

GOA UNIVERSITY
Choice Based Credit System (CBCS)
Objectives & Learning Outcome for BA/ BSC/BCOM Programmes
Semester I/III/V

TITLE OF THE PAPER	Environmental Studies
Class	FYBA/ FYBSC
No of Credits	04
Paper Code	AECC
Semester	I /II
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To acquire knowledge of environment thereby allowing students to appreciate our dependence on it. 2. The students will gain necessary vision to take upon themselves the role of custodianship of this living planet. 3. It will foster love and respect for nature, inculcate earth friendly world-view and acquisition of skills for earth-wise actions. 4. The students will be sensitized towards the fragile ecology of present times and the need to balance material, progress with ecological integrity.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Natural Endowments: Status, Issues, Concerns and Responses, The Multi-Disciplinary Nature of Environmental Studies, Natural Resources, Ecosystems, Biodiversity and its Conservation, Field Visit to different ecosystems/landscapes and to learn biodiversity. 2. Social Issues and the Environment: Environmental Pollution, Social Issues and the Environment, Human Population and the Environment, Tourism and Environment, Field visit local polluted/waste treatment site.
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. The course envisages that all the undergraduate students will be aware of our natural resources, ecosystems and their linkages to society, livelihood, environment and conservation. 2. Appreciate concepts and methods from ecological and physical sciences and their application in environmental problem solving. 3. Reflect critically about their role and identity as citizens, consumers and environmental actors in a complex, interconnected world. 4. The theoretical learning shall be supported with actual field visits
Suggested Reading	<ol style="list-style-type: none"> 1. Agarwal K. C. (2001): Environmental Biology, Bikaner, Nidi. 2. Bharucha E.: The Biodiversity of India, Ahmedabad, Mapin. 3. Bharucha E.: Textbook of Environmental Studies. Orient BlackSwan. 4. Brunner R. C. (1989): Hazardous Waste Incineration, New York, McGraw-Hill. 5. Chatwal G.R. & Sharma H. (2005): A textbook of Environmental Studies, Mumbai, Himalaya. 6. Clark G. R.: Marine Pollution, Oxford, Clanderson. 7. Cunningham W.P., Cooper T. H., Gorani E. & Hepworth M. T. (2001): Environmental Encyclopedia, Mumbai, Jaico. 8. De A.K.: Environmental Studies, Mumbai, Vipul. 9. Desai R. J. (2003): Environmental Studies, Mumbai, Vipul. 10. Gleick H. P. (1993): Water in Crisis, Stockholm Env't. Institute,

	<p>OUP.</p> <ol style="list-style-type: none"> 11. Hawkins R. E.: Encyclopedia of Indian Natural History, Mumbai, BNHS. 12. Heywood V. H. & Watson R. T. (1995): Environmental Protection and Laws, Mumbai, Himalaya. 13. Jadhav H. &Bhosale V. M. (1995): Environmental Protection and Laws, Mumbai, Himalaya. 14. McKiney M. L. &Schoel R. M. (1996): Environmental Science, Systems and Solutions, Web Enhanced Edition. 15. Das Gupta and Kapoor,A.N., (2002): Principles of Physical Geography, S. Chand, Mhaskar A.K.: Matter Hazardous, Techno-Science Publications. 16. Miller T.G. Jr.: Environmental Science, Wadsworth. 17. Odum E.P. (1971): Fundamental of Ecology, Philadelphia, W.B. Saunders. 18. Rao M.N. &Datta A.K. (1986): Waste Water Treatment, Oxford & IBH. 19. Santra, S.C (2004). Environmental Science, Kolkata, Central Book Agency. 20. Sharma B.K. (2001): Environmental Chemistry, Meerut, Goel Publishing House. Townsend C., Harper J.&Begon M.: Essentials of Ecology, Blackwell Science. 21. Trivedi R. K.: Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. 1 & 2, Enviro Media. 22. Trivedi R. K. & P. K. Goel: Introduction to Air Pollution, Techno-Science Publications. 23. Wagner K. D. (1998): Environmental Management, Philadelphia, W. B. Saunders. 24. Down to Earth, Centre for Science & Environment. 25. Survey of the Environment published by The Hindu. 26. http://www.ugc.ac.in/oldpdf/modelcurriculum/env.pdf.
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TITLE OF THE PAPER	Environmental Studies-I
Class	F.Y.B.Com.
No of Credits	02
Paper Code	AECC-I:
Semester	I /II
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To acquire knowledge of environment thereby allowing students to appreciate our dependence on it. 2. The students will gain necessary vision to take upon themselves the role of custodianship of this living planet. 3. It will foster love and respect for nature, inculcate earth friendly world-view and acquisition of skills for earth-wise actions. 4. The students will be sensitized towards the fragile ecology of present times and the need to balance material, progress with ecological integrity
COURSE CONTENT	<p>A. Section A- A Natural Endowments: Status, Issues, Concerns and Responses.</p> <ol style="list-style-type: none"> 1. The Multi-Disciplinary Nature of Environmental Studies 2. Natural Resources

	<ol style="list-style-type: none"> 3. Ecosystems 4. Biodiversity and its Conservation 5. Field Visit to different ecosystems/landscapes and to learn biodiversity.
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. The course envisages that all the undergraduate students will be aware of our natural resources, ecosystems and their linkages to society, livelihood, environment and conservation. 2. Appreciate concepts and methods from ecological and physical sciences and their application in environmental problem solving. 3. Reflect critically about their role and identity as citizens, consumers and environmental actors in a complex, interconnected world. 4. The theoretical learning shall be supported with actual field visits.
Suggested Reading	<ol style="list-style-type: none"> 1. Agarwal K. C. (2001): Environmental Biology, Bikaner, Nidi. 2. Bharucha E.: The Biodiversity of India, Ahmedabad, Mapin. 3. Bharucha E.: Textbook of Environmental Studies. Orient BlackSwan. 4. Brunner R. C. (1989): Hazardous Waste Incineration, New York, McGraw-Hill. 5. Chatwal G.R. & Sharma H. (2005): A textbook of Environmental Studies, Mumbai, Himalaya. 6. Clark G. R.: Marine Pollution, Oxford, Clarendon. 7. Cunningham W.P., Cooper T. H., Gorani E. & Hepworth M. T. (2001): Environmental Encyclopedia, Mumbai, Jaico. 8. De A.K.: Environmental Studies, Mumbai, Vipul. 9. Desai R. J. (2003): Environmental Studies, Mumbai, Vipul. 10. Gleick H. P. (1993): Water in Crisis, Stockholm Env't Institute, OUP. 11. Hawkins R. E.: Encyclopedia of Indian Natural History, Mumbai, BNHS. 12. Heywood V. H. & Watson R. T. (1995): Environmental Protection and Laws, Mumbai, Himalaya. 13. Jadhav H. & Bhosale V. M. (1995): Environmental Protection and Laws, Mumbai, Himalaya. 14. McKiney M. L. & Schoel R. M. (1996): Environmental Science, Systems and Solutions, Web Enhanced Edition. 15. Das Gupta and Kapoor, A.N., (2002): Principles of Physical Geography, S. Chand, Mhaskar A.K.: Matter Hazardous, Techno-Science Publications. 16. Miller T.G. Jr.: Environmental Science, Wadsworth. 17. Odum E.P. (1971): Fundamental of Ecology, Philadelphia, W.B. Saunders. 18. Rao M.N. & Datta A.K. (1986): Waste Water Treatment, Oxford & IBH. 19. Santra, S.C (2004). Environmental Science, Kolkata, Central Book Agency. 20. Sharma B.K. (2001): Environmental Chemistry, Meerut, Goel Publishing House. 21. Townsend C., Harper J. & Begon M.: Essentials of Ecology,

	<p>Blackwell Science.</p> <p>22. Trivedi R. K.: Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. 1 & 2, Enviro Media.</p> <p>23. Trivedi R. K. & P. K. Goel: Introduction to Air Pollution, Techno-Science Publications.</p> <p>24. Wagner K. D. (1998): Environmental Management, Philadelphia, W. B. Saunders.</p> <p>25. Down to Earth, Centre for Science & Environment.</p> <p>26. Survey of the Environment published by The Hindu.http://www.ugc.ac.in/oldpdf/modelcurriculum/env.pdf</p>
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TITLE OF THE PAPER	INTRODUCTION AND FUNDAMENTALS OF GEOGRAPHY (THEORY) (DSC)
Class	FYBA
No of Credits	03
Paper Code	GEC101
Semester	I
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. This introductory paper is intended to acquaint the students with distinctiveness of Geography as a field of learning. 2. The philosophy of the subject is to be taught in order to develop a keen interest in the subject and to pursue it for higher studies. 3. To accustom the students with the basic concepts of the subject. 4. To nurture the importance of the subject in order to develop a keen interest in the subject.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Geography: Introduction, Meaning, Definition, Nature and Scope of Geography. 2. Physical Geography: Introduction to the Solar System, Basic Study of planets; Earth & Moon Relationship 3. Domains of earth: Lithosphere; Atmosphere; Hydrosphere; Introduction to Geological Time Scale. 4. Human geography: Major schools of Thought; Geography and Development; Geography and Nationalism.
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this course students will be able to gain knowledge and understand the fundamentals of geographical concepts. 2. They will also acquire the skills to apply this knowledge to solve day to day problems and geographical issues. 3. They will take up the subject to pursue higher studies and will be able to apply the subject in research.
Suggested Reading	<ol style="list-style-type: none"> 1. Das Gupta and Kapoor, A.N., (2002): Principles of Physical Geography, S. Chand, New Delhi. 2. Dikshit R.D., (2000): Geographical Thought - A Contextual History of Ideas, Prentice Hall of India New Delhi 3. Leong, Goh. Cheng., (1995): Certificate Physical and Human Geography, Oxford University Press, New Delhi. 4. Harvey, David., (2008): Explanation in Geography, Sage Publication 5. Hussain, Masjid., (2015): Evolution of Geographical Thought, Rawat Publications, Jaipur.

	<p>6.Lal, D. S.,(2011): Climatology, Sharda Pushtak Mahal, Allahabad.</p> <p>7.Leong G.,and Morgan.C.,(1982): Human and Economic Geography Oxford University Press.</p> <p>8.Perpillou, A V., (1966) : Human Geography, Longman Press, London.</p> <p>9.Savindra Singh.,(2005): Environmental Geography, Prayag Pustak Bhavan, Allhabad.</p>
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TITLE OF THE PAPER	INTRODUCTION TO CARTOGRAPHIC TECHNIQUES (PRACTICAL) (DSC)
Class	FYBA
No of Credits	01
Paper Code	GEC101
Semester	I
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To develop skills and techniques in map reading and map making.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Shape of the Earth, Location of Places on the Globe, Latitude, Longitude and Time, Time Zones; Scale and its Types, 2. Enlargement and Reduction of Maps, Base Maps, Format of a Map, Finding Directions, Measurement of Distances, Calculation of area.
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this practical course, students will be able to locate places on the maps. 2. It will enable students to understand maps and interpret the same. 3. Students will also acquire basic skills of drawing maps
Suggested Reading	<ol style="list-style-type: none"> 1. Mishra R. P. and Ramesh A.,(2009): Fundamentals of Cartography, Concept Publishing Company, New Delhi. 2. Monkhouse F. J.and Wilkinson ,H.R.,(2009) : Maps and Diagrams, B. I Publications, New Delhi. 3. Raise, E.,(2004): Principles of Cartography, McGraw Hills, London. 4. Singh,G.,(2010): Map Works and Practical Geography, Vikas Publishing House, New Delhi. 5. Singh R, L., (1979): Elements of Practical Geography, . Kalyani Publishers 6. Singh, R.L. and Singh Rana P.B., (2008): Elements of Practical Geography, Kalyani Publishers, New Delhi.

TITLE OF THE PAPER	FUNDAMENTALS OF GEOGRAPHY (THEORY) (DSC)
Class	FYBSC
No of Credits	04
Paper Code	SGC101
Semester	I

COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. This introductory paper is intended to acquaint the students with distinctiveness of Geography as a field of learning. 2. The philosophy of the subject is to be taught in order to develop a keen interest in the subject and to pursue it for higher studies. 3. To nurture the importance of the subject in order to develop a keen interest in the subject. 4. To develop interest so that students pursue it for higher studies.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Geography: Introduction, Meaning, Definition, Career opportunities, Pioneers in Geography. 2. Physical geography: Basic Study of planets; Earth & Moon Relationship, Domains of earth 3. Human geography: Major school of Thought 4. Recent trends in Geography: Application of Major themes in Geography
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this course students will be able to gain knowledge and understand the fundamentals of geographical concepts. 2. They will also acquire the skills to apply this knowledge to solve day to day problems and geographical issues.
Suggested Reading	<ol style="list-style-type: none"> 1. Broek,O.M., and Webb.,J.W.,(1981): Geography of Mankind, McGraw-Hill Inc.,USA 2. Gupta, Das.A.,and Kapoor,A.N., (2013): Principles of Physical Geography, S. Chand & Company Pvt. Ltd. 3. Dikshit R.D.,(2000): Geographical Thought - A Contextual History of Ideas, Prentice Hall of India Pvt. 4. Leong, Goh. Cheng.,(2003): Certificate Physical and Human Geography, Oxford university press, New Delhi 5. Harvey, David.,(1972): Explanation in Geography, Edward - Arnold, London. 6. Hussain, Majid.,(1984): Evolution of Geographical Thought, Rawat Publications, Jaipur. 7. Lal, D. S.,(2007): Climatology, Pushtakmahal, Allahabad 8. Leong G.,and Morgan.C.,(1982): Human and Economic Geography, Oxford University Press. 9. Perpillou A V,. (1966) : Human Geography, Longman Press, London. 10. Singh. Savindra.,(2005): Environmental Geography, Prayag Pustak Bhavan, Allahabad.

