

GOA UNIVERSITY

Course Structure of Choice Based Credit System B. A. General (Geography) w.e.f. 2017-18

Semesters	CORE COURSE (CC)	Ability Enhancement Compulsory Course (AECC)	Skill Enhancement Course (SEC)	Discipline Specific Elective: (DSE)	Generic Elective: (GE) (Optional)
Sem I	<b>GPCC IA (3+1)</b> <b>Theory:</b> Introduction and Fundamentals of Geography <b>Practical: *</b> Introduction to Cartographic Techniques	<b>GPAECC IA (4)</b> Environment Studies / Science / Education ** those who opt for Sem I			<b>GPGE I (4)</b> Resource Geography of Goa  <b>OR</b> <b>GPGE I (4)</b> Fundamentals of Ecology
Sem II	<b>GPCC IB (3+1)</b> <b>Theory:</b> Social and Cultural Geography <b>Practical: *</b> Practicals in Social and Cultural Geography	<b>GPAECC IB (4)</b> Environment Studies / Science / Education **those who opt for Sem II			<b>GPGE II (4)</b> Geography of Resource Utilisation in Goa  <b>OR</b> <b>GPGE II (4)</b> Spatial and Functional Aspects of Ecology
Sem III	<b>GPCC IC (3+1)</b> <b>Theory:</b> Geography of Natural Resource Development <b>Practical: *</b> Practicals in Cartographic Techniques-I		<b>GPSEC I (4)</b> Fundamentals of Tourism Geography <b>OR</b> <b>GPSEC I (4)</b> Field Study and Survey Techniques		<b>GPGE III (4)</b> Fundamentals of Population Geography <b>OR</b> <b>GPGE III (4)</b> Fundamentals of Disaster Management
Sem IV	<b>GPCC ID (3+1)</b> <b>Theory:</b> Geography of Secondary and Tertiary Activities <b>Practical: *</b> Practicals in Cartographic Techniques-II		<b>GPSEC II (4)</b> Application of Skills in Tourism Geography <b>OR</b> <b>GPSEC II (4)</b> Appl. of Field Study & Survey Techniques (Report)		<b>GPGE IV (4)</b> Application of Population Geography <b>OR</b> <b>GPGE IV (4)</b> Disaster Risk Reduction and Mitigation

<b>Sem V</b>	<b>GPCC IE (3+1)</b> <b>Theory:</b> Principles of Geomorphology <b>Practical:*</b> Analysis and Interpretation of Geomorphic Data & Features			<b>GPDSE IA (4)</b> * Map Analysis and Interpretation  <b>GPDSE IB (4)</b> Geography of India	
<b>Sem VI</b>	<b>GPCC IF (3+1)</b> <b>Theory:</b> Climatology and Oceanography <b>Practical: *</b> Analysis and Interpretation of Climatic & Oceanographic Data & Features			<b>GPDSE IC (4)</b> * Remote Sensing and GIS <b>GPDSE ID (4)</b> Regional Development of India <b>OR</b> <b>GPDSP I (in lieu of GPDSCE ID)</b> Project in Geog. Appl. Topic	

**Pl. Note: GP: Geography, The no. of Credits are indicated in the bracket against the Paper.**

**In case of Practical Components of the Paper:**

**Theory: Total Periods / Lectures:** 45 Lectures of 1 Hour Duration Each and

**Practical: Total Sessions:** 15 Laboratory Sessions of 2 hours each.

**One Practical batch consists of maximum 20 students.**

**In case of only Theory Components of the Paper: Total Lectures: 60 Lectures of 1 Hour Each.**

**\* One Practical Session will comprise continuous 2 periods of 1hour duration comprising 1 Credit and One Field Trip Session will comprise continuous 5 periods of 1hour duration comprising 1 Credit.**

