of India's Manufacturing Sector in the Post-reform Period. Pattern of Industry Location under Liberalization. Banking Sector Reform, Flow of Foreign Direct Investment to India, Export Composition in the Liberalized Era, Flow, International Integration and Financial Crisis | 12 |

Credits = 04

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 4= 48.

References:

- i. Danny MacKinnon & Andrew Cumbers (2007) An introduction to Economic Geography Globalization, Uneven Development and Space. Persons Education Ltd. England.

- ii. Dilip Saikia Vachaspati Shukla Kiran Kumar Kakarlapudi (Edited) (2013) India's Economy in the Globalized Era. BOOKWELL, New Delhi.
- iii. Masahisa Fujita, & Paul Krugman (2004) The new economic geography: Past, present and the future. Regional Science (RSAI 2004) Papers Reg. Sci. 83, 139–164 (2004)
- iv. Giovanna Vertova (ed) (2006) The Changing Economic Geography of Globalization, Routledge, 2006,

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY (In Affiliated Colleges)
GEO018: TROPICAL GEOMORPHOLOGY

| Unit | Topic | Subtopic | Contact Hours |
|------|--|---|---------------|
| 1 | Introduction Tropical Terrain and Weathering | Definition of Tropics: Peculiar features of tropical climate; intensity and erosivity of rainfall, role of vegetation, Morphogenetic classification Processes and products. Weathering profiles, tropical soils and clay minerals, Relief, drainage and landforms-slopes, valleys, domes, inselbergs, tors and ventifacts-pediments; characters, distribution and origin and theories of development-plane surfaces in tropical region, Duricrusts: Definition and Types | 12 |
| 2 | Denudation Quaternary in the tropics Anthropogenic changes | Mass movement, chemical and mechanical, denudation, Fluvial processes in tropics Surface processes, pipe flows, gully erosion, fluvial erosion. Quaternary glaciations in the tropics, Climate change Sea-level change, The Ganga River system: Quaternary, adjustments, Quaternary changes around the Sunda Shelf Anthropogenic alteration of geomorphic processes in the tropics Urban geomorphology in the tropics The future with climate change | 12 |

Credits = 02

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 2= 24

References:

1. Faniran, A. and Jeje, L. K. (1983): Humid Tropical Geomorphology, Longman, London.
2. Thomas, M. F. (1994): Geomorphology in the Tropics: A study of weathering and denudation
in low latitudes. John Wiley and Sons, Chichester.
3. Kale, V. S. and Gupta, A. (2001): Introduction to Geomorphology, Orient Longman, Calcutta.
4. Goudie, A. (1985): Duricrusts in tropical and sub-tropical landscapes. Alien Unwin
5. Savindra Singh (2002): Geomorphology, Prayag Pustak Bhawan, Allahabad
6. Bloom, A. L. (2002). Geomorphology: A systematic analysis of late Cenozoic landforms. Prentice-Hall of India, New Delhi

8. Avijit Gupta (2011) "Tropical Geomorphology" - Cambridge University press Cambridge, UK.

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY(In Affiliated Colleges)
GEO019: TEACHING METHODOLOGY

| Unit | Topic | Subtopic | Contact Hours |
|------|--|---|---------------|
| 1 | <p>Introduction to teaching methodology</p> <p>Methods of teaching geography</p> <p>Planning and designing for effective instruction in geography</p> | <p>Aims and Objectives of teaching Geography, Importance of teaching Geography , Correlation of geography with other subjects</p> <p>Methods : Lecture, Project, Discussion, Assignment, Problems solving, Demonstration, Inductive and Deductive, Regional, Case study methods</p> <p>Field trip, observation, questioning techniques</p> <p>Design of Lesson planning, Approaches to Lesson Planning, Writing the lesson plan.</p> <p>Geography room and Geography Museum.</p> <p>Instructional materials used in the teaching of geography- maps, globes, atlas, films, pictures, specimens, models, simple meteorological equipments. Field work and excursions</p> | 12 |
| 2 | <p>Media/materials in geography teaching</p> <p>Evaluations in geography</p> | <p>Projected Media:- Overhead projector with transparencies; Films and slides</p> <p>Non-projected :- Pictures and charts; Chalk board</p> <p>Printed :- Text and reference books Newspapers and magazine</p> <p>Mass media :- Television ,Radio ,Audio, Computer</p> <p>Construction of tests in geography – designing Of tests, Blueprint of tests, framing the questions, assembling the questions and preparing the instructions, administration of tests, Diagnostic tests and remedial measures in geography.</p> | 12 |

Credits = 02

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 2= 24

Reference Books:

1. M.S Rao, Teaching of geography (2009), Anmol Publication
2. Norman J Graves, Source book for Geography teaching (1982), Unesco Press
3. Ratho & Prakash, Emerging Trends in the Teaching of Geography (1995), Kanishka Publishers & Distributors

4. Fien, John et al The Geography Teachers' Guide to the classroom
5. Varma & Vedanayagam ,Geography Teaching
6. Arora, K.L., BhugolShikshan: The Teaching of Geography, Ludhiana; Parkash Brothers. 1983

GOA UNIVERSITY
POST GRADUATE SYLLABUS FOR M.A DEGREE IN GEOGRAPHY(In Affiliated Colleges)
GEO020: FIELD TECHNIQUES AND VILLAGE SURVEY

| Unit | Topic | Subtopic | Contact Hours |
|------|---|--|---------------|
| 1 | Introduction to Field Survey Chain and Plane Table Survey | Importance of field instrument survey - scope and purpose, principles and application of selected survey instruments. Chain survey: use of tapes-open traverse, triangulation survey; Plane table; plan preparation, resection -one point and two point problem; three point problem; tracing paper method. | 12 |
| 2 | Prismatic compass method Dumpy level and Theodolite Survey Village Survey | Prismatic compass: Open and closed traverse, elimination error, Bowditch method. Dumpy level: traverse survey, contour plan preparation. Theodolite - horizontal, land vertical (height) measures, accessible and inaccessible method. Fundamentals of Village survey, prerequisites of village survey, preparation of questionnaires, data entry, basic analysis in Microsoft excel | 12 |

Credits = 02

Each credit consists of 12 Contact hours.

Total No of Contact hours 12 X 2= 24

References:

1. Clendinning , J. Principles and use of Surveying Instruments. 2nd edition, Blockie. A 1958.
2. Clendinning ,J Principles of surveying 2nd edition 1960.
3. Hotine, Major M. The re-triangulation of Great Britain. Empire survey review 1935.
4. Mitra,R.P. and Ramesh A : Fundamentals of Cartography Revised Edition, Concept Publication, New Delhi.
5. Monkhouse - Maps and diagrams Methuen 1971.
6. Negi, Balbir Singh. Practical Geography Third revised Ed. Kedar Nath and Ram Nath, Meerut &Delhi, 1994-95.
7. Sandover,J.A. Plane Surveying. Arnold 1961.
8. Singh & Karanjta - Map work and Practical Geography Central Book Dept Allahabad 1972.
9. Singh, R.L.and Dutt, P.K. Elements of Practical Geography, Students Friends, Allahabad.1968.