TITLE OF THE PAPER	CARTOGRAPHIC TECHNIQUES (PRACTICAL) (DSC)
Class	FYBSC
No of Credits	02
Paper Code	SGC101
Semester	I
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To develop skills and techniques in map reading and map making. 2. To impart training on map making techniques with Field and Laboratory experiences.
COURSE CONTENT	1. Introduction to Cartography and Cartographic Techniques

	<ol style="list-style-type: none"> Globes and their Types; Construction of Latitudes and Longitudes. Longitudes and Time. Time Zones; enlargement and reduction of map, Sources of Population Statistics, Population Census and vital statistics, Calculation of Socio-Economic Indices, Field Work.
LEARNING OUTCOMES	<ol style="list-style-type: none"> At the end of this practical course, students will be able to locate places on the maps. It will enable students to understand maps and interpret the same. Students will also acquire basic skills of drawing maps.
Suggested Reading	<ol style="list-style-type: none"> Campbell, J.,(2004): Introductory Cartography, Prentice Hall, Inc Englewood. Misra, R.P. and Ramesh, A., (2005): Fundamentals of Cartography, Concept Pub. Co., New Delhi. Misra, R. P., (2014): Fundamentals of Cartography, Concept Pub. Co., New Delhi. Monkhouse, F.J. and ,Wilkinson, H.R., (2009): Maps and Diagram, B.I. Publication, New Delhi. Raisz, E. (2004): Principles of Cartography, McGraw Hills, London Singh, Gopal., (2014): Map Work and Practical Geography, 4th Edition, Sterling Book House.

TITLE OF THE PAPER	Economic Geography(Generic Elective)
Class	F.Y.B.COM
No of Credits	04
Paper Code	GEO-01/16
Semester	I
COURSE OBJECTIVES	<ol style="list-style-type: none"> To acquaint the students with distinctiveness of Geography as a field of learning. To accustom the students with the philosophy of the subject. To nurture the importance of the subject in order to develop a keen interest in the subject. To develop interest so that students pursue it for higher studies
COURSE CONTENT	<ol style="list-style-type: none"> Economic geography: introduction, nature and scope Relationship between geography and economic and commercial activities of man. Human resources: nature and importance, world population growth and its spatial variations, occupational structure and migration. Natural resources: Forests, Fisheries, Mineral resources,Energy resources, Agriculture and development, Manufacturing industries and development, Study of industries. Geography: Introduction, Meaning, Definition, Nature and Scope of Geography.
LEARNING OUTCOMES	<ol style="list-style-type: none"> Students will be able to gain knowledge and understand the

	<p>fundamentals of geographical concepts.</p> <ol style="list-style-type: none"> 2. They will also acquire the skills to apply this knowledge to solve day to day problems and geographical issues. 3. They will take up the subject to pursue higher studies. <p>They will be able to apply the subject in research</p>
Suggested Reading	<ol style="list-style-type: none"> 1. Alexander J. W, 1963: Economic Geography, Prentice-Hall Inc., Englewood Cliffs, New Jersey. 2. Bagchi-Sen S. and Smith H. L., 2006: Economic Geography: Past, present and future, Taylor and Francis. 3. Coe N.M, Kelly P.F. and Yeung H. W., 2007: Economic Geography: A Contemporary Introduction, Wiley-Blackwell. 4. R. N. Tikka Geography of resources: Majid Husain Resource Geography

TITLE OF THE PAPER	Resource Geography of Goa
Class	F. Y. B. A. / B. SC
No of Credits	04
Paper Code	GEG101
Semester	I
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To orient the students to know the physical and economic setting of Goa. 2. To enable students to appreciate the prospects of the state of Goa and enlighten its imminent problems. 3. To take students to compulsory field work this will enable them to visit places of geographical interest in the state. 4. To motivate the students to carry out further study and research in the concern areas.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Geographical Setting and Physical Resources of Goa: 2. Human Resources: (pre & post liberation, 21st Century): 3. Population: Growth and Distribution, Density, Age-sex structure, Literacy and Education, Rural- Urban composition, Migration, Occupational structure, Future of Population 4. Resource Utilization: pre & post liberation, 21st Century. 5. Regional Disparity and Regional Planning in Goa, Efforts of Regional Development in Goa
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. Students will be able to appreciate physical, social, economic and cultural resources available in the state of Goa. 2. The information will enable the students to become rational citizen and express their understanding before others. 3. The students will acquire basic skills of taking judicious

	<p>decisions and stand about the state and its activities.</p> <p>4. The students will be able to apply the knowledge in day to day life.</p>
Suggested Reading	<ol style="list-style-type: none"> 1. Alvares.,Claude.,(2002): Fish Curry and Rice, Eco-Forum, A Goa Foundation Publication., Other India Press Publication 2. De Souza., Teotonio R., (Eds),Goa University Publications.,(1999): Goa through the Ages – An Economic History.,Vol. I, II &III,ConceptPublishingCo, New Delhi. 3. Govt. of Goa, Economic Survey of Goa, Directorate of Planning,Statistics& Evaluation(DPSE) publication,Porvorim Goa., Govt. Printing Press, Panaji, Goa. 4. Daily Newspapers published from Goa (Publication Houses).

TITLE OF THE PAPER	GEOGRAPHY OF NATURAL RESOURCE DEVELOPMENT(Theory) (DSC)
Class	S.Y.B.A
No of Credits	03
Paper Code	GEC103
Semester	III
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To provide an exposure to develop geographical knowledge in understanding and appreciating the distribution of natural resources of the world in general and India in particular. 2. To acquaint the students with various concepts and theories 3. To help the students to apply the knowledge in real situations. 4. To guide students in undertaking research in the field.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Economic Geography: Meaning, Definitions and significance. 2. Bases of world Economy: Classification of Economic activities. 3. Historical Evolution of world economic systems: 4. Natural Resources: Forest Resources, World Fisheries, Mineral Fuel & Power Resources Resources. 5. World Agriculture: Types of Agriculture 6. Agricultural Land Use Theory by Von Thunen.
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of the successful completion of this course, students will be able to understand the location of resources in the world and their occurrences in places within India. 2. It will enable students to understand the interaction among various resources. 3. Students will understand about distribution of world economic activities. 4. Students will be able locate the places of surplus and deficit in resource distribution
Suggested Reading	<ol style="list-style-type: none"> 1. Boesch, H., (1964): A Geography of World Economy, Van Nostrand Co., New York.

	<ol style="list-style-type: none"> 2. Chapman J. D. (1989): Geography and Energy, Longman, London. 3. Hartshorne T. N. & Alexander J. W.(1988): Economic Geography, Prentice Hall, New Delhi. 4. Jones C. F. and Darkenwald G. G.,(1975): Economic Geogra Macmillan & Co, New York. 5. Smith, D. M., (1971): Industrial location: An Economic Geographical Analysis, John Wiley, New York. 6. Bengston & Van, G. H. Royan.,(1988): Fundamentals of Economic Geography, Prentice Hall, New Delhi. 7. Leong, G. C. & Morgan, G. H., (1982): Human & Economic Geography, Oxford Univ. Press, New York.
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TITLE OF THE PAPER	CARTOGRAPHIC TECHNIQUES (PRACTICAL-III)
Class	S.Y.B.A.
No of Credits	01
Paper Code	GEC103
Semester	III
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To develop skills and techniques for transformation of globe information to Paper. 2. Representation and representation of physical features and data pertaining to physical geography.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Projections: Definition, classification of projection, Uses and properties. 2. Construction of Zenithal, Conical and Cylindrical projection. 3. Methods of Representation of Relief features and Profile drawing
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this practical course, the students will be able to express and appreciate globe and map information through. 2. It will enable the students to understand and interpret the same. The students will also acquire basic skills of drawing a variety of physical geography graphs and cartograms.
Suggested Reading	<ol style="list-style-type: none"> 1. Campbell, J.(2004) Introductory Cartography, Prentice Hall, Inc Englewood 2. Misra, R.P. and Ramesh, A., (2009): Fundamentals of Cartography, Concept Pub. Co., New Delhi 3. Monkhouse, F.J. and Wilkinson, H.R., (2009): Maps and Diagram, B.I. Publication, New Delhi 4. Misra, R. P., (2014): Fundamentals of Cartography, Concept Pub. Co., New Delhi 5. Raisz, E., (2004): Principles of Cartography, McGraw Hills, London 6. Singh, Gopal., (2014), : Map Work and Practical Geography, 4th Edition, Sterling Book House.

TITLE OF THE PAPER	GEOGRAPHY OF NATURAL RESOURCE DEVELOPMENT (THEORY) (DSC)
Class	S. Y. B. Sc.
No of Credits	04
Paper Code	SGC103:
Semester	III
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To gain geographical knowledge in understanding and appreciating the distribution of natural resources of the world in general and India in particular. 2. To acquire information regarding the basis of agriculture and its systematic development to the present plantation and commercial stages. 3. To appreciate the rich natural resource base of India in terms of forests, fisheries and minerals. 4. To gain knowledge about the energy resources on India and gradual shift towards renewable and non-conventional sources of energy.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Economic geography today and the historical evolution of the world's economic systems 2. World agriculture – types and crops 3. A. World fisheries. B. Forest resources. C. Forest products in the world, India and Goa 4. Natural resources (mineral and energy) and non-conventional energy resources.
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of the successful completion of this course, the undergraduate students will be able to understand the basis and evolution of the economic systems in place in the world. 2. The students will also be made aware of location of resources in the world and their occurrences in places within India. 3. It will also enable students to understand the interaction among various resources through the geography of primary economic activities. 4. The knowledge about resources and their location will be supported by practical component.
Suggested Reading	<ol style="list-style-type: none"> 1. Boesch, H. (1964): A Geography of World Economy, Van Nostrand Co., New York. 2. Chapman J. D., (1989): Geography and Energy, Longman, London. 3. Hartshorne T. N. & Alexander J.W., (1988): Economic Geography, Prentice Hall, New Delhi,. 4. Jones C. F. and Darkenwald G.G.,(1975): Economic Geography, Macmillan & Co, New York, 5. Smith, D. M.,(1971): Industrial location: An Economic Geographical Analysis, John Wiley, New York,. 6. Bengston& Van, G. H. Royan(1988): Fundamentals of Economic Geography, Prentice Hall, New Delhi. 7. Leong, G. C. & Morgan, G. H.,(1982): Human and Economic Geography, Oxford University Press – New York. 8. Berry J. L.,(1967): Geogrophy of Market Centres and Retail

	<p>Distribution, Prentice Hall , New York.</p> <p>9. Chatterjee, S. P., (1984): Economic Geography of Asia, Allied Book Agency, Calcutta.</p> <p>10. Chorley, R. J. and Haggett, P. (ed.), (1969): Network Analysis in Geography, Arnold, London.</p> <p>11. Dreze, J. & Sen, A.,(1996): India-Economic Development & Social Opportunity, Oxford, N. Delhi.</p> <p>12. Eckarsley, R.(ed.), (1995):Markets, the State and the Environment, McMillan, London.</p> <p>13. Garnier. B. J. and Delobez, A.,(1979): Geography of Marketing, Longman, London.</p>
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TITLE OF THE PAPER	CARTOGRAPHIC TECHNIQUES (PRACTICAL-III)
Class	S.Y.B.Sc.
No of Credits	02
Paper Code	SGC103
Semester	III
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To develop skills and techniques for transformation of globe information to Paper. 2. Representation of physical features and data pertaining to physical geography.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Map Projections: Definition, classification of projection, Uses and properties. Construction of gnomonic, stereographic, orthographic equal area. one and two standard parallel. Equidistant and equal area projection 2. Methods of Representation of Relief features – Contours diagrams and profile drawings and its types 3. Measurement Scales in Geography: Nominal Ordinal and Ratio Measurements 4. Human Resource Indices and their calculations: Population Concentration Index (Gini's), Rank Size Rule.
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this practical course, the students will be able to express and appreciate globe and map information through. 2. It will enable the students to understand and interpret the same. 3. The students will also acquire basic skills of drawing a variety of physical & economic geography graphs and cartograms.
Suggested Reading	<ol style="list-style-type: none"> 1. Misra R. P. and Ramesh A.,(2009): Fundamentals of Cartography, Concept Publishing Company, New Delhi. 2. Monkhouse F. J.& Wilkinson ,H.R.,(2009) : Maps and Diagrams, B. I Publications, New Delhi. 3. Raise, E.,(2004): Principles of Cartography, McGraw Hills, London. 4. Singh,Gopal.,(2010): Map Works and Practical Geography,

	<p>Vikas Publishing House, New Delhi.</p> <p>5. Singh R, L., (1979): Elements of Practical Geography, . Kalyani Publishers, New Delhi</p> <p>6. Singh, R.L. and Singh Rana P.B., (2008): Elements of Practical Geography, Kalyani Publishers, New Delhi</p>
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TITLE OF THE PAPER	GEOGRAPHY OF SECONDARY AND TERTIARY ECONOMIC ACTIVITIES (THEORY)
Class	B. SC.
No of Credits	04
Paper Code	SGC104
Semester	IV
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. The paper intends to sensitize students with the geographical approach to study secondary and tertiary economic activities. 2. It also imparts information about economic related contemporary issues in India and the world. 3. It aims at detailed study of the secondary and tertiary economic systems of the world.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Manufacturing – theories and industries 2. Study of tertiary activities – international transport and world communication systems 3. Trade 4. Cities as centers of manufacturing and service.
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this course, the students will be able to gain knowledge and understand the fundamental concepts of economic geography of the world w.s.r.t. India. 2. The students will also be trained with current knowledge enabling them to understand the spatial variations in economic zones. 3. They will also acquire the skills to apply the knowledge to solve the day-to-day socio-economic and cultural issues.
Suggested Reading	<ol style="list-style-type: none"> 1. Bengston & Van, G. H. Royan.,(1988): Fundamentals of Economic Geography, Prentice Hall, New Delhi. 2. Boesch, H., (1964): A Geography of World Economy, Van Nostrand Co., New York. 3. Chapman J. D., (1989): Geography and Energy, Longman, London. 4. Hartshorne T. N. & Alexander J. W.,(1988): Economic Geography, Prentice Hall, New Delhi. 5. Jones C. F. and Darkenwald G. G.,(1975): Economic Geography, Macmillan & Co, New York.