**GOA UNIVERSITY**

**Course Structure of Choice Based Credit System B. A. Honours (Geography) w.e.f. 2017-18**

<b>Semester s</b>	<b>CORE COURSE (CC)</b>	<b>Ability Enhancement Compulsory Course (AECC)</b>	<b>Skill Enhancement Course (SEC)</b>	<b>Discipline Specific Elective: (DSE)</b>	<b>Generic Elective: (GE) (Optional)</b>
<b>Sem I</b>	<p><b>GPCC I (3+1)</b>  <b>Theory:</b>                      Introduction and Fundamentals of Geography  <b>Practical: *</b>                      Introduction to Cartographic Techniques</p> <p><b>GPCC II (3+1)</b>  <b>Theory:</b>                      Fundamentals of Geomorphology  <b>Practical: *</b>                      Cartographic Techniques in Geomorphology</p>	<p><b>GPAECC IA (4)</b>                      Environment Studies / Science/ Education                      ** those who opt for Sem I</p>			<p><b>GPGE I (4)</b>                      Resource Geography of Goa  <b>OR</b>  <b>GPGE I (4)</b>                      Fundamentals of Ecology</p>
<b>Sem II</b>	<p><b>GPCC III (3+1)</b>  <b>Theory:</b>                      Fundamentals of Human Geography  <b>Practical: *</b>                      Practicals in Human Geography</p> <p><b>GPCC IV (3+1)</b>  <b>Theory:</b>                      Social and Cultural Geography  <b>Practical: *</b>                      Practicals in Social and Cultural Geography</p>	<p><b>GPAECC IB (4)</b>                      Environment Studies / Science/ Education                      **those who opt for Sem II</p>			<p><b>GPGE II (4)</b>                      Geography of Resource Utilisation in Goa  <b>OR</b>  <b>GPGE II (4)</b>                      Spatial and Functional Aspects of Ecology</p>
<b>Sem III</b>	<p><b>GPCC V (3+1)</b>  <b>Theory:</b>                      Principles of Geomorphic Processes  <b>Practical: *</b></p>		<p><b>GPSEC I (4)</b>                      Fundamentals of Tourism Geography  <b>OR</b></p>		<p><b>GPGE III (4)</b>                      Fundamentals of Population Geography  <b>OR</b></p>

	<p>Geomorphologic Map Interpretation and Analysis</p> <p><b>GPCC VI (3+1)</b>  <b>Theory:</b>  Geography of Natural Resource Development  <b>Practical: *</b>  Practicals in Cartographic Techniques-I</p>		<p><b>GPSEC I (4)</b>  Field Study and Survey Techniques</p>		<p><b>GPGE III (4)</b>  Fundamentals of Disaster Management</p>
<b>Sem IV</b>	<p><b>GPCC VII (3+1)</b>  <b>Theory:</b>  Fundamentals of Climatology and Oceanography  <b>Practical: *</b>  Practicals in Climatology and Oceanography</p> <p><b>GPCC VIII (3+1)</b>  <b>Theory:</b>  Geography of Secondary and Tertiary Activities  <b>Practical: *</b>  Practicals in Cartographic Techniques-II</p>		<p><b>GPSEC II (4)</b>  Application of Skills in Tourism Geography</p> <p><b>OR</b></p> <p><b>GPSEC II (4)</b>  Application of Field Study and Survey Techniques (Report)</p>		<p><b>GPGE IV (4)</b>  Applied Population Geography</p> <p><b>OR</b></p> <p><b>GPGE IV (4)</b>  Disaster Risk Reduction and Mitigation</p>
<b>Sem V</b>	<p><b>GPCC IX (4)</b>  <b>Theory:</b>  Geography of India</p> <p><b>GPCC X (4)</b>  <b>Theory:</b>  Evolution of Geographical Thought</p> <p><b>GPCC XI (3+1)</b>  <b>Theory:</b>  Statistical Methods in Geography  <b>Practical:*</b>  Analysis and</p>			<p><b>GPDSE I (4)</b>  * Map Analysis and Interpretation</p> <p><b>GPDSE II (4)</b>  Geography of Costal Area</p> <p><b>OR</b></p> <p><b>GPDSE II (4)</b>  Agricultural Geography</p> <p><b>GPDSE III (4)</b>  Settlement Geography</p> <p><b>OR</b></p> <p><b>GPDSE III (4)</b>  Urban Geography</p>	

	Interpretation of Statistical Data				
<b>Sem VI</b>	<b>GPCC XII (4)</b> <b>Theory:</b> Regional Planning and Development in India <b>GPCC XIII (4)</b> <b>Theory:</b> Environmental Geography <b>GPCC XIV (3+1)</b> <b>Theory:</b> Remote Sensing & GIS <b>Practical:*</b> Analysis and Interpretation of RS & GIS Data			<b>GPDSE IV (4)</b> * Remote Sensing and GIS based Project  <b>GPDSE V (4)</b> Geography of Health and Wellbeing <b>OR</b> <b>GPDSE V (4)</b> Political Geography  <b>GPDSE VI (4)</b> Geography of Resource Management <b>OR</b> <b>GPDSE VI (4)</b> Rural Geography <b>OR</b> <b>GPDSE I (in lieu of GPDSE VI)</b> Project in Geographical Application related Topic	

**Pl. Note: GP: Geography, The no. of Credits are indicated in the bracket against the Paper.**

**In case of Practical Components of the Paper:**

**Theory: Total Periods / Lectures:** 45 Lectures of 1 Hour Duration Each and

**Practical: Total Sessions:** 15 Laboratory Sessions of 2 hours each.

**One Practical batch consists of maximum 20 students.**

**In case of only Theory Components of the Paper: Total Lectures: 60 Lectures of 1 Hour Each.**

**\* One Practical Session will comprise continuous 2 periods of 1hour duration comprising 1 Credit and One Field Trip Session will comprise continuous 5 periods of 1hour duration comprising 1 Credit.**