	<ol style="list-style-type: none"> 6. Leong, G. C. & Morgan, G. H., (1982): Human and Economic Geography, Oxford University Press – New York. 7. Rodrigue, Jean-Paul, Comtois Claude and Slack Brian (2013): The Geography of Transport Systems, Routledge, London. 8. Smith, D. M.,(971): Industrial location: An Economic Geographical Analysis, John Wiley, New York. 9. Singh, S.,(2011): Industrial Geography , ABD Publisher.
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TITLE OF THE PAPER	TRAVEL AND TOURISM OPERATION IN GEOGRAPHY
Class	S.Y.B. A. / S.Y.B. SC.
No of Credits	04
Paper Code	GES101
Semester	III
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. The main objective of this paper is to orient the students to the skills of travel and tourism operation with the fundamental knowledge of tourism geography. 2. It is to develop preparedness to work or assist travel and tourism enterprise in the competitive market in the society. 3. To orient the students to the skills of travel and tourism operation with the fundamental knowledge of tourism geography. 4. To develop preparedness to work or assist travel and tourism enterprise in the competitive market in the society. 5. To help the students to apply the knowledge in solving practical problems. 6. To guide students in undertaking research in the field.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Fundamentals of Geography of Travel and Tourism: Concepts, Nature and Scope. 2. Type of Travel and Tourism. 3. Benefits and Impact of Tourism. 4. Human Induced Travel and Tourism Hazards 5. Travel and Tourism in India. 6. National and State Tourism Policy.
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. The students will be able to be comprehend the possibilities and unforeseen challenges in travel and tourism activity. They will be able to understand the relevance of the subject. 2. The information gained from the course will enable the students to become fair businessman or worker. 3. The students will acquire confidence of taking up tourism related activities which is expanding everywhere across the world. 4. They will be able to apply the knowledge in day to day life.

Suggested Reading	<ol style="list-style-type: none"> 1. Dhar, P.N.,(2006): International Tourism: Emerging Challenges and Future Prospects. Kanishka, New Delhi. 2. Fesenmaker, L (1983):Recreation Planning and Management, ventures Publications, USA. 3. Hall, M. and Stephen, P.,(2006): Geography of Tourism and Recreation – Environment, Place and Space, Routledge, London. 4. Kamra, K. K. and Chand, M.,(2007): Basics of Tourism: Theory, Operation and Practise, Kanishka Publishers, Pune. 5. Kaur, J., (1985):Himalayan Pilgrimages and New Tourism, Himalayan Books, New Delhi. 6. Page,S. J.,(2011):Tourism Management: An Introduction, Butterworth-Heinemann- USA. Chapter 7. Robinson, H., (1976): A Geography of Tourism, Macdonald and Evans, London.
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TITLE OF THE PAPER	FUNDAMENTALS OF TOURISM GEOGRAPHY
Class	S.Y.B.A./S.Y.B.Com.
No of Credits	04
Paper Code	GEG109
Semester	III
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. The main objective of this paper is to orient the students to know the fundamentals or basic concepts of tourism and its related fields in a geographical perspective. 2. Studying of Tourism as a multi disciplinary subject will also be met.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Introduction to Tourism Geography. 2. Fundamentals: Nature, scope and contents. 3. Tourism in the past and its growth 4. Dynamics of tourism, 5. Factors influencing tourism 6. Elements of Tourism. 7. Tourism as spatial affinity 8. Emerging Fields in tourism 9. Impacts of Tourism 10. Case study of coastal / environmental degradation.
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this Generic course, the students will be able to develop interest in Tourism Geography as a skill orientation amongst the students. 2. It will enhance confidence level of the students to achieve gainful employment.
Suggested Reading	<ol style="list-style-type: none"> 1. Bhatiya, A. K., (1991): International Tourism - Fundamentals and Practices., Sterling, New Delhi. 2. Cosgrove, I and Jackson, R., (1972):The Geography of

	<p>Recreation and Leisure, Hutchinson, London.</p> <ol style="list-style-type: none"> 3. Fesenmaker, L (1983): Recreation Planning and Management, ventures Publications, USA. 4. Kaul, R.K., (1985): Dynamics of Tourism and Recreation Inter – India., New Delhi. 5. Larvery, P., (1971): Recreational Geography, Douglas David and Charles Ltd. Vancouver. 6. Meyer, H. D and Brightbill, C.K., (1956): Community Recreation, Prentice Hall Inc., Englewood Cliffs, N.J. 7. Neumeyer, M.H. and Neumeyer, E. S., (1949): Leisure and Recreation, A.S. Burnes & Co., New York. 8. Kaur, J., (1985): Himalayan Pilgrimages and New Tourism, Himalayan Books, New Delhi. 9. Miles, C. W. N and Seabrooke, W., (1977): Recreational and Management, E & F. N, Span Ltd. London. 10. Pearce Douglas, P., (1996): Tourism Today: A Geographical Analysis, John Wiley, New York. 11. Pearce, D.G., (1979): Towards Geography of Tourism., Annals of Tourism Geography., Elsevier Ltd 12. Robinson, H., (1976): A Geography of Tourism, Macdonald and Evans, London. 13. Singh, J.C., (1975): Tourism and Tourist Industry, New Height, Delhi. 14. Singh, S.N., (1986): Geography of Tourism and Recreation, Inter-India, New Delhi.
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TITLE OF THE PAPER	Physical Geography (Theory)
Class	T.Y.B.A.
No of Credits	03
Paper Code	GEC105
Semester	V
COURSE OBJECTIVES	This is an introductory paper which is intended to acquaint the students with basics concepts in physical Geography.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Concept and Nature of Physical Geography: Meaning and Branches of physical geography 2. Earth Systems I: Structure of the earth; Rock formation; folds and faults; Earthquakes and Volcanoes. 3. Earth Systems II: Insolation; Global Warming; Climate Change; Biosphere; Applications in risk reduction.
LEARNING OUTCOMES	At the end of this course students will be able to gain knowledge and about physical Geography.
Suggested Reading	<ol style="list-style-type: none"> 1. Bloom, Arthur L., (2008): Geomorphology – A Systematic Analysis of Late Cenozoic Landforms, Prentice Hall, Engle Wood Cliff, New Jersey. 2. Ahmed, E., (2005): Geomorphology, Kalyani Publishers, New Delhi 3. Sharma, V.K., (2006): Geomorphology, Earth Surface, Process and forms, Tata McGraw Hill, New York 4. Lal.D.S ., (2004): Oceanography, Prayag Pustak Bhavan,

	<p>Allahabad</p> <ol style="list-style-type: none"> 5. Strahler, A.N., (2005): Physical Geography, 3rd Ed., Wiley Publications 6. Singh, S. (2005): Physical Geography, Prayag Pustak Bhawan, Allahabad 7. Thornbury, W.D., (2004): Principles of Geomorphology, Wiley International. 8. Wooldridge, S.W. and Morgan, R.S., (2008): The Physical Basis of Geography, Longman (First published in 1937) 9. Worcestor, P.G., (2005): A Textbook of Geomorphology, Van Nostrand, 2nd Ed., East West Edition, New Delhi. 10. Chorley, Richard J., (2002): Spatial Analysis in Geomorphology, Harper and Row Publishers, New York, London. 11. Dayal, P. (2nd edition) (2006): A Textbook of Geomorphology, Shukla Book Depot, Patna 12. Sharma, H.S. (ed), (2002): Perspective in Geomorphology, Vol. I & IV, Concept, New Delhi. 13. Sharma, V.K., (2006): Geomorphology, Earth Surface Processes and Forms, Tata Mc. Graw Hill, New Delhi. <p>Sparks, B.W., (2000): Geomorphology, Longman, London, 2nd edition.</p>
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TITLE OF THE PAPER	Physical Geography (Practical)
Class	T.Y.B.A.
No of Credits	01
Paper Code	GEC105
Semester	V
COURSE OBJECTIVES	This is an introductory paper which is intended to acquaint the students with basics of topographical mapping.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Introduction to Survey of India (SOI) toposheets 2. Comparison of SOI with Ordinal maps of UK and United States Geological Survey Maps (USGS) 3. Topographical Map Interpretation
LEARNING OUTCOMES	At the end of this course students will be able to gain knowledge about toposheet map reading and interpretation of the same.
Suggested Reading	<ol style="list-style-type: none"> 1. Cuff J. D. and Mattson M. T., (1982): Thematic Maps: Their Design and Production, Methuen Young Books 2. Dent B. D., Torguson J. S., and Holder T. W., (2008): Cartography: Thematic Map, Design (6th Edition), McGraw-Hill Higher Education. 3. Gupta K. K. and Tyagi V. C., (1992): Working with Maps, Survey of India, DST, New Delhi. 4. Kraak M. J., Ormeling F., (2003): Cartography: Visualization of Geo-Spatial Data, Prentice-Hall. 5. Mishra R. P., and Ramesh A., (1989): Fundamentals of Cartography, Concept, New Delhi. 6. Singh R. L., Singh R. P. B., (1999): Elements of Practical Geography, Kalyani Publishers. 7. Slocum T. A., McMaster R. B. and Kessler F. C., (2008): Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.

	8. Tyner J. A., (2010): Principles of Map Design, The Guilford Press. Sarkar, A. (2015): Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi
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TITLE OF THE PAPER	Regional Planning and Development (Theory)
Class	T.Y.B.A.
No of Credits	03
Paper Code	GEC107
Semester	V
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To understand and evaluate the concept of region in geography and its role and relevance in regional planning; 2. To identify the issues relating to the development of the region through the process of spatial organization of various attributes and their inter relationship.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Regions and Regional Planning: Concept and Types of regions; urban agglomerations 2. Regional Development, theories and Models: Concepts of growth & development, 3. Regional Development: India; Concept & Causes of underdevelopment;
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this course, students are expected to understand the concept of regional planning and its variations across time and space. 2. They will be able to correlate and differentiate the various types of regional planning and apply the same to the local settings. 3. Students will develop the values necessary for the effective practice of planning, including problem-solving skills; research skills; written, graphical, and oral skills; computational skills; collaboration with peers; meeting professional standards; forecasting and scenarios; implementation of plans; working with diverse communities. 4. Students will learn the values and ethical standards affecting the practice of planning, including the values of justice, equity, fairness, efficiency, order, and beauty; the values of fair representation and equal opportunity; and respecting complex legacies.
Suggested Reading	<ol style="list-style-type: none"> 1. Berry, B.J.L. And Horton, F.F., (1970): Geographic Perspectives on Urban Systems, Prentice Hall, and New Jersey. 2. Bhat L.S., (1972): Regional Planning In India, Statistical Publishing Society. 3. Blij H. J. De., (1971): Geography: Regions and Concepts, John Wiley and Sons.

	<ol style="list-style-type: none"> 4. Chand, M., and Puri V.K., (2000): Regional planning In India, Allied Publishers, New Delhi. 5. Chandana, R.C.,(2016): Regional Planning and Development, 6th ed, Kalyani Publishers 6. Kulshetra, S. K.,(2012): Urban and Regional Planning in India : A hand book for Professional Practioners, Sage Publication, New Delhi. 7. Kumar, A., Meshram, D.S., Gowda, K. (Eds) 2016. Urban and Regional Planning Education: Learning for India, Springer 8. Kundu, A., (1992): Urban Development Urban Research in India, Khanna Publication, New Delhi. 9. Misra, R.P., Sundaram K.V., Prakash Rao, VLS. (1974): Regional Development Planning in India, Vikas Publication, New Delhi. 10. Misra, R.P., (1992): Regional Planning: Concepts, Techniques, Policies and Case Studies, Concept, New Delhi.
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TITLE OF THE PAPER	Practical in Regional Planning & Development (Practical)
Class	T.Y.B.A.
No of Credits	01
Paper Code	GEC107
Semester	V
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. This is an introductory paper which is intended to acquaint the students with statistics of Regional Development.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Delineation of formal regions by weighted index method 2. Delineation of functional regions by breaking point analysis 3. Measurement of inequality by location quotient 4. Measuring regional disparity by Sopher index 5. Measures of Inequality: Index of Dissimilarity, Gini Coefficient and Location Quotient 6. Measures of Interaction and Spatial Distribution: Nearest Neighbour Analysis, Rank-Size Rule (Zipf, Berry), 7. Computation of Human Development Index and ranking of countries and Indian states based on HDI and GDI
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. Students will develop the values necessary for the effective practice of planning, including problem-solving skills; research skills; written, graphical, and oral skills; computational skills; collaboration with peers; meeting professional standards; forecasting and scenarios; implementation of plans; working with diverse communities. 2. Students will learn the values and ethical standards affecting the practice of planning, including the values of justice, equity, fairness, efficiency, order, and beauty; the values of fair representation and equal opportunity; and respecting

	complex legacies.
Suggested Reading	

TITLE OF THE PAPER	Quantitative Techniques in Geography - I
Class	T.Y.B.A.
No of Credits	03
Paper Code	GEC108
Semester	V
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To introduce students with some basic statistical techniques. 2. To guide them use the techniques in day to day life 3. To help them to apply the techniques in geographical research as the Project / Dissertation is compulsory at UG / PG level. 4. To develop interest so that students pursue it for higher studies.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Introduction to Statistics 2. Scales of Measurement 3. Graphical Representation 4. Measures of Central Tendency 5. Measures of Dispersion
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. Students will be able to understand different techniques. 2. They will be able to understand the relevance of the subject. 3. The will be able to apply the knowledge in day to day life. 4. They will be able to draw inferences using the geographical database.
Suggested Reading	<ol style="list-style-type: none"> 1. Aronoff S., (1989): Geographic Information Systems: A Management Perspective, DDL Publication, Ottawa. 2. DDL Publication, Ottawa. 3. Burrough P.A., (1986): Principles of Geographic information Systems for Land 4. Resource Assessment, Oxford University Press, New York. 5. David Unwin., (1981): Introductory Spatial Analysis, Methuen, London. 6. Fraser. Taylor.D.R., (1991): Geographic information System, Pergamon Press, Oxford.

TITLE OF THE PAPER	Practical in Quantitative Techniques in Geography- I
Class	T.Y.B.A.
No of Credits	01
Paper Code	GEC108
Semester	V
COURSE OBJECTIVES	To introduce students with some basic statistical techniques, relevant to geographical research as the Project/Dissertation is compulsory at UG/PG level.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Descriptive Statistics-I: Measures of central tendency 2. Descriptive statistics – II: Measures of Dispersion 3. Relative Measures of Dispersion
LEARNING OUTCOMES	Students will be able to understand different techniques and their relevance and the knowledge of drawing inferences using the geographical database.
Suggested Reading	<ol style="list-style-type: none"> 1. Gregory., (1963): Statistical methods and the Geographer, Longman S. London 2. Gupta S.P., (1979: Practical Statistics, S. Chand and Co. 3. Johnson R.J., (1980): Multivariate statistical Analysis in Geography, Longman 4. Khan Z.A., (1998): Text book of practical Geography, Concept Publication, New Delhi 5. Majumdar, P.K., (2002): Statistics: A Tool for Social Sciences, Rawat Publications, Jaipur & New Delhi. 6. Pal. S. K., (1982): Statistical Techniques: A basic approach to Geography, Tata – McGraw Hill, New Delhi. 7. Rastogi, R.S.,(2005): Elementary Statistics, Rohit Publications ,Delhi. 8. Succheti D.C. and Kapoor V.K., (2002) - Statistics (Theory, methods and application), Sultan Chand & sons. 9. Zamir,Alvi., (2000): Statistical Geography:Method and Applications, Rawat Publications, New Delhi.