#### GOA UNIVERSITY

##### Course Structure of Choice Based Credit System B. Sc. General (Geography) w.e.f. 2017-18

Semester	CORE COURSE (CC)	Ability Enhancement Compulsory	Skill Enhancement Course (SEC)	Discipline Specific Elective: (DSE)	Generic Elective: (GE) (Optional)
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		<b>Course (AECC)</b>			
<b>Sem I</b>	<b>GPCC IA (4+2)</b> <b>Theory:</b> Introduction and Fundamentals of Geography <b>Practical: *</b> Introduction to Cartographic Techniques	<b>GPAECC IA (4)</b> Environment Studies / Science/ Education ** those who opt for Sem I			
<b>Sem II</b>	<b>GPCC IB (4+2)</b> <b>Theory:</b> Social and Cultural Geography <b>Practical: *</b> Practicals in Social and Cultural Geography	<b>GPAECC IB (4)</b> Environment Studies / Science/Education **those who opt for Sem II			
<b>Sem III</b>	<b>GPCC IC (4+2)</b> <b>Theory:</b> Geography of Natural Resource Development <b>Practical: *</b> Practicals in Cartographic Techniques-I				<b>GPGE I (4)</b> Fundamentals of Ecology  <b>OR</b> <b>GPGE I (4)</b> Fundamentals of Disaster Management
<b>Sem IV</b>	<b>GPCC ID (4+2)</b> <b>Theory:</b> Geography of Secondary and Tertiary Activities <b>Practical: *</b> Practicals in Cartographic Techniques-II				<b>GPGE II (4)</b> Spatial and Functional Aspects of Ecology  <b>OR</b> <b>GPGE II (4)</b> Disaster Risk Reduction and Mitigation
<b>Sem V</b>			<b>GPSEC I (3+1)</b> <b>Theory:</b> Principles of Geomorphology <b>Practical:*</b> Analysis and Interpretation of Geomorphic	<b>GPDSE IA (6 or 4+2)</b> * Map Analysis & Interpretation and Remote Sensing & GIS	

			Data & Features		
<b>Sem VI</b>			<b>GPSEC II (3+1)</b> <b>Theory:</b> Climatology and Oceanography <b>Practical: *</b> Analysis and Interpretation of Climatic & Oceanographic Data & Features	<b>GPDSE IB (6 or 4+2)</b> *Application of Remote Sensing and GIS <b>OR</b> <b>GPDSP I (in lieu of GPDSCE IB)</b> Project in Geog. Application Topic	

**Pl. Note: GP: Geography, The no. of Credits are indicated in the bracket against the Paper.**

**In case of Practical Components of the Paper:**

**Theory: Total Periods / Lectures: 60/45 Lectures of 1 Hour Duration Each and**

**Practical: Total Sessions: 30/ 15 Laboratory Sessions of 2 hours each.**

**One Practical batch consists of maximum 20 students.**

**In case of only Theory Components of the Paper: Total Lectures: 60 Lectures of 1 Hour Each.**

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GOA UNIVERSITY

Course Structure of Choice Based Credit System B. Sc. Honours Geography w.e.f. 2017-18

Semesters	CORE COURSE (CC)	Ability Enhancement Compulsory Course (AECC)	Skill Enhancement Course (SEC)	Discipline Specific Elective: (DSE)	Generic Elective: (GE) (Optional)
Sem I	<p><b>GPCC I (4+2)</b>  <b>Theory:</b>                      Introduction and Fundamentals of Geography  <b>Practical: *</b>                      Introduction to Cartographic Techniques</p> <p><b>GPCC II (4+2)</b>  <b>Theory:</b>                      Fundamentals of Geomorphology  <b>Practical: *</b>                      Cartographic Techniques in Geomorphology</p> <p><b>GPCC III (4+2)</b>  <b>Theory:</b>                      Fundamentals of Human Geography  <b>Practical: *</b>                      Practicals in Human Geography</p>	<p><b>GPAECC IA (4)</b>                      Environment Studies /Science/ Education                      ** those who opt for Sem I</p>			<p><b>GPGE I (4)</b>                      Resource Geography of Goa</p> <p><b>OR</b></p> <p><b>GPGE I (4)</b>                      Sustainable Development</p>
Sem II	<p><b>GPCC IV (4+2)</b>  <b>Theory:</b>                      Principles of Geomorphic Processes  <b>Practical: *</b>                      Geomorphologic Map Interpretation and Analysis</p> <p><b>GPCC V (4+2)</b>  <b>Theory:</b>                      Fundamentals of Climatology and</p>	<p><b>GPAECC IB (4)</b>                      Environment Studies / Science / Education                      **those who opt for Sem II</p>			<p><b>GPGE II (4)</b>                      Geography of Resource Utilisation in Goa</p> <p><b>OR</b></p> <p><b>GPGE II (4)</b>                      Spatial Information Technology</p>

	<p>Oceanography  <b>Practical: *</b>  Practicals in  Climatology and  Oceanography  <b>GPCC VI (4+2)</b>  <b>Theory:</b>  Social and  Cultural  Geography  <b>Practical: *</b>  Practicals in  Social and  Cultural  Geography</p>				
<b>Sem III</b>	<p><b>GPCC VII (4+2)</b>  <b>Theory:</b>  Geography of  Costal Area  <b>Practical: *</b>  Case Study &amp;  Reports on  Coastal  Geomorphology  <b>GPCC VIII (4+2)</b>  Settlement  Geography  <b>Practical: *</b>  Practicals in  Settlement  Geography  <b>GPCC IX (4+2)</b>  Geography of  Natural  Resource  Development  <b>Practical: *</b>  Practicals in  Cartographic  Techniques-I</p>		<p><b>GPSEC I (4)</b>  Fundamentals of  Tourism  Geography  <b>OR</b>  <b>GPSEC I (4)</b>  Field Study and  Survey  Techniques</p>		<p><b>GPGE III (4)</b>  Fundamentals  of Ecology  <b>OR</b>  <b>GPGE III (4)</b>  Fundamentals  of Disaster  Management  <b>OR</b>  <b>GPGE III (4)</b>  Fundamentals  of Population  Geography</p>
<b>Sem IV</b>	<p><b>GPCC X (4+2)</b>  <b>Theory:</b>  Economic  Geography  <b>Practical: *</b>  Practicals in  Economic  Geography  <b>GPCC XI (4+2)</b></p>		<p><b>GPSEC II (4)</b>  Application of  Skills in Tourism  Geography  <b>OR</b>  <b>GPSEC II (4)</b>  Application of  Field Study and  Survey</p>		<p><b>GPGE IV (4)</b>  Spatial and  Functional  Aspects of  Ecology  <b>OR</b>  <b>GPGE IV (4)</b>  Disaster Risk  Reduction and</p>

	<p><b>Theory:</b> Environmental Geography</p> <p><b>Practical: *</b> Case study and Report of Environmental Pollution or Conservation</p> <p><b>GPCC XII (4+2)</b></p> <p><b>Theory:</b> Geography of Secondary and Tertiary Activities</p> <p><b>Practical: *</b> Practicals in Cartographic Techniques-II</p>		Techniques (Report)		Mitigation <b>OR</b> <b>GPGE IV (4)</b> Applied Population Geography
<b>Sem V</b>	<p><b>GPCC XIII (4+2)</b></p> <p><b>Theory:</b> Geography of India</p> <p><b>Practical: *</b> Mapping and Interpretation of Geographical Attributes of India</p>		<p><b>GPSEC III (4)*</b> Thematic Cartography <b>OR</b> Field Work and Research Methodology</p>	<p><b>GPDSE I (6 or 4+2)</b> * Map Analysis &amp; Interpretation and Remote Sensing &amp; GIS <b>GPDSE II (4)</b> Agricultural Geography <b>OR</b> <b>GPDSE II (4)</b> Urban Geography</p>	
<b>Sem VI</b>	<p><b>GPCC XIV (4+2)</b></p> <p><b>Theory:</b> Regional Planning and Development of India</p> <p><b>Practical: *</b> Mapping and Case Study of Developed, Developing and Less Developed Regions of India</p>		<p><b>GPSEC IV (4)*</b> Advanced Spatial Statistical Techniques <b>OR</b> <b>GPSEC IV (4)*</b> Digital Cartography</p>	<p><b>GPDSE III (6 or 4+2)</b> *Application of Remote Sensing and GIS <b>GPDSE IV (6 or 4+2)</b> * Remote Sensing and GIS based Project <b>OR</b> <b>GPDSE IV (6 or 4+2)</b> Geography of</p>	

				Health and Wellbeing Management <b>OR</b> <b>GPDSP I (in lieu of GPDSE IV)</b> Project in Geography related Topic	
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***Pl. Note: GP: Geography, The no. of Credits are indicated in the bracket against the Paper.***

**In case of Practical Components of the Paper:**

**Theory: Total Periods / Lectures: 60/45 Lectures of 1 Hour Duration Each and**

**Practical: Total Sessions: 30/15 Laboratory Sessions of 2 hours each.**

**In case of only Theory Components of the Paper: Total Lectures: 60 Lectures of 1 Hour Each.**

**\* One Practical Session will comprise continuous 2 periods of 1hour duration comprising 1 Credit and One Field Trip Session will comprise continuous 5 periods of 1hour duration comprising 1 Credit.**

**THREE YEARS B. A. / B. SC. GENERAL AND HONOURS DEGREE PROGRAMME**

**(Goa University Choice Based Credit System) w.e.f. 2017-18  
GEOGRAPHY CORE COURSE (GPCC-I OR GPCC-IA THEORY)  
INTRODUCTION AND FUNDAMENTALS OF GEOGRAPHY  
F. Y. B. A. / B. SC.  
SEMESTER-I**

**COURSE CREDITS:** \* 03 for \* B. A. and \*\* 04 for \*\* B. Sc.

**Total Periods/Lectures:** \* 45 / \*\* 60 Lectures of 1 Hour Duration Each respectively for \* B. A. and \*\* B. Sc.

**COURSE OBJECTIVES:** This introductory paper is intended to acquaint the students with distinctiveness of Geography as a field of learning. 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.