TITLE OF THE PAPER	Fundamentals of Geomorphology (Discipline Specific Elective in Geography)
Class	B.A.
No of Credits	03
Paper Code	GED101
Semester	V
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. The course provides the basic concepts, theories and application in geomorphology in a brief but adequate manner. 2. It familiarizes students with core concepts in geomorphology. 3. It imparts knowledge about various geomorphic processes and landforms.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Introduction to geomorphology 2. Theories in geomorphology 3. Geomorphic processes and landforms

LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this course, the students will be able to gain knowledge and understand the fundamental concepts and theories of geomorphology. 2. The students will also be trained with information regarding the applications of geomorphology in various disciplines. 3. They will also be familiarized with the various landforms in the world and the reasons behind their formation.
Suggested Reading	<ol style="list-style-type: none"> 1. Ahmed, E., (2005): Geomorphology, Kalyani Publishers, New Delhi. 2. Bloom, Arthur L., (2004): Geomorphology – A Systematic Analysis of Late Cenozoic Landforms, Prentice Hall, Engle Wood Cliff, N.J. 3. Bridges E. M., (1990): World Geomorphology, Cambridge University Press, Cambridge. 4. Chorley, Richard J., (2002): Spatial Analysis in Geomorphology, Harper and Row Publishers, New York, London. 5. Christopherson, Robert W., (2011): Geosystems: An Introduction to Physical Geography, (8 Ed), Macmillan Publishing Company. 6. Conserva, H. T., (2004): Illustrated Dictionary of Physical Geography, Author House, USA. 7. Dayal, P. (2nd edition) (2006): A Textbook of Geomorphology, Shukla Book Depot, Patna. 8. Gabler, R. E., Petersen, J. F., and Trapasso, L. M., (2007): Essentials of Physical Geography (8th Edition), Thompson, Brooks/Cole, USA. 9. Garrett, N., (2000): Advanced Geography, Oxford University Press. 10. Goudie, A., (1984): The Nature of the Environment: An Advanced Physical Geography, Basil Blackwell Publishers, Oxford. 11. Hamblin, W. K., (1995): Earth's Dynamic System, Prentice Hall, N.J. 12. Husain M., (2002): Fundamentals of Physical Geography, Rawat Publications, Jaipur. 13. Kale V. S. and Gupta A., (2001): Introduction to Geomorphology, Orient Longman, Hyderabad. 14. Knighton A. D., (1984): Fluvial Forms and Processes, Edward Arnold Publishers, London. 15. Sharma, H.S. (ed), (2002): Perspective in Geomorphology, Vol. I & IV, Concept, New Delhi. 16. Monkhouse, F. J. (2009): Principles of Physical Geography, Platinum Publishers, Kolkata. 17. Sharma, V.K., (2006): Geomorphology, Earth Surface Processes and Forms, Tata Mc. Graw Hill, New Delhi. 18. Selby, M.J., (2005): Earth's Changing Surface, Indian Edition, OUP. 19. Singh, S. (2005) : Geomorphology, PrayagPustakBhawan, Allahabad.

	<p>20. Skinner, B. J., and Porter, S. C., (2000): The Dynamic Earth: An Introduction to physical Geology, 4th Edition, John Wiley and Sons</p> <p>21. Strahler, A. N. and Strahler, A. H., (2008): Modern Physical Geography, John Wiley & Sons, New York.</p> <p>22. Sparks, B.W., (2000): Geomorphology, Longman, London.</p> <p>23. Strahler, A.N. (2006): Physical Geography, 3rd Ed., Wiley.</p> <p>24. Thornbury, W.D., (2001): Principles of Geomorphology, 2nd Ed., Wiley International Edition, Wiley Eastern Reprint.</p> <p>25. Wooldridge, S.W., and Morgan, R.S., (2000): The Physical Basis of Geography, Longman.</p> <p>26. Worcestor, P.G., (2005): A Textbook of Geomorphology, Van Nostrand, 2nd Ed., East West Edition, New Delhi.</p>
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TITLE OF THE PAPER	Application of Aerial photography in Geomorphology
Class	T.Y.B.A.
No of Credits	01
Paper Code	GED101
Semester	V
COURSE OBJECTIVES	This is an introductory paper which is intended to acquaint the students with basics of Aerial photography and its components.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Aerial Photography and its Component: Types of Aerial photos; Elements of Image Interpretation and Application 2. Aerial Photograph Interpretation: Scales and Interpretations
LEARNING OUTCOMES	At the end of this course students will be able to interpret aerial photographs
Suggested Reading	<ol style="list-style-type: none"> 1. Bhatta, B., (2011): Global Navigation Satellite Systems: Insights into GPS, GLONASS, Galileo Compass and Others, CRC Press. Bhatta, B., (2011): Remote Sensing and GIS, 2nd ed, Oxford Univ. Press. 2. Bolstad, P., (2016): GIS Fundamentals: A First Text on Geographic Information Systems, 5th ed, Xan Edu Publishing. Brewer, C.A., (2015): Designing Better Maps: A Guide for GIS Users, 2nd ed, Esri Press. 3. Harvey, F., (2015): A Primer of GIS: Fundamental Geographic and Cartographic Concepts, 2nd ed, The Guilford Press. 4. Jensen, J.R., (2013): Remote Sensing of the Environment: An Earth Resource Perspective, Pearson Education India. 5. Joseph, G. and Jegannathan, C., (2018): Fundamentals of Remote Sensing, 3rd ed, Universities Press. 6. Lillesand, T.M., Kiefer, R.W. and Chipman, J.W., (2015): Remote Sensing and Image Interpretation, 7th ed, Wiley. 7. Sarkar, A., (2015): Practical Geography: A Systematic Approach. 2nd ed, Orient Black Swan Private Ltd.

TITLE OF THE PAPER	Physical Geography of India (Theory)
Class	T.Y.B.A.
No of Credits	03
Paper Code	GED102
Semester	V
COURSE OBJECTIVES	The course provides the basic understanding of India in a brief but adequate manner.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Introduction, Location, Extent and Geo-Political significance; Major Physiographic regions and their importance 2. The Himalayan Drainage System of India; The Peninsular River system; Water Resource Development 3. Climatic characteristics, Origin and Mechanism of Monsoons and Various Seasons; Natural Resources
LEARNING OUTCOMES	At the end of this course, students are expected to have an understanding of the inter linkages and interaction between physical aspects and resource base of India.
Suggested Reading	<ol style="list-style-type: none"> 1. Deshpande C.D, (1992): India-A Regional Interpretation Northern Book Centre, New Delhi. 2. Dhara, M.K., Basu, S.K., Bandyopadhyay, R.K., Roy, B., Pal, A.K., (Eds.) (1999): Geology and Mineral Resources of the States of India, Part-1: West Bengal, Geological Survey of India, Miscellaneous Publication. 3. Ghurey, G.S., (1963): The Scheduled Tribes of India, 1980 reprint, Transaction Books. 4. Husain, M., (2014): Geography of India, Tata McGraw-Hill Education, New Delhi. 5. Johnson, B.L.C., (Ed) (2001): Geographical Dictionary of India, Vision Books. 6. Kale, V.S., (2014): Landscapes and Landforms of India, Springer. Khullar, D.R., (2011): Indian-A Comprehensive Geography, Kalyani Publishers, New Delhi. 7. Krishnan, M.S., (1949): Geology of India and Burma, The Madras Law Journal Press, Chennai 8. Learmonth, A.T.A., et.al(ed): Man and Land of South Asia Concept, New Delhi. 9. Mamoria, C.B.,(1995): Economic and Commercial Geography of India, Shiv Lal Agarwal & Co, Agra. 10. Mandal, H., Mukherjee, S., Datta, A., (2002): India: An Illustrated Atlas of Tribal World, Anthropological Survey of India. 11. Pal, S.K., (1998): Physical Geography of India, Sangam Books Ltd, New Delhi. 12. Pathak, C.R., (2003): Spatial Structure and Processes of Development in India, Regional Science Association-Kolkata. 13. Sharma, T.C., (2012): Economic Geography of India, Rawat Publications, Delhi. 14. Singh, J.,(2003): India-A Comprehensive & Systematic Geography, Gyanodaya Prakashan. 15. Singh, J., and Dhillon, S.S.,(2004):Agricultural Geography,

	<p>Tata McGrawHill Education, New Delh.i</p> <p>16. Singh, R.L.,(ed) (1971): India: A Regional Geography. National Geographical Society. India, Varnasi.</p> <p>17. Spate, O.H.K., and Learmonth, A.T.A., (1967): India and Pakistan - Land, People and Economy, Methuen & Co, London.</p> <p>18. Tiwari, R.C., (2006): Geography of India, Prayag Pustak Bhavan, Allahabad.</p> <p>19. Valdiya, K.S., (1998): Dynamic Himalaya, University Press, Hyderabad.</p> <p>20. Valdiya, K.S. (2004): Geology, Environment and Society, University Press, Hyderabad.</p> <p>21. Wadia, D.N. (1967): Geology of India, McMillan & Co, London.</p>
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TITLE OF THE PAPER	Physical Geography of India (Practical)
Class	T.Y.B.A.
No of Credits	01
Paper Code	GED102
Semester	V
COURSE OBJECTIVES	This is an introductory paper which is intended to enable students to prepare maps various aspects of physical geography of India.
COURSE CONTENT	Preparation and Interpretation of Maps; Drainage Basins of India; Maps of Natural Resources
LEARNING OUTCOMES	At the end of this course students will be able to gain knowledge about map reading and interpretation of various aspects of physical Geography of India.
Suggested Reading	<ol style="list-style-type: none"> 1. Bolton. T., (2009): Geological Maps: Their Solution and Interpretation, Cambridge Univ. Press. (reprint). 2. Monkhouse, F.J., Wilkinson, H.R., (1971). Maps and Diagrams: Their Compilation and Construction, 3rd ed (2017 reprint), Alphaneumera-Kolkata. 3. Robinson, A.H., Morrison, J.L., Phillip, C.M., Kimerling, A.J., Guphill, S.C.,(1995): Elements of Cartography, 6th ed, Wiley. Sarkar, A.,(2015): Practical Geography: A Systematic Approach, 3rd ed, Orient Blackswan Private Ltd. 4. Singh, R.L., Singh, R.P.B, (2008): Elements of Practical Geography, Kalyani Publishers.

TITLE OF THE PAPER	Climate Change: Vulnerability and Adaptations
Class	T.Y.B.A
No of Credits	04
Paper Code	GED 103
Semester	V
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. The course content allows students who need to acquaint with a different presentation of Earth Science than they have seen/ perceived in the class. 2. It supplements the classroom teaching and experiences.
COURSE CONTENT	<ol style="list-style-type: none"> 1. The science of climate change 2. Global climate assessment 3. Global initiatives to climate change mitigation 4. National Action Plan on climate change.
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. Since important connections of natural surroundings are lost in the dry facts and abstract concepts the discussion with example orientation will give the reader a complete knowledge. 2. Ultimately a firm grasp of the concepts of how and why our world works makes us partners in a relationship with nature as we are all immersed in everyday as we are neither foreign objects or subjects rather than victims of it.
Suggested Reading	<ol style="list-style-type: none"> 1. Parry, M., Canziani, O., Palutikof, J., Linden, P., Hanson, C. (Eds) (2007). Climate Change 2007. Impacts, Adaptation and Vulnerability-contribution of working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press. 2. Field, C.B., Barros,, V.R., Dokken, D.J., Mach, K.J., Mastrandrea, M.D., Bilir, D.E., Chatterjee, M., Ebi, K.L, Estrada, Y.O., Genova, R.C., Girma, B., Kissel, E.S., Levy, A.N., MacCracken, S., Mastrandrea, P.R., White, L.L.(Eds) (2014). Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects-Contribution of Working Group II to the Fifth assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press. 3. Field, C.B., Barros,, V.R., Dokken, D.J., Mach, K.J., Mastrandrea, M.D., Bilir, D.E., Chatterjee, M., Ebi, K.L, Estrada, Y.O., Genova, R.C., Girma, B., Kissel, E.S., Levy, A.N., MacCracken, S., Mastrandrea, P.R., White, L.L.(Eds) (2014). Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B:Regional Aspects-Contribution of Working Group II to the Fifth assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press. 4. Organisation for Economic Co-operation and Development (OECD) (2008): Climate Change Mitigation: What do we do? Organisation and Economic Co-operation and Development. 5. United Nations Environmental programme (UNEP) (2007):

	<p>Global Environment Outlook: GEO4: Environment for Development, United Nations.</p> <ol style="list-style-type: none"><li data-bbox="635 197 1498 302">6. Singh, M., Singh, R.B., Hassan, M.I. (Eds) (2014): Climate change and biodiversity: Proceedings of IGU Rohtak Conference, Vol-1, Springer.<li data-bbox="635 309 1498 414">7. Sen Roy, S., Singh, R.B. (2002): Climate Variability. Extreme Events and Agricultural Productivity in Mountain Regions, Oxford & IBH.
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GOA UNIVERSITY
Choice Based Credit System (CBCS)
Objectives & Learning Outcome for BA/ BSC/BCOM Programmes
Semester II/IV/VI

TITLE OF THE PAPER	SOCIAL AND CULTURAL GEOGRAPHY (THEORY)(DSC)
Class	FYBA
No of Credits	03
Paper Code	GEC102
Semester	II
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. The paper intends to sensitize students with socio-cultural aspects and the related contemporary issues in India and the world with a geographical outlook. 2. The philosophy of the subject is to be taught in order to develop a keen interest in the subject and to pursue it for higher studies.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Introduction to Social and Cultural Geography; Physical-Cultural Environment and major regions of the world. 2. Introduction to culture and civilization, cultural realms, cultural landscapes 3. World population: growth, distribution, Factors affecting world population, rural-urban composition, urbanization; Migration; Linguistic Composition, Religious Composition, Global and Cultural Conflicts. 4. Races of the world; Ethnicity- inequality and conflicts, Contemporary Issues.
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this course, the students will be able to gain knowledge and understand the fundamental concepts of social and cultural geography of the world w.s.r.t. India. 2. They will also acquire the skills to apply the knowledge to solve the day-to-day socio-cultural issues.
Suggested Reading	<ol style="list-style-type: none"> 1. Bergwan, Edward E.,(1995): Human Geography: Culture, Connections and Landscapes, Prentice Hall, New Jersey. 2. Carr M., (1987): Pattern, Processes and Change in Human Geography, McMillan Education, London. 3. Chandna, R C.,(2014): Geography of Population: Concepts, Determinants and Patterns, Kalyani Publishers, Delhi 4. De Blij H. J. and Murphy, Alexandar.,(2006): Human Geography, Culture, Society and Space, John Wiley, New York. 5. Fellman J. L.,(2007): Human Geography: Landscapes of Human Activities, Brown & Benchman, USA. 6. Hussain, Majid.,(2011): Human Geography, Rawat Publishers, Jaipur.