**LEARNING OUTCOMES:** At the end of this course students will be able to gain knowledge and understand the fundamentals of geographical concepts. They will also acquire the skills to apply this knowledge to solve day to day problems and geographical issues.

<b>UNIT NO.</b>	<b>COURSE CONTENT</b>	<b>MARKS WEIGHTAGE</b>	<b>TEACHING PERIODS</b>
I	<p>Geography: Introduction, Meaning, Definition, Nature and Scope Of Geography as a Discipline, Multi Disciplinary Approach.</p> <p>Pioneers in Geography and their Contributions: Erastosthenes, Ptolemy, Galileo, Vidal De La Blache, Carl Ritter, Homboldt, W. M. Davis, Walter Christaller; Development of Geography in India.</p> <p>Major divisions and branches of geography (Physical &amp; Human Geography).</p> <p>Recent trends in Geography.</p> <p>Career opportunities for Geographers.</p> <p>Major themes in Geography: Location, Place, Human-Environment Interaction, Movement, Regions.</p>	25	15/20
II	<p><b>Physical geography:</b></p> <p>Introduction to the Solar System, Basic Study of planets; Earth &amp; Moon Relationship (Rotation, Revolution, Eclipse, Phases of Moon).</p> <p>Domains of earth:</p> <p>Lithosphere: Composition and structure, Orders of relief, Distribution of Oceans and Continents.</p> <p>Atmosphere: Composition and structure, Elements of weather and climate.</p> <p>Hydrosphere: Composition and distribution, Hydrological cycle.</p> <p>Introduction to Geological Time Scale.</p>	25	15/20
III	<p><b>Human geography:</b></p> <p>Major school of Thought: Environmental Determinism,</p>	25	

	Possibilism, Neo-Determinism. Human Beings, Culture and Environment. Geography and Development: Levels of Development based on Social, Economic and Demographic Indicators. Geography and Nationalism.		15/20
	<b>Total</b>	75	45/60

**Weightage of Marks: I. S. A: 15 + S. E. E.: 60 Total= 75.**

**Credits: 3 /4**

### **Instructions**

1. Maximum thrust to be given to local and national examples.
2. Questions should be set with due weightages to all the units as specified above and/or on university pattern.

### **Suggested Readings / Reference Materials**

1. Dikshit R.D.: Geographical Thought - A Contextual History of Ideas, P. Hall of India Pvt. 2000.
  2. Harvey, David: Explanation in Geography, Edward - Arnold, London, 1972.
  3. Hussain, Majid: Evolution of Geographical Thought, Rawat Publications, Jaipur, 1984.
  4. Lal D. S.: Climatology, Pushtak Mahal, Allahabad.
  5. Goh Cheng Leong: Certificate Physical and Human Geography, Oxford University Press, New Delhi.
  6. Das Gupta and Kapoor: Principles of Physical geography.
  7. Leong and Morgan: Human and Economic Geography.
  8. Brook and Webb: Geography of Mankind,
  9. Perpillou A: Human Geography, Longman Press, London.
  10. Savindra Singh: Environmental Geography.
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**THREE YEARS B. A. / B. SC. GENERAL AND HONOURS DEGREE PROGRAMME**  
**(Goa University Choice Based Credit System) w.e.f. 2017-18**  
**GEOGRAPHY CORE COURSE (GPCC-I / GPCC-IA: PRACTICAL)**  
**INTRODUCTION TO CARTOGRAPHIC TECHNIQUES**  
**F. Y. B. A. / B. SC.**  
**SEMESTER-I**

**COURSE CREDITS:** \* 01 / \*\* 02 for \* B. A. and \*\* B. Sc. respectively.

**TOTAL sessions:** \* 15 / \*\* 30 Laboratory sessions of 2 hours duration each for \* B. A. and \*\* B. Sc. respectively.