	<p>7. Pathak, C. R.,(2017): Spatial Structure and Development in India, RSAI.</p> <p>8. Unisa, S. Ram, F. and Sekhar,T.V.,(2012): Population, Gender and Reproductive Health, IIPS, Mumbai.</p>
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TITLE OF THE PAPER	PRACTICALS IN SOCIAL AND CULTURAL GEOGRAPHY (PRACTICAL-II)
Class	FYBA
No of Credits	01
Paper Code	GEC102
Semester	II
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To develop skills and techniques for representation of social and cultural data.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Cartographic Representation of Population Data: Line Graph; Bar Graph; Pie Diagram; Age-Sex Pyramid; Ergo-graph; Tri-Linear Chart; Flow Diagrams. 2. Cartographic Exercises on World Maps, Dot Maps; Choropleth Map; Proportional Circles; Spheres; Pictograms; Chorochromatic Maps.
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this practical course, the students will be able to express and appreciate social and cultural information through cartograms, graphs and charts. 2. It will enable the students to understand and interpret the same. 3. Finally, the students will acquire basic skills of drawing a variety of graphs and cartograms.
Suggested Reading	<ol style="list-style-type: none"> 1. Campbell, J.,(2004): Introductory Cartography, Prentice Hall, Inc Englewood. 2. Misra, R.P. and Ramesh, A., (2005): Fundamentals of Cartography, Concept Pub. Co., New Delhi. 3. Misra, R. P.,(2014): Fundamentals of Cartography, Concept Pub. Co., New Delhi. 4. Monkhouse, F.J. , and ,Wilkinson, H.R., (2009): Maps and Diagram, B.I. Publication, New Delhi. 5. Singh, Gopal., (2014): Map Work and Practical Geography, 4th Edition, Sterling Book House.

TITLE OF THE PAPER	GEOGRAPHY OF SECONDARY AND TERTIARY ACTIVITIES (THEORY)
Class	S.Y.B.A
No of Credits	03
Paper Code	GEC104
Semester	IV
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. The paper intends to sensitize students with the geographical approach to study secondary and tertiary economic activities and the related contemporary issues in India and the world.

	<ol style="list-style-type: none"> The subject is to be taught with maps in order to develop a keen interest in the subject and to pursue it for higher studies.
COURSE CONTENT	<ol style="list-style-type: none"> Manufacturing: Meaning and Importance; Theories of Manufacturing Study of Tertiary Activities; International transport. World Trade; Central Place theory; trade blocks.
LEARNING OUTCOMES	<ol style="list-style-type: none"> At the end of this course, the students will be able to gain knowledge and understand the fundamental concepts of economic geography of the world w.s.r.t. India. They will also acquire the skills to apply the knowledge to solve the day-to-day socio-economic and cultural issues.
Suggested Reading	<ol style="list-style-type: none"> Boesch, H., (1964): A Geography of World Economy, Van Nostrand Co., New York. Chapman J. D. (1989): Geography and Energy, Longman, London. Hartshorne T. N. & Alexander J. W.(1988): Economic Geography, Prentice Hall, New Delhi. Jones C. F. and Darkenwald G. G.,(1975): Economic Geography, Macmillan & Co, New York. Smith, D. M., (1971): Industrial location: An Economic Geographical Analysis, John Wiley, New York. Bengston & Van, G. H. Royan.,(1988): Fundamentals of Economic Geography, Prentice Hall, New Delhi. Leong, G. C. & Morgan, G. H., (1982): Human & Economic Geography, Oxford Univ. Press, New York.

TITLE OF THE PAPER	DATA COLLECTION AND STATISTICAL METHODS IN GEOGRAPHY (PRACTICAL –IV)
Class	S.Y.B.A
No of Credits	01
Paper Code	GEC104
Semester	IV
COURSE OBJECTIVES	<ol style="list-style-type: none"> To understand basic statistical methods and skills for cartographic transformation of information. Skills in Tabular and graphical representation of data pertaining to geography will be given.
COURSE CONTENT	<ol style="list-style-type: none"> Sampling Techniques: Its Significance in Research Data collection; Sampling purpose and its types. Coding of sample data; Statistical measure in Geography Field survey and Report; socio-economic surveys
LEARNING OUTCOMES	<ol style="list-style-type: none"> At the end of this practical course, the students will be able to collect the field data and represent the collected information through tables and cartograms. It will also enable the students to understand and interpret the same.
Suggested Reading	<ol style="list-style-type: none"> Campbell, J.(2004) Introductory Cartography, Prentice Hall, Inc Englewood

	<ol style="list-style-type: none"> 2. Misra, R.P. and Ramesh, A., (2009): Fundamentals of Cartography, Concept Pub. Co., New Delhi 3. Monkhouse, F.J. and Wilkinson, H.R., (2009): Maps and Diagram, B.I. Publication, New Delhi 4. Misra, R. P., (2014): Fundamentals of Cartography, Concept Pub. Co., New Delhi 5. Raisz, E., (2004): Principles of Cartography, McGraw Hills, London 6. Singh, Gopal., (2014), : Map Work and Practical Geography, 4th Edition, Sterling Book House
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TITLE OF THE PAPER	SOCIAL AND CULTURAL GEOGRAPHY (THEORY)
Class	F.Y.B.Sc.
No of Credits	04
Paper Code	SGC102
Semester	II
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. The paper intends to sensitize students with socio-cultural aspects and the related contemporary issues in India and the world with a geographical outlook. 2. The philosophy of the subject is to be taught in order to develop a keen interest in the subject and to pursue it for higher studies.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Introduction to social and cultural Geography. 2. World Population; Migration: Races of the world; Ethnicity. 3. Linguistic and Religious Composition. 4. Contemporary Issues: Gender Inequality, Refugees, Terrorism; Social well-being and its indicators.
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this course, the students will be able to gain knowledge and understand the fundamental concepts of social and cultural geography of the world w.s.r.t. India. 2. They will also acquire the skills to apply the knowledge to solve the day-to-day socio-cultural issues.
Suggested Reading	<ol style="list-style-type: none"> 1. Bergwan,Edward.E.,(1994): Human Geography: Culture, Connection and Landscapes, Prentice Hall, N.Jersey. 2. Carr, M.,(1987): Pattern, Processes and Change in Human Geography, Thomas Nelson Publishers. 3. De Blij, H.J., et.all.,(2007): <i>Human Geography: People, Place and Culture</i>. John Wiley and sons. USA. 4. Fellman, J.L., (2007): Human Geography-Landscapes of Human Activities, Brown and Bench man, Pub. U.S.A. 5. Hussain, Majid., (2011): Human Geography, Rawat Publishers, Jaipur. 6. Pathak, C. R.,(2017): Spatial Structure and Development in India, RSAI. 7. Rubenstein. J. M., (2010): <i>Contemporary Human Geography</i>. PHI Learning Pvt, New Delhi. 8. Sharma Y.K., (2007): <i>Human Geography</i>. Lakshmi Narain Agrawal, Agra. 9. Unisa, S. et.al.,(Eds.),(2012): Population, Gender and Reproductive Health, IIPS, Mumbai.

TITLE OF THE PAPER	PRACTICALS IN SOCIAL AND CULTURAL GEOGRAPHY (PRACTICAL-II)
Class	F.Y.B.Sc
No of Credits	02
Paper Code	SGC102
Semester	II
COURSE OBJECTIVES	1. To develop skills and techniques for representation of social and cultural data.
COURSE CONTENT	1. Introduction to Social and cultural data. 2. Cartographic Representation of Population Data. 3. Cartographic Exercises on Census Data.
LEARNING OUTCOMES	1. At the end of this practical course, the students will be able to express and appreciate social and cultural information through cartograms, graphs and charts. 2. It will enable the students to understand and interpret the same. 3. Finally the students will acquire basic skills of drawing a variety of graphs and cartograms.
Suggested Reading	1. Campbell, J.(2004) Introductory Cartography, Prentice Hall, Inc Englewood 2. Misra, R.P. and Ramesh, A., (2009): Fundamentals of Cartography, Concept Pub. Co., New Delhi 3. Monkhouse, F.J. and Wilkinson, H.R., (2009): Maps and Diagram, B.I. Publication, New Delhi 4. Misra, R. P., (2014): Fundamentals of Cartography, Concept Pub. Co., New Delhi 5. Raisz, E., (2004): Principles of Cartography, McGraw Hills, London 6. Singh Gopal. (2014), : Map Work and Practical Geography, 4th Edition, Sterling Book House

TITLE OF THE PAPER	GEOGRAPHY OF SECONDARY AND TERTIARY ECONOMIC ACTIVITIES (THEORY)
Class	S.Y.B.Sc.
No of Credits	04
Paper Code	SGC104
Semester	IV
COURSE OBJECTIVES	1. The paper intends to sensitize students with the geographical approach to study secondary and tertiary economic activities and the related contemporary issues in India and the world. 2. The subject is to be taught with maps in order to develop a keen interest in the subject and to pursue it for higher studies.
COURSE CONTENT	1. Manufacturing: Meaning and Importance; Theories of Manufacturing. 2. Study of Tertiary Activities; International transport: land, ocean and air routes; World Communication system

	<ol style="list-style-type: none"> 3. Trade: Domestic and International 4. Cities as centres of manufacturing and services.
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this course, the students will be able to gain knowledge and understand the fundamental concepts of economic geography of the world w.s.r.t. India. 2. They will also acquire the skills to apply the knowledge to solve the day-to-day socio-economic and cultural issues.
Suggested Reading	<ol style="list-style-type: none"> 1. Bengston & Van, G. H. Royan.,(1988): Fundamentals of Economic Geography, Prentice Hall, New Delhi. 2. Boesch, H., (1964): A Geography of World Economy, Van Nostrand Co., New York. 3. Chapman J. D., (1989): Geography and Energy, Longman, London. 4. Hartshorne T. N. & Alexander J. W.,(1988): Economic Geography, Prentice Hall, New Delhi. 5. Jones C. F. and Darkenwald G. G.,(1975): Economic Geography, Macmillan & Co, New York. 6. Leong, G. C. & Morgan, G. H., (1982): Human and Economic Geography, Oxford University Press – New York. 7. Rodrigue, Jean-Paul, Comtois Claude and Slack Brian (2013): The Geography of Transport Systems, Routledge, London. 8. Smith, D. M.,(971): Industrial location: An Economic Geographical Analysis, John Wiley, New York. 9. Singh, S.,(2011): Industrial Geography , ABD Publisher.

TITLE OF THE PAPER	DATA COLLECTION AND STATISTICAL METHODS IN GEOGRAPHY (PRACTICAL-IV)
Class	S.Y.B.Sc.
No of Credits	02
Paper Code	SGC104
Semester	IV
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To develop skills and techniques for representation of demographic or socio-economic indicators and data pertaining to spatial geography.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Data sets in Geography; Sources of primary data; Sampling techniques. 2. Statistical measures in geography: Measures of central tendency. 3. Measures of dispersion. 4. Field survey report; Socio-Economic Survey.
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this practical course, the students will be able to express and appreciate data set information through statistical approach. It will enable the students to understand and interpret the same. 2. The students will also acquire basic skills of drawing a variety of economic geography cartograms.

Suggested Reading	<ol style="list-style-type: none"> 1. Bygot, J.,(2001): An Introduction to Map Work and Practical Geography, Bookbarn Internationals, U.K. 2. Campbell, J., (2004): Introductory Cartography, Prentice Hall, Inc Englewood 3. Jackson, R.H. and Hudmar, L.E.,(2001): Regional Geography: Issues for today 4. Misra, R.P. and Ramesh, A.,(2005): Fundamentals of Cartography, Concept Pub. Co., New Delhi 5. Monkhouse, I.J. and Wilkinson, H.R., (2001): Maps and Diagram, B.I. Publication, New Delhi 6. Raisz, E.,(2005): General Cartography, McGraw Hills Co., London 7. Robinson, A.H., et al, (2003): Elements of Cartography, John Wiley and Sons, New York 8. Singh, R.L., (2000): Elements of Practical Geography, Kalyani Publishers, New Delhi 9. Singh, R ; Singh L.R., (2001): Mapworks in Practical Geography,Central book Depot, Allahabad
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TITLE OF THE PAPER	GEOGRAPHY OF RESOURCE UTILIZATION IN GOA
Class	B.A./ B.Sc./ B.Com.
No of Credits	04
Paper Code	GEG102
Semester	II
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To orient the students to comprehend the prevailing pattern and limitations of Resource Utilization in Goa. 2. It aims at enabling the students to appreciate the prospects of the State and take pro-active stand to solve its problems. 3. Compulsory field work component will enable the students to visit places of geographical interest in the state and motivate students to carry out further study.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Geographical Study of primary activities in Goa Agriculture. 2. Geographical Study of Mining & Manufacturing in Goa Mining. 3. Geographical study of tertiary Activities-I: Tourism 4. Geographical Study of Tertiary Activities-II: Trade
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this Generic course, the students will be able to appreciate physical, social, economic and cultural resources utilization in the State of Goa. 2. The information will enable the students to become rational citizen and express their understanding before others. 3. Finally the students will acquire basic skills of taking judicious stand about the state and its prospective activities.
Suggested Reading	<ol style="list-style-type: none"> 1. Alvares.,Claude.,(2002): Fish Curry and Rice, Eco-Forum, A Goa Foundation Publication., Other India Press Publication. 2. Angle P.S., (1983): Goa : An Economic Review, Goa Hindu Association, Bombay. 3. Angle P.S., (2001): Goa : An Economic Update, Goa

	<p>Hindu Association, Bombay.</p> <ol style="list-style-type: none"> 4. Daily newspapers published from Goa (Publication Houses). 5. De Souza., Teotonio R., (Eds.), Goa University Publications., (1999): Goa through the Ages – An Economic History., Vol. I, II & III, Concept Publishing Co., New Delhi. 6. Goa Chamber of Commerce and Industry., (1992): Thirty years of Economic Development, Printing Press, Panaji. 7. Gomes Olivinho J. F., (1996): Village Goa: A Study of Goan Social Structure and Change published by National Book Trust India. 8. Govt. of Goa: Regional Plan for Goa 2001, Govt. Printing Press, Panaji, Goa. 9. Govt. of Goa., Statistical Pocket Books, Govt. Printing Press, Panaji. 10. Govt. of India: Gazetteer of Goa, Daman & Diu, Govt. Printing Press, Panaji-Goa. 11. Govt. of Goa, Economic Survey of Goa, Directorate of Planning, Statistics & Evaluation (DPSE) publication, Porvorim Goa., Govt. Printing Press, Panaji, Goa. 12. Larsen., Karin., (1998): Faces of Goa., Gyan Publishing House, New Delhi. 13. Saksena, R.N., (1964): Goa: Into the Mainstream., Techno Economic Survey of Goa, Daman & Diu., NCAER, Govt. Printing Press, Panaji.
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TITLE OF THE PAPER	SPATIAL AND FUNCTIONAL ASPECTS OF ECOLOGY
Class	B. A. / B. SC. / B. COM.
No of Credits	04
Paper Code	GEG104
Semester	II
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. This Paper aims to provide the students a multi-disciplinary approach to the spatial and functional overview of ecology and environment. 2. It also aims to create effective awareness of major ecological components and their influences on their life through Field Trip and Field Survey.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Biogeochemical Cycles 2. Diversity & Spatial Distribution of Major Ecosystems: aquatic and terrestrial 3. Biodiversity: Indian Scenario; Biogeographical regions in India 4. Global Climate change
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. The Students will be able to comprehend the ecological systems and their functionality. 2. The course will provide the basic skills to motivate and guide the common people to protect the ecology and environment for sustainable development of their habitat and zones of living in the world.

Suggested Reading	<ol style="list-style-type: none"> 1. Arora., M. P., (2014): Ecology., Himalaya Publishing House,Pvt,Ltd. 2. Dash M. C., (2009): Fundamentals of Ecology by Tata McGraw Hill Publishing Co. Ltd., New Delhi. 3. Verma., P. S. & Agarwal., V. K.,(2000): Environmental Biology, S. Chand & Co. Ltd. 4. Kumar, H. D., (1995): Modern Concepts of Ecology.,Vikas Publishing House Pvt. Ltd. 5. Odum E. P.,(2004):Fundamentals of Ecology., Oxford & IBH Publishing Co. Pvt. Ltd. 6. Purphit S.S., Ranjan R,(2003): Ecology, Environment and Pollution, Agrobios (India) Publication Jodhpur 7. Rangnathan,Mahesh.,(Ed).(2006): Environmental issues in India- A Reader,1st Edition, Pearson Longman. 8. Santra, S. C.,(2011): Environmental Science., Savera Publishing House. 9. Sharma., P. D.,(2015): Ecology and Environment.,Mittal Books India. 10. Singh., Benu.,(2006): Ecology and Environment, Vista International Publishing House, Delhi. 11. Singh, Pramod.,(1987): Ecology of Urban India., Vol.II, Ashish Pub. House. 12. Singh., Pramod., (1987): Ecology of Rural India, National Conference on Rural Ecology : Papers, , Ashish Pub. House.
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TITLE OF THE PAPER	SPATIAL INFORMATION TECHNOLOGY
Class	B. A. / B. SC. / B. COM.
No of Credits	04
Paper Code	GEG106
Semester	II
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. This paper will deal with the Spatial Information Technology for Sustainable Development of the world with special reference to India. 2. It is intended to acquaint the students with the global development patterns as a scientific and distinctive field of Geography learning. 3. The paper is to be taught with reference to current topics in the field of SIT and sustainable geography in order to develop a keen interest in the subject.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Introduction to Spatial Information Technology; Components and sustainability for Development. 2. Spatial Information Data 3. Functions of Spatial Information System 4. Application of Spatial Information Technology on Contemporary Issues
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this Paper students will be able to gain an insight of Spatial Information Technology for sustainable development and geography. 2. They will also acquire the skills to apply this knowledge to appreciate the diversity on the earth's surface.

	3. They will be able to broaden their horizon and use the skill to become global citizen.
Suggested Reading	<ol style="list-style-type: none"> 1. Alias A. Rahman and Morakot Pilouk.,(2008): Spatial Data Modeling for 3D GIS, Springer New York. 2. Esperança C., Samet H., (2001): An overview of the SAND spatial database system, to appear in Communications of the ACM, http://www.cs.umd.edu/~hjs/pubs/sandprog.ps. Gz. 3. Goodrich, M.,(2000): Data Structures and Algorithms in Java, 2nd Edition Wiley. Malczewski, J.,1999: GIS and Multicriteria Decision Analysis. New York: John Wiley and Sons. 4. Hjaltason. G.,andSamet H., (1995): Ranking in Spatial Databases in Advances in Spatial Databases —4th Symposium, SSD'95, M. J. Egenhofer and J. R. Herring, Eds., Lecture Notes in Computer Science 951, Springer-Verlag, Berlin, , 83-95. http://www.cs.umd.edu/~hjs/pubs/incnear.ps 5. Longley, P.A., et. Al.(2005): Geographic Information Systems and Science. Chichester: Wiley. 2nd edition. 6. Ott, T. and Swiaczny, F.,(2001): Time-integrative GIS. Management and analysis of spatiotemporal data. Berlin / Heidelberg / New York: Springer. 7. Samet H., (1995):Spatial Data Structures in Modern Database Systems: The Object Model, Interoperability, and Beyond, W. Kim, Ed., Addison-Wesley/ACM Press, , 361-385. 8. Samet H., (1990):The Design and Analysis of Spatial Data Structures, Addison-Wesley, Reading, MA,. ISBN 0-201-50255-0. 9. Samet H. and Aref W. G., (1995):Spatial Data Models and Query Processing in Modern Database Systems: The Object Model, Interoperability, and Beyond, W. Kim, Ed., Addison-Wesley/ACM Press, , 338-360. http://www.cs.umd.edu/~hjs/pubs/kim2.ps 10. Tomlin C. D., (1990): Geographic Information Systems and Cartographic Modeling, Prentice-Hall, Englewood Cliffs, NJ,. ISBN 0-13-350927-3. 11. Thurston, J., Poiker, T.K. and J. Patrick Moore.,(2003): Integrated Geospatial Technologies: A Guide to GPS, GIS, and Data Logging. Hoboken, Wiley, New Jersey.

TITLE OF THE PAPER	APPLIED / APPLICATION OF POPULATION GEOGRAPHY
Class	B. A. / B. SC. / B. COM
No of Credits	04
Paper Code	GEG108
Semester	IV
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. The course is meant to provide an understanding of spatial and structural dimensions of population and the emerging

	<p>issues.</p> <ol style="list-style-type: none"> 2. The course is further aimed at familiarizing the students with regional level problems and to equip them for comprehending the Indian situation. 3. Compulsory field work related mini project will enable the students to visit house hold or population related institutions in the state to carry out the study.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Introduction to Applied Population Geography; Migration: Sources and Pattern in India. 2. Population and environment interface. 3. Consequences of High and low concentration of Population. 4. Mini project and field work
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this Generic course, the students will be able to appreciate the link between the observed physical, social, economic and human resources available in their region. 2. The information will enable the students to become rational citizen and express their understanding before others. 3. Finally the students will acquire basic skills of taking judicious decisions for their family and society.
Suggested Reading	<ol style="list-style-type: none"> 1. Beaujeu-Garnier, J., (1966): Geography of Population (Translated by Beaver, S. H.) Longmans, London. 2. Bhende and Kanitkar (2011), Principles of Population Studies, Himalaya Publishing House, 3. Delhi 4. Census of India 2011 Series - I (2013): India Provisional Population Totals, Pub. Registrar General, India. 5. Chandna, R.C., (2000): Geography of Population: Concepts, Determinants & Patterns, Kalyani Pub., N. Delhi. 6. Clarke J. I (1972), Population Geography, Pergamon Press, Oxford. 7. Mitra&Kamaljit Chandra, (2005) Population Studies and Demography: Vol. 4 Concept of Population Geography, Delhi 8. Peters, G. L. & Larkim R. P.,(1979): Population Geog: Problems, Concepts & Prospects Kendele-Hunt Iowa. 9. Srinivasan K. and M. Viass., (2001):Off Population Development Nexus in India: Challenges for theN Millennium,Tata McGraw Hill Publishing Co Ltd., New Delhi. 10. Sundaram K.V. & Nangia Sudesh, (eds), (1986): Population Geography, Heritage Publishers, Delhi,. 11. Trewartha, G. T.,(1972): The Less Developed Realm - A Population Geography, McGraw Hill, New York. 12. UNDP(2001): Human Development Report, Oxford University Press. 13. Zelinsky, W., (1966): A Prologue to Population Geography, Prentice-Hall, Englewood Cliffs

TITLE OF THE PAPER	APPLIED / APPLICATION OF TOURISM GEOGRAPHY
Class	B. A. / B. SC. / B. COM.
No of Credits	04
Paper Code	GEG110
Semester	IV
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. The main objective of this paper is to orient the students to know the fundamentals or basic concepts of tourism and its related fields in a geographical perspective. 2. Studying of Tourism as a multi-disciplinary subject will also be met.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Introduction to Applied Tourism Geography; Tour planning stages and importance. 2. Tourism Development; problems and prospects. 3. Geographical aspects of tourism. 4. Mini project and Reports/ Field visits.
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this Generic course, the students will be able to develop interest in Tourism Geography as a skill orientation amongst the students. 2. It will enhance confidence level of the students to achieve gainful or self- employment.
Suggested Reading	<ol style="list-style-type: none"> 1. Neumeyer, M.H. and Neumeyer, E. S.,(1949):Leisure and Recreation, A.S. Burnes & Co., New York. 2. Robinson, H., (1976): A Geography of Tourism, Macdonald and Evans, London. 3. Cosgrove, I and Jackson, R., (1972):The Geography of Recreation and Leisure, Hutchinson,London. 4. Bhatiya, A. K., (1991): International Tourism - Fundamentals and Practices., Sterling, New Delhi. 5. Kaul, R.K., (1985):Dynamics of Tourism and Recreation Inter – India., New Delhi. 6. Singh, J.C., (1975): Tourism and Tourist Industry, New Height, Delhi. 7. Larvery, P., (1971):Recreational Geography, Douglas David and Charles Ltd. Vancouver. 8. Singh, S.N., (1986):Geography of Tourism and Recreation, Inter-India, New Delhi. 9. Meyer, H. D and Brightbill, C.K., (1956):Community Recreation,Prentice Hall Inc., Englewood Cliffs, N.J. 10. Kaur, J., (1985):Himalayan Pilgrimages and New Tourism, Himalayan Books, New Delhi. 11. Miles, C. W. N and Seabrooke, W., (1977):Recreational and Management, E & F. N, Span Ltd. London. 12. Fesenmaker, L (1983):Recreation Planning and Management, ventures Publications, USA. 13. Pearce Douglas, P.,(1996): Tourism Today: A Geographical Analysis, John Wiley, New York. 14. Pearce, D.G., (1979): Towards Geography of Tourism., Annals of Tourism Geography., Elsevier Ltd

TITLE OF THE PAPER	APPLICATION OF DISASTER RISK REDUCTION AND MITIGATION
Class	B. A. / B. SC. / B. COM.
No of Credits	04
Paper Code	GEG112
Semester	IV
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. The main objective of this paper is to orient the students to apply the fundamental knowledge of disaster risk reduction, management and mitigation in a geographical perspective. 2. It is to develop preparedness amongst the students as the catalyst in the Society.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Fundamentals of Application of Disaster Risk Reduction and Mitigation. 2. Climate Change: Understanding Climate Change. 3. Impacts of Climate change; adaptation and mitigation 4. Mini Project report: Case studies
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this Generic course, the students will be able to be alert during the unforeseen hazards. 2. The information will enable the students to become moral citizen and use their understanding before others. 3. Finally the students will acquire confidence of taking judicious decisions for saving their family and society at the time of disasters.
Suggested Reading	<ol style="list-style-type: none"> 1. Government of India.,(1997): Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India. 2. Kapur, A.,(2010): Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi. 3. Modh, S.,(2010):Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi. 4. Singh, R.B.,(2005): Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi. (Chapter 1, 2 and 3). 5. Singh, R. B. (Ed.), (2006):Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi. 6. Sinha, A., (2001): Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi. 7. Stoltman, J.P. et al., (2004): International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht. 8. Singh Jagbir (2007): Disaster Management Future Challenges and Oppurtunities”I.K. International Pvt. Ltd., New Delhi, India. 9. IPCC (2014): <i>Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change</i> Cambridge University Press, Cambridge, United Kingdom

	and New York, NY, USA.
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TITLE OF THE PAPER	APPLIED TRAVEL AND TOURISM OPERATION IN GEOGRAPHY
Class	B. A. / B. SC. / B. COM.
No of Credits	04
Paper Code	GES102
Semester	IV
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. The main objective of this skill based paper is to enable the students to apply the fundamental knowledge of travel and tourism operation gained earlier for management and operation in an efficient way. 2. It is to develop preparedness amongst the students as employees or self-employed youths in the Society.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Infrastructure and support system in travel and tour operation. 2. Application of Travel and Tourism Operation Skills through Geographical Networking and Geographical Tools 3. Identification and liasioning of Agency or Institution 4. A mini project Report
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this skill based training course, the students will be able to be dedicated employees in travel and tourism operation sector. 2. The students will become trained and moral citizen to use their skill. 3. Finally the students will acquire confidence of taking up part time or full time jobs to help their family.
Suggested Reading	<ol style="list-style-type: none"> 1. Dhar, P.N.,(2006): International Tourism: Emerging Challenges and Future Prospects. Kanishka, New Delhi. 2. Hall, M. and Stephen, P.,(2006): Geography of Tourism and Recreation – Environment, Place and Space, Routledge, London. 3. Kamra, K. K. and Chand, M.,(2007): Basics of Tourism: Theory, Operation and Practise, Kanishka Publishers, Pune. 4. Page,S. J.,(2011): Tourism Management: An Introduction, Butterworth-Heinemann- USA. Chapter 2. 5. Raj, R. and Nigel,D.,(2007): Morpeth Religious Tourism and Pilgrimage Festivals Management: An International perspective by, CABI, Cambridge, USA, www.cabi.org. 6. Tourism Recreation and Research Journal, Center for Tourism Research and Development, Lucknow. 7. Singh,Jagbir.,(2014):Eco-Tourism.,I.K.International Pvt. Ltd., New Delhi,India. (www.ikbooks.com).