**COURSE OBJECTIVES:** To develop skills and techniques in map reading and map making.

**LEARNING OUTCOMES:** 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.

UNIT NO.	COURSE CONTENT	MARKS WEIGHTAGE	NO. OF SESSIONS
I	Introduction to Cartography and Cartographic Techniques. Exercises: Shape of the Earth. Location of Places on the Globe, Latitude, Longitude and Time, Time Zones. Scale and its Types– System of Measurements (British and Metric System), Conversion of Scale (RF to Verbal and Vice Versa), Construction of Simple, Comparative, Diagonal, Time and Distance Scale.	10	8/16
II	Exercises: Study of Globe and Map; Enlargement and Reduction of Maps by Square Method. Maps: Base Maps, Format of a Map. On Campus Field Work: Finding Directions, Measurement of Distances, Calculation of area. Measurement of Area on the Map and Toposheets (By Square Method).	10	7/14
III	<b>Journal &amp; Viva</b>	<b>5</b>	
	<b>Total</b>	<b>25</b>	<b>15</b>

**Weightage of Marks: 25. Credit: 1/2**

**Instructions**

1. Every candidate shall complete the laboratory course prescribed by the University entering all the experiment exercise in the laboratory journal, which shall be produced at the time of Practical Examination along with a certificate signed both by the course Teacher and the Head of the Department of Geography of the concerned college to the effect that he/she has completed the prescribed course in a satisfactory manner.
2. A batch shall consist of not more than 20 students.
3. Workload - One lab session of 2 hrs. Total number of laboratory sessions: 15. **Credit: 1**
4. The duration of practical exam: 2 hrs carrying 25 marks.

5. Practical examination is to be conducted at the end of the Semester prior to the Theory examination in Geography Laboratory or exclusively designated place/s.

### **Suggested Readings / References**

1. Gopal Singh: Map Works and Practical Geography.
2. Singh and Kanaujia: Elements of Practical Geography.
3. Monkhouse F. J. : Maps and Diagrams.
4. Raise: Principles of Cartography.
5. Mishra R. P. and Ramesh A: Fundamentals of Cartography.

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**THREE YEARS B. A. / B. SC. GENERAL AND HONOURS DEGREE PROGRAMME**  
**(Goa University Choice Based Credit System) w.e.f. 2017-18**  
**GEOGRAPHY CORE COURSE (GPCC-IB / GPCC IV/ GPCCVI - THEORY)**  
**SOCIAL AND CULTURAL GEOGRAPHY**  
**F. Y. B. A. / B. SC.**  
**SEMESTER-II**

**COURSE CREDITS: \* 03 for \* B. A. and \*\* 04 for \*\* B. Sc. respectively.**

**Total Periods / Lectures: \* 45 / \*\* 60 Lectures of 1 Hour Duration Each for \* B. A. and \*\* B. Sc. respectively.**

**COURSE OBJECTIVES:** The paper intends to sensitize students with socio-cultural aspects and the related contemporary issues in India and the world with a geographical outlook. 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.

**LEARNING OUTCOMES:** 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. They will also acquire the skills to apply the knowledge to solve the day-to-day socio-cultural issues.

UNIT NO.	COURSE CONTENT	MARKS WEIGHTAGE	TEACHING PERIODS
I	Introduction to social and cultural geography. Physical-Cultural Environment and major regions of the world: Equatorial, Monsoon, Grasslands, Mediterranean, Tundra, Taiga and Desert regions. Introduction to culture and civilization, cultural realms, cultural landscapes. Basis of classification of cultural regions.	25	15
II	World population: growth, distribution, Factors affecting world population, rural-urban composition, urbanization. Migration – causes and effects. Linguistic Composition: Global linguistic mosaic, origin and characteristic, linguistic classification of India. Religious Composition: Origin and regional distribution of religions, Major Religions and Cultures, Global and Indian Religious and Cultural Conflicts.	25	15
III	Races of the world: Basis of racial classification, races of India, tribal societies in India. Ethnicity- inequality and conflicts. Contemporary Issues: Gender Inequality, Nutrition, Health and Diseases. Refugees, Communalism, Terrorism, Naxalism and Separatist Groups; Peace efforts. Social wellbeing: Indicators and Efforts in India. Socio-cultural regions in India.	25	15

	<b>Total</b>	<b>75</b>	<b>45</b>
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**Weightage of Marks: I. S. A: 15 + S. E. E: 60 Total= 75. Credits: 3**

**Instructions:**

1. Maximum thrust to be given to national and local examples.
2. Questions should be set with due weightages to all the units as specified above.

**Suggested Readings / References**

1. Bergwan, Edward E.: Human Geography: Culture, Connections and Landscapes, Prentice Hall, N.J.
  2. Carr M.: Pattern, Processes and Change in Human Geography, Macmillan, London.
  3. Fellman J. L.: Human Geography: Landscapes of Human Activities, Brown & Benchman, USA.
  4. De Blij H. J. and Alexandar: Human Geography, Culture, Society and Space, John Wiley, New York.
  5. Hussain, Majid: Human Geography, Rawat Publishers, Jaipur.
  6. Chandna, R. C.: Population Geography, Kalyani, Delhi.
  7. Pathak, C. R.: Spatial Structure and Development in India, RSAI.
  8. Unisa, S. Ram, F. and Sekhar: Population, Gender and Reproductive Health, IIPS, Mumbai.
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**THREE YEARS B. A. / B. SC. GENERAL AND HONOURS DEGREE PROGRAMME**  
**(Goa University Choice Based Credit System) w.e.f. 2017-18**  
**GEOGRAPHY CORE COURSE (GPCC-IB / GPCC-IV/ GPCC-VI: PRACTICAL)**  
**PRACTICALS IN SOCIAL AND CULTURAL GEOGRAPHY**  
**F. Y. B. A. / B. SC.**  
**SEMESTER – II**