TITLE OF THE PAPER	APPLICATION OF FIELD STUDY AND SURVEY TECHNIQUES IN GEOGRAPHY
Class	B. A. / B. SC. / B. COM.
No of Credits	04

Paper Code	GES104
Semester	IV
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. The main objective of this applied skill based paper is to enable the students to apply the fundamental knowledge of Field Survey and Study gained earlier for efficient management and operation in the field. 2. It is to develop preparedness for the students to work as employees or self-employed youths.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Questionnaire designing; interview with special focus; field survey planning. 2. Designing the field report 3. Training Programme for skill development 4. A mini project report
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this applied skill based training course, the students will be able to act as dedicated employees in field job sector. 2. The students will become trained and moral citizen to use their skill. 3. Finally the students will acquire confidence of taking up field based part time or full time jobs in their tenure as youth.
Suggested Reading	<ol style="list-style-type: none"> 1. Creswell J., (1994): <i>Research Design: Qualitative and Quantitative Approaches.</i>, Sage Publications, New Delhi. 2. Dikshit, R. D.,(2003): <i>The Art and Science of Geography: Integrated Readings.</i> Prentice-Hall of India, New Delhi. 3. Eyles,J.,and Smith,D.M.,(Ed).,(1988):<i>Qualitative Methods in Human Geography.</i>,Polity Press, U.K. 4. Mukherjee,Neela.,(2002):<i>Participatory Learning and Action: with 100 Field Methods.</i> Concept Publs. Co., New Delhi. 5. Pryczak F. and Pryczak Bruce R.(Ed).,(1998): <i>Writing empirical research reports: A Basic guide for students of the Social and Behavioral Sciences,</i> Pyczak Publication, Los Angeles. 6. Stoddard R. H.,(1982): <i>Field Techniques and Research Methods in Geography,</i> Kendall/Hunt Publication 7. <i>The Geographical Review.</i>, (2001): <i>Doing Fieldwork Special Issue,</i>Publication, American Geographical Society, New York. 8. Wolcott, H.,(1995): <i>The Art of Fieldwork.</i> Alta Mira Press, Walnut Creek, CA.

TITLE OF THE PAPER	APPLICATION OF WATERSHED DEVELOPMENT IN GEOGRAPHY
Class	B. A. / B. SC. / B. COM.
No of Credits	04
Paper Code	GES106
Semester	IV
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. The main objective of this applied skill based paper is to enable the students to apply the fundamental knowledge of

	<p>watershed development approach gained earlier for efficient management of water and land resources in the field.</p> <p>2. It is to develop preparedness of the students to work as employees or self-employed.</p>
COURSE CONTENT	<ol style="list-style-type: none"> 1. Application of watershed development approach in Geography. 2. Land Capability Classification 3. Field survey or Training Programme for skill development 4. A mini project report
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this applied skill based training course, the students will be able to act as employees in field and agriculture sector. 2. The students will become trained and moral citizen to use their skill for optimal utilization of resources. 3. The students will also acquire confidence of taking up field based part time or full time jobs as youth of the country.
Suggested Reading	<ol style="list-style-type: none"> 1. Creswell J., (1994): <i>Research Design: Qualitative and Quantitative Approaches.</i>, Sage Publications, New Delhi. 2. Dikshit, R. D.,(2003): <i>The Art and Science of Geography: Integrated Readings.</i> Prentice-Hall of India, New Delhi. 3. Eyles,J.,and Smith,D.M.,(Ed).,(1988):<i>Qualitative Methods in Human Geography.</i>,Polity Press, U.K. 4. Mukherjee,Neela.,(2002):<i>Participatory Learning and Action: with 100 Field Methods.</i> Concept Publs. Co., New Delhi. 5. Pryczak F. and Pryczak Bruce R.(Ed).,(1998): <i>Writing empirical research reports: A Basic guide for students of the Social and Behavioral Sciences,</i> Pycszak Publication, Los Angeles. 6. Stoddard R. H.,(1982): <i>Field Techniques and Research Methods in Geography,</i> Kendall/Hunt Publication 7. Kakde, B. K.,(2010): <i>Watershed Manual – A Guide for Watershed Development Practitioners and Trainers,</i> BAIF Development Research Foundation,Pune., Assests Publications. 8. Suresh,R.,(2012): <i>Soil and Watershed Conversation Engineering.,</i> Standard Publication Distributors, Delhi. 9. Schwab, G. O., et al.,(1993): <i>Soil and Water Conservation Engineering,</i> John Wiley & Sons. 10. Rajora,Rajesh.,(1998): <i>Integrated Watershed Management: A Field Manual for Equitable, Productive and SustainableDevelopment.,</i>Rawat Publications, Jaipur.

TITLE OF THE PAPER	Environmental Studies-II
Class	F.Y.B.Com.
No of Credits	02

Paper Code	AECC-II:
Semester	II
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To acquire knowledge of environment thereby allowing students to appreciate our dependence on it. 2. The students will gain necessary vision to take upon themselves the role of custodianship of this living planet. 3. It will foster love and respect for nature, inculcate earth friendly world-view and acquisition of skills for earth-wise actions. 4. The students will be sensitized towards the fragile ecology of present times and the need to balance material, progress with ecological integrity.
COURSE CONTENT	<p>A. Section A- A Natural Endowments: Status, Issues, Concerns and Responses.</p> <ol style="list-style-type: none"> 1. The Multi-Disciplinary Nature of Environmental Studies 2. Natural Resources 3. Ecosystems 4. Biodiversity and its Conservation 5. Field Visit to different ecosystems/landscapes and to learn biodiversity. <p>B. Section B- Social Issues and the Environment</p> <ol style="list-style-type: none"> 1. Environmental Pollution 2. Social Issues and the Environment 3. Human Population and the Environment 4. Tourism and Environment 5. Field visit local polluted/waste treatment site(s).
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. The course envisages that all the undergraduate students will be aware of our natural resources, ecosystems and their linkages to society, livelihood, environment and conservation. 2. Appreciate concepts and methods from ecological and physical sciences and their application in environmental problem solving. 3. Reflect critically about their role and identity as citizens, consumers and environmental actors in a complex, interconnected world. 4. The theoretical learning shall be supported with actual field visits.
Suggested Reading	<ol style="list-style-type: none"> 1. Agarwal K. C. (2001): Environmental Biology, Bikaner, Nidi. 2. Bharucha E.: The Biodiversity of India, Ahmedabad, Mapin. 3. Bharucha E.: Textbook of Environmental Studies. Orient BlackSwan. 4. Brunner R. C. (1989): Hazardous Waste Incineration, New York, McGraw-Hill. 5. Chatwal G.R. & Sharma H. (2005): A textbook of Environmental Studies, Mumbai, Himalaya. 6. Clark G. R.: Marine Pollution, Oxford, Clanderson. 7. Cunningham W.P., Cooper T. H., Gorani E. & Hepworth M. T. (2001): Environmental Encyclopedia, Mumbai, Jaico.

	<ol style="list-style-type: none"> 8. De A.K.: Environmental Studies, Mumbai, Vipul. 9. Desai R. J. (2003): Environmental Studies, Mumbai, Vipul. 10. Gleick H. P. (1993): Water in Crisis, Stockholm Env't. Institute, OUP. 11. Hawkins R. E.: Encyclopedia of Indian Natural History, Mumbai, BNHS. 12. Heywood V. H. & Watson R. T. (1995): Environmental Protection and Laws, Mumbai, Himalaya. 13. Jadhav H. &Bhosale V. M. (1995): Environmental Protection and Laws, Mumbai, Himalaya. 14. McKiney M. L. &Schoel R. M. (1996): Environmental Science, Systems and Solutions, Web Enhanced Edition. 15. Das Gupta and Kapoor,A.N., (2002): Principles of Physical Geography, S. Chand, Mhaskar A.K.: Matter Hazardous, Techno-Science Publications. 16. Miller T.G. Jr.: Environmental Science, Wadsworth. 17. Odum E.P. (1971): Fundamental of Ecology, Philadelphia, W.B. Saunders. 18. Rao M.N. &Datta A.K. (1986): Waste Water Treatment, Oxford & IBH. 19. Santra, S.C (2004). Environmental Science, Kolkata, Central Book Agency. 20. Sharma B.K. (2001): Environmental Chemistry, Meerut, Goel Publishing House. 21. Townsend C., Harper J.&Begon M.: Essentials of Ecology, Blackwell Science. 22. Trivedi R. K.: Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. 1 & 2, Enviro Media. 23. Trivedi R. K. & P. K. Goel: Introduction to Air Pollution, Techno-Science Publications. 24. Wagner K. D. (1998): Environmental Management, Philadelphia, W. B. Saunders. 25. Down to Earth, Centre for Science & Environment. 26. Survey of the Environment published by The Hindu.
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TITLE OF THE PAPER	GEOGRAPHY OF COMMERCIAL ACTIVITIES
Class	F.Y.B.Com
No of Credits	04
Paper Code	GEO-02/16
Semester	II
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To understand the importance of various Locational theories. 2. To understand the need for Sustainable development.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Locational Theories: Significance and their applications. 2. Spatial pattern of Commercial activities. 3. Locational study of Wholesaling and Retailing. 4. GIS (Geographical Information System) in Business Studies.
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. Reflects the recent developments taking place in the field of Geography and their applications in Commerce and Business. 2. Help to know and understand Goa and its important resources.
Suggested Reading	<ol style="list-style-type: none"> 1. Hartshorne T. N. & Alexander J.W., (1988): Economic

	<p>Geography, Prentice Hall, New Delhi.</p> <ol style="list-style-type: none"> 2. Jones C. F. and Darkenwald G.G.,(1975): Economic Geography, Macmillan & Co, New York, 3. Smith, D. M.,(1971): Industrial location: An Economic Geographical Analysis, John Wiley, New York,. 4. Bengston & Van, G. H. Royan(1988): Fundamentals of Economic Geography, Prentice Hall, New Delhi. 5. Leong, G. C. & Morgan, G. H.,(1982): Human and Economic Geography, Oxford University Press – New York.
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TITLE OF THE PAPER	Climatology and Oceanography
Class	T.Y.B.A.
No of Credits	03
Paper Code	GEC106
Semester	VI
COURSE OBJECTIVES	The focus of this course is to introduce key concepts of Climatology and Oceanography in general.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Atmospheric Circulation: Inversion; Pressure and wind system. 2. Exetreme Events and Climatic Classification: Jet streams; Monsoos; air masses and fronts. 3. Oceanography: Waves; tides; currents
LEARNING OUTCOMES	On completion of this course students will able to understand the concepts of climatology and oceanography and apply the same for interpretation.
Suggested Reading	<ol style="list-style-type: none"> 1. Ahrens, C.D. 2012. Essentials of Meteorology: An Invitation to the Atmosphere. 9th Ed, Cengage Learning. 2. Barry R. G. and Carleton A. M., (2001): Synoptic and Dynamic Climatology, Routledge, UK. 3. Barry, R.G, Chorley R.J. 2009. Atmosphere Weather and Climate. 9th Ed, Routledge. 4. Barry R. G. and Corley R. J., (1998): Atmosphere, Weather and Climate, Routledge, New York. 5. Critchfield H. J., (1987): General Climatology, Prentice-Hall of India, New Delhi, (2010 Reprint). 6. Lal, D.S. 2012. Climatology. Sharda Pustak Bhawan. 7. Lutgens F. K., Tarbuck E. J. and Tasa D.,(2009): The Atmosphere: An Introduction to Meteorology, Prentice-Hall, Englewood Cliffs, New Jersey. 8. Oliver J. E. and Hidore J. J., (2002): Climatology: An Atmospheric Science, Pearson Education New Delhi.

TITLE OF THE PAPER	Application & Interpretation of Weather Maps
Class	T.Y.B.A.
No of Credits	01
Paper Code	GEC106
Semester	VI

COURSE OBJECTIVES	This is an introductory paper which is intended to acquaint the students with basics of weather maps.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Weather Maps Reading 2. Study and Interpretation of Indian Daily Weather Report (IDWR) 3. Study Tour
LEARNING OUTCOMES	At the end of this course students will be able to gain knowledge about understanding and interpretation of weather maps.
Suggested Reading	<ol style="list-style-type: none"> 1. Anson R. and Ormelling F. J., (1994): International Cartographic Association: Basic Cartographic Vol. Pregmen Press. 2. Gupta K.K. and Tyagi, V. C., (1992): Working with Map, Survey of India, DST, New Delhi. 3. Mishra R.P. and Ramesh, A., (1989): Fundamentals of Cartography, Concept, New Delhi. 4. Monkhouse F. J. and Wilkinson H. R., (1973): Maps and Diagrams, Methuen, London. 5. Rhind D. W. and Taylor D. R. F., (eds.), (1989): Cartography: Past, Present and Future, Elsevier, International Cartographic Association. 6. Robinson A. H., (2009): Elements of Cartography, John Wiley and Sons, New York. 7. Singh R. L. and Singh R. P. B., (1999): Elements of Practical Geography, Kalyani Publishers. 8. Sarkar, A. (2015) Practical Geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi.

TITLE OF THE PAPER	Regional Planning in India
Class	T.Y.B.A.
No of Credits	03
Paper Code	GEC109
Semester	VI
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To understand and evaluate the concept of region and regional planning with reference to India. 2. To identify the issues relating to the development of the regions in India through the process of spatial organization of various attributes and their inter relationship.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Regional Planning in India 2. Resource Regionalisation of India; Urban regions in India 3. Planning regions of India; Planning in Goa
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this course, students are expected to understand the concept of regional planning and its variations across time and space. 2. They will be able to correlate and differentiate the various types of regional planning and apply the same to the local settings.