**COURSE CREDITS: \* 01 / \*\* 02 for \* B. A. and \*\* B. Sc. respectively.**

**TOTAL sessions: \* 15 / \*\* 30 Laboratory sessions of 2 hours duration each for \* B. A. and \*\* B. Sc. respectively.**

**COURSE OBJECTIVES:** To develop skills and techniques for representation of social and cultural data.

**LEARNING OUTCOMES:** 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. It will enable the students to understand and interpret the same. Finally the students will acquire basic skills of drawing a variety of graphs and cartograms.

UNIT NO.	COURSE CONTENT	MARKS WEIGHTAGE	NO. OF SESSIONS
I	Introduction to Social and cultural data. <b>Cartographic Representation of Population Data on Paper and Graph Papers (Exercises)</b> Line graphs and its types. Bar Graph and its types. Pie Diagram. Age-Sex Pyramid. Urban-Rural Pyramid. Ergo-graph (Circular and Graphical). Tri-Linear Chart. Flow Diagrams.	10	8/16
II	<b>Cartographic Exercises on Maps</b> Dot Maps: Uniform and Multiple. Choropleth. Proportional Circles. Spheres. Pictograms. Chorochromatic Maps.	10	7/14
III	<b>Journal and Viva</b>	5	
	<b>Total</b>	<b>25</b>	<b>15/30</b>

**Weightage of Marks: 25.**

**Credit: 1/2**

**Instructions**

- Every candidate shall complete the laboratory work entering all the experiments/exercises in the Practical Book/ Journal, which shall be produced at the time of Practical Examination along with a certificate signed both by the course Teacher and the HOD of Geography of the concerned college to the effect that he/she has completed the prescribed course in a satisfactory manner.
- A batch shall consist of not more than 20 students.

3. Workload- one lab session of 2 hrs. Total number of laboratory sessions: 15/30. Total Credit: 1/2.
4. The duration of practical exam: 2 hrs. carrying 25 marks.
5. Practical examination is to be conducted at the end of the Semester prior to the Theory examination in Geography laboratory or exclusively designated place/s.

**Suggested Readings / References**

1. Singh, Gopal: Map Works and Practical Geography.
  2. Singh and Kanaujia: Elements of Practical Geography.
  3. Monkhouse F. J.: Maps and Diagrams.
  4. Raise: Principles of Cartography.
  5. Mishra R. P. and Ramesh A: Fundamentals of Cartography.
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**THREE YEARS B. A. / B. SC. HONOURS DEGREE PROGRAMME**  
**(Goa University Choice Based Credit System) w.e.f. 2017-18**  
**GEOGRAPHY CORE COURSE PAPER (GPCC-II THEORY)**  
**FUNDAMENTALS OF GEOMORPHOLOGY**  
**F. Y. B. A. / B. SC.**  
**SEMESTER-I**

**COURSE CREDITS:** \* 03 for \* B. A. Hons. and \*\* 04 for \*\* B. Sc. Hons.

**Total Periods / Lectures:** \* 45 / \*\* 60 of 1 Hour Duration Each for \* B. A. Hons. and \*\* B. Sc. Hons.

**COURSE OBJECTIVES:** This introductory paper in geomorphology is intended to acquaint the students with physical geography and geomorphology as a scientific and distinctive field of Geography in the field of learning. The fundamental and guiding principle of the subject is to be taught in order to develop a keen interest in the subject and to pursue higher studies.

**LEARNING OUTCOMES:** At the end of this course students will be able to gain knowledge and understand the fundamentals of physical geography. They will also acquire the skills to apply this knowledge to foresee the occurrences of some unavoidable natural events and calamities and try to mitigate these unforeseen events. They will be able to get the analytical thinking of celestial events.

UNIT NO.	COURSE CONTENT	MARKS WEIGHTAGE	TEACHING PERIODS
I	Origin of the Universe, Origin and structure of Solar System: Big-Bang Theory, Nebular, Binary-Star Theory, Origin of Earth, formation and structure of Earth. Concepts of First, Second and Third orders of Relief features. Concept of Isostasy, Wegner's Continental Drift Hypothesis. Shield Areas, Mobile Zones and Plate Tectonics (with special reference to Indian Sub- Continent).	25	15/20
II	Crustal Movements and Diastrophism. Orogenic and Epeirogenic forces, Folds and faults, Earthquakes and volcanoes, structural and volcanic landscapes e.g. Deccan Trap.	25	15/20
III	Materials of the Earth's Crust: Minerals and rocks- mode of formation; Denudation: Agents of denudation, Mass wasting processes, Weathering and its types. Current Geomorphologic Crisis and Issues: Natural Disasters and mitigation with special reference to Earthquakes, Volcanoes, Tsunamis, landslides and Avalanches.	25	15/20

**Weightage of Marks: ISA: 15 + SEE: 60; Total= 75. Credits: 3 / 4**

**Instructions**

1. Thrust may be given to local regional and national examples while teaching and learning.

2. Questions should be set with due weightage to all the units as specified above and /or GU pattern.
3. The Current relevant topic/s of Regional & National interest should be incorporated by referring to subject journals, viz. Down to Earth, Current Science, Yojana and Other relevant materials.