Suggested Reading	<ol style="list-style-type: none"> 1. Bhargava, G.,(2000): Development of India's Urban, Rural, and Regional Planning in 21st Century: Policy Perspective, Gyan Publishing House, Delhi. 2. Chand, Mahesh., (2000):Regional Planning In India, Allied Publishers Ltd, Mumbai. 3. Chandana, R. C., (2016):Regional Planning and Development, Kalyani Publishers, New Delhi. 4. Devi, L.(ed.), (2000):Planning Development and Regional Disparities, Anmol Publications, New Delhi. 5. Dikshit, J. K. (ed.), (2011): The Urban Fringe of Indian Cities: Professor Jaymala Diddee Felicitation Volume, Rawat Publications, Jaipur. 6. Freeman T. W., (1958): Geography And Planning, Hutchinsen University, London. 7. Hall, P., (2016): Urban and Regional Planning, Routledge, London. 8. Jhingan, M. L., (2017):The Economics of Development and Planning, Vrinda Publications (P) Limited, Delhi. 9. Glasson, J., and Marshall.,(2007): Regional Planning, Taylor And Francis. 10. Kant,S. et al.,(ed.),(2004): Reinventing Regional Development: Festschrift to Honours Gopal Krishnan, Rawat Publications, Jaipur. 11. Misra, R. P. (2002): Regional Planning, Concept Publishing Co, New Delhi. 12. NITI Ayog (2017): Three Year Action Plan (2017-18 to 2019-20), NITI Ayog, New Delhi. 13. Sundaram, K. V., (1985): Geography and Planning: Essays in Honours of Prof. V. L. S. PrakasaRao, Concept Publishing Co, New Delhi. 14. Sundaram, K. V., (1989): Regional Planning and Development: Essays on Space, 15. Society, and Development in Honours of Professor R. P. Misra, Heritage Publishers, New Delhi. 16. Tiwari, R. C., (2016): Geography of India, Pravalika Publications, Allahabad. 17. Vidyarthi, A. et al., (2017): Understanding India's New Approach to Spatial Planning and Development: A Spatial Shift?, Oxford University Press, New Delhi. 18. Yojana, Monthly Journal Published by Government of Maharashtra.
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TITLE OF THE PAPER	Practical in Regional Planning of India
Class	T.Y.B.A.
No of Credits	01
Paper Code	GEC109
Semester	VI
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To understand and evaluate the concept of region and regional planning with reference to India. 2. To identify the issues relating to the development of the regions in India through the process of spatial organization of various attributes and their inter relationship.

COURSE CONTENT	<ol style="list-style-type: none"> 1. Preparation of Thematic maps (Manually) 2. Application of Computer Cartography:
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. At the end of this course, students are expected to understand the concept of regional planning and its variations across time and space. 2. They will be able to correlate and differentiate the various types of regional planning and apply the same to the local settings.
Suggested Reading	<ol style="list-style-type: none"> 1. Gregory., (1963): Statistical methods and the Geographer, Longman S. London 2. Gupta S.P., (1979: Practical Statistics, S. Chand and Co. 3. Johnson R.J., (1980): Multivariate statistical Analysis in Geography, Longman 4. Khan Z.A., (1998): Text book of practical Geography, Concept Publication, New Delhi 5. Majumdar, P.K., (2002): Statistics: A Tool for Social Sciences, Rawat Publications, Jaipur & New Delhi. 6. Monkhouse F.J.,(1971): Maps & Diagrams, (3rd Edition, Revised),Methuen and Co., London. 7. Pal. S. K., (1982): Statistical Techniques: A basic approach to Geography, Tata – McGraw Hill, New Delhi. 8. Rastogi, R.S.(2005): Elementary Statistics, Rohit Publications ,Delhi. 9. Sarkar A., (2013):Quantitative Geography, Orient Black Swan, New Delhi. 10. Sarkar, A., (2015): Practical Geography, Orient Black Swan, New Delhi. 11. Singh, R.L., & Singh P. B., (2005): Elements of Practical Geography, Kalyani Publishers. 12. Succheti D.C. and Kapoor V.K., (2002) - Statistics (Theory, methods and application), Sultan Chand &sons. 13. Zamir,Alvi., (2000): Statistical Geography:Method and Applications, Rawat Publications, New Delhi.

TITLE OF THE PAPER	Quantitative Techniques in Geography- II
Class	T.Y.B.A.
No of Credits	03
Paper Code	GEC110
Semester	VI
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To introduce students with some basic statistical techniques, relevant to geographical research as the Project/Dissertation is compulsory at UG/PG level. 2. To acquaint students with potentiality and applications of statistics.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Use of Data in Geography; Parametric Statistics: Sampling Techniques 2. Non- Parametric Statistics; Non-Parametric: Hypothesis testing 3. Matrices & Indices:

LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. Students will be able to understand different techniques and their relevance. 2. The knowledge of drawing inferences using the geographical database.
Suggested Reading	<ol style="list-style-type: none"> 1. Aronoff S., (1989):Geographic Information Systems: A Management Perspective, DDL Publication, Ottawa. 2. Burrough P.A., (1986): Principles of Geographic information Systems for Land Resource Assessment, Oxford University Press, New York. 3. David Unwin., (1981): Introductory Spatial Analysis, Methuen, London. 4. Fraser., Taylor.D.R.,(1991): Geographic information System, Pergamon Press, Oxford. 5. Gregory, S., (1978): Statistical Methods and the Geographer, Longman, London. 6. Haggett. P., Cliff A. D., & Frey. Allan., (1977): Location Methods Vol. I and II, Edward, Arnold, London 7. Hammond. R., and P.S. McCullagh., (1974): Quantitative Techniques in Geography: An Introduction, Clarendan Press, Oxford. 8. John, P.C., and Cuchlaine A. M. King., (1968): Quantitative Geography, John Wiley, London. 9. Johnston, R. J., (1973): Multivariate Statistical Analysis in Geography, Longman, London. 10. King, L. S., (1969): Statistical Analysis in Geography, Prentice-Hall. 11. Mahmood, A., (1977): Statistical Methods in Geographical Studies, Concept, Delhi. 12. Maquire, D.J., Goodchild. M.F., Rhind. D. W., (eds.), (1991): Geographic information Systems: Principles and Application, Taylor & Francis, Washington. 13. Monmonier, M.S.,(1982): Computer-Assisted Cartography, Prentice-Hall, Englewood Clif., New Jersey. 14. Majumdar, P.K., (2002): Statistics: A Tool for Social Sciences, Rawat Publications, Jaipur & NewDelhi. 15. Pal, S. K., (1982): Statistical Techniques: A Basic Approach to Geography, Tata – McGraw Hill, New Delhi. 16. Pal, S.K., (1998): Statistics for Geoscientists — Techniques and Applications, Concept, New Delhi. 17. Peuquet,D.J., and Marble.D.F., (1990): Introductory Reading in Geographic Information Systems, Taylor & Francis, Washington. 18. Rastogi, R.S.,(2005): Elementary Statistics, Rohit Publications, Delhi. 19. Robinson, A.H. et al., (1995): Elements of Cartography, John Wiley & Sons, U.S.A. 20. Sarkar, A.,(2013) Quantitative geography: Techniques and Presentations, Orient Black Swan Private Ltd, New Delhi. 21. Silk J., (1979): Statistical Concepts in Geography, Allen and Unwin, London. 22. Star J and Estes. J., (1994): Geographic Information Systems: An Introduction, Prentice- Hall, Englewood Cliff, New Jersey. 23. Yeats M., (1974): An Introduction to Quantitative Analysis

	<p>in Human Geography, McGraw Hill, New York.</p> <p>24. Zamir Alvi., (2000): Statistical Geography: Method and Applications, Rawat Publications, New Delhi.</p>
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TITLE OF THE PAPER	Practical in Quantitative Techniques in Geography- II
Class	T.Y.B.A.
No of Credits	01
Paper Code	GEC110
Semester	VI
COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To introduce students with some basic statistical techniques, relevant to geographical research as the Project/Dissertation is compulsory at UG/PG level. 2. To acquaint students with potentiality and applications of statistics.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Non- Parametric Statistics: Co-relation and Regression analysis 2. Non-Parametric: Hypothesis testing; Matrices & Indices; Preparation of Survey Report
LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. Students will be able to understand different techniques and their relevance. 2. The knowledge of drawing inferences using the geographical database.
Suggested Reading	<ol style="list-style-type: none"> 1. Hammond P. and McCullagh P. S., (1978): Quantitative Techniques in Geography: An Introduction, Oxford University Press. 2. King L. S., (1969): Statistical Analysis in Geography, Prentice-Hall. 3. Mahmood A., (1977): Statistical Methods in Geographical Studies, Concept. 4. Pal S. K., (1998): Statistics for Geoscientists, Tata McGraw Hill, New Delhi. 5. Sarkar, A. (2013) Quantitative geography: techniques and presentations. Orient Black Swan Private Ltd., New Delhi 6. Silk J., (1979): Statistical Concepts in Geography, Allen and Unwin, London. 7. Spiegel M. R.: Statistics, Schaum's Outline Series. 8. Yeates M., (1974): An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.

TITLE OF THE PAPER	Regional Development of India
Class	T.Y.B.A.
No of Credits	03
Paper Code	GED106
Semester	VI

COURSE OBJECTIVES	The course provides the basic concepts in regional disparities and development of India in a brief but adequate manner.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Regional disparities in India since Independence; Regions of regional disparity: Physical & Cultural bases 2. Success Stories of Regional Development 3. Regional Development and Contemporary Issues; Regional Development & Future Vision.
LEARNING OUTCOMES	This course will facilitate the students to understand and appreciate the basic concepts of regional development of India.
Suggested Reading	<ol style="list-style-type: none"> 1. Bhargava, G., (2001): Development of India's Urban, Rural, and Regional Planning in 21st Century: Policy Perspective, Gyan Publishing House. 2. Chand, M., Puri, V.K., (2000): Regional Planning In India, Allied Publishers Ltd. 3. Chandana, R.C. (2016): Regional Planning and Development, 6th ed, Kalyani Publishers. 4. Glasson, J., (2017): Contemporary Issues in Regional Planning, Routledge. 5. Gore, C. (2011): Regions in Question: Space, Development Theory, and Regional Policy, Routledge. 6. Gregory, D., Johnston, R., Pratt, G., Watts., Whatmore, S., (Eds). (2009): The Dictionary of Human Geography, 5th ed, Wiley. 7. Hall, P., Tewdwr-Jones, M., (2010): Urban and Regional Planning, Routledge. 8. Higgins, B., Savoie, D.J., (2017): Regional Development: Theories and Their Application, Routledge. 9. Kulshetra, S.K., (2012): Urban and Regional Planning in India: A Handbook for Professional Practitioners, Sage Publication. 10. Kumar, A., Meshram, D.S., Gowda, K., (Eds). (2016): Urban and Regional Planning Education: Learning for India, Springer. 11. Misra, R.P., (1992): Regional Planning: Concepts, Techniques, Policies and Case Studies, Concept Publishing. 12. Rapley, J., (2007): Understanding Development: Theory and Practice in the Third World, Lynne Rienner. 13. Ray, J., (2001): Introduction to Development & Regional Planning, Orient Blackswan. 14. Raza, M., (Ed.) (1988): Regional Development: Contributions to Indian Geography, Heritage Publishers. 15. Sen, A., (2000): Development as Freedom, Random House.

TITLE OF THE PAPER	Application of Remote Sensing and Satellite Imageries
Class	T.Y.B.A.
No of Credits	01
Paper Code	GED106
Semester	VI
COURSE OBJECTIVES	The course provides the understanding and application of remote sensing and satellite imageries.
COURSE CONTENT	Introduction to Remote Sensing and EMR; Satellites Imageries Introduction to GIS & GPS

LEARNING OUTCOMES	This course will facilitate the students to understand and appreciate the regional development of India through the use of GPS in the field and through interpretation satellite imageries.
Suggested Reading	<ol style="list-style-type: none"> 1. C.P.Lo and Albert K. W. Yeung,(2002) Concepts and Techniques of Geographic Information System, Prentice – Hall, India. 2. Heywood I, el. (2011) An Introduction to Geographical Information Systems , Pearson Education Pvt. Ltd., New Delhi., 3. J.R. Jensen, (2003) Remote Sensing of Environment, An Earth Resource Perspective, , Pearson Education Pvt. Ltd., New Delhi. 4. Kang – tsung – Chang, (2002)Introduction to Geographical Information System, , McGraw Hill. 5. Lillesand T.M. and Kiefer R.W., (2002) Remote Sensing and Image Interpretation, John Wiley and Sons, New Delhi. 6. George Joseph (2005) Fundamentals of Remote Sensing, University press Private Ltd, Hyderabad. 7. P. A. Burrough and R. A. McDonnell, (2000)Principles of Geographical Information System, Oxford University Press. 8. Paul A. Lonfley, et al.(2002), Introduction to Geographic Information Systems and Science, John Wiley and Sons Ltd

TITLE OF THE PAPER	Geography of Urban Settlements
Class	T.Y.B.A.
No of Credits	04
Paper Code	GED111
Semester	VI
COURSE OBJECTIVES	The course provides the basic concepts, theories and application in urban geography in a brief but adequate manner.
COURSE CONTENT	<ol style="list-style-type: none"> 1. Urban Settlements – Origin and Evolution 2. Theories of urban evolution and growth and hierarchies 3. Urban Places – Changing Scenario 4. Urban Issues
LEARNING OUTCOMES	This course will facilitate the students to understand and appreciate the basic concepts in urbanization.
Suggested Reading	<ol style="list-style-type: none"> 1. Carter, H.,(1995): The Study of Urban Geography, 4th ed, Arnold. 2. Giuliano, G., Hanson, S., (Eds). (2017): The Geography of Urban Transportation, 4th ed, Guilford Press. 3. Gottdiener, M., Budd, M. Lehtovuori, P.,(2016): Key Concepts in Urban Studies, 2nd ed, Sage Publication. 4. Jonas, A.E.G., McCann, E., Thomas, M.,(2015):. Urban Geography: A Critical Introduction, Wiley-Blackwell. 5. Kaplan, D., Holloway, S.,(2014): Urban Geography, 3rd ed, Wiley. 6. Knox, P.L., McCarthy, L.M.,(2011): Urbanization: An Introduction to Urban Geography, 3rd ed, Pearson. 7. Latham, A., McCormack, D., McNamara, K. McNeill, D.,(2009):.Key Concepts in Urban Geography, Sage. 8. LeGates, R.T., Stout, F., (Eds).(2015): The City Reader, 6th

	ed, Routledge
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