**Suggested Readings / References**

1. Wooldrige S. W. & Morgan R.S.: An outline of Geomorphology, Longman Green & Co., London.
2. Thornbury W. D.: Principles of Geomorphology, Wiley & Sons.
3. Strahler A. N.: Physical geography, John Wiley & Sons.
4. Sparks B. W.: Geomorphology, Longman Green & Co., London.
5. Monkhouse F. J: Principles of Physical Geography, Hodder & Stoughton, London.
6. Steers J. A: The Unstable Earth, Kalyani Publishers, New Delhi.
7. Tinch & Trewartha: Elements of Physical Geography, Kethuem, London/ N.Y.

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**THREE YEARS B. A. / B. SC. HONOURS DEGREE PROGRAMME**  
**(Goa University Choice Based Credit System) w.e.f. 2017-18**  
**GEOGRAPHY CORE COURSE PAPER (GPCC-II PRACTICAL)**  
**CARTOGRAPHIC TECHNIQUES IN GEOMORPHOLOGY**  
**F. Y. B. A. / B. SC.**  
**SEMESTER-I**

**COURSE CREDITS:** \* 01 / \*\* 02 for \* B. A. Hons. and \*\* B. Sc. Hons. respectively.

**TOTAL sessions:** \* 15 / \*\* 30 Laboratory sessions of 2 hours duration each for \* B. A. Hons. and \*\* B. Sc. Hons.

**COURSE OBJECTIVES:** It is intended to impart training and develop skills and techniques of map and chart reading, interpreting and map making in physical geography.

**Learning Outcomes:** At the end of this practical course, students will be able to identify features and locate places on the map. It will enable students to understand physical maps and charts and interpret the same. Students will acquire basic skills of drawing physical maps and charts.

UNIT NO.	COURSE CONTENT	MARKS WEIGHTAGE	NO. OF SESSIONS
I	Globes and Maps Classification. Construction of latitudes and longitudes, Time zones. Scales: Meaning and Definition, Types, Conversion and Construction of Verbal Scale, RF and Linear Scales (Comparative and Diagonal), Time scale.	10	7/14
II	Methods of Representation of Relief features: spot heights, Bench Marks, Hachures, Hill shading. Contours diagrams with cross sections: hills, plateaus, mesa, cliff, V-shaped valley, waterfall, escarpment, spur, U-shaped valley, Hanging Valley, Volcano with crater, Ria coast, Fiord coast, Profile drawing and types.	10	8/16
III	<b>Journal &amp; Viva</b>	<b>5</b>	
	<b>Total</b>	<b>25</b>	<b>15</b>

**Weightage of marks: 25.**

**Credit: 1 / 2**

**Instructions**

- Every candidate shall complete the laboratory course prescribed by the University entering all the experiment exercise in the laboratory journal, which shall be produced at the time of Practical Examination along with a certificate signed both by the course Teacher and the Head of the Department of Geography of the concerned college to the effect that he/she has completed the prescribed course in a satisfactory manner.
- A batch shall consist of not more than 20 students. Workload - one lab session of 2 hrs. each. Total number of laboratory sessions: 15 /30. **Credit: 1/2**
- The duration of practical exam: 2 /4 hrs carrying 25 marks.
- Practical examination is to be conducted at the end of Semester prior to the Theory (exam) in Geography laboratory or exclusively designated place/s.

**Suggested Reading / References**

- Singh, Gopal: Map works and practical Geography.
- Singh and Kanaujia: Elements of Practical Geography.

3. Monkhouse F. J.: Maps and Diagrams.
4. Raisz: Principles of Cartography.
5. Mishra R. P. and Ramesh: Fundamentals of Cartography.

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**THREE YEARS B. A. / B. SC. HONOURS DEGREE PROGRAMME  
(Goa University Choice Based Credit System) w.e.f. 2017-18  
GEOGRAPHY CORE COURSE PAPER (GPCC-III THEORY)**

**FUNDAMENTALS OF HUMAN GEOGRAPHY**

**F. Y. B. A. / B. SC.**

**SEMESTER-I / II**

**COURSE CREDITS: \* 03 for \* B. A. Hons. and \*\* 04 for \*\* B. Sc. Hons.**

**Total Periods / Lectures: \* 45 / \*\* 60 Lectures of 1 Hour Duration Each for \* B. A. Hons. and \*\* B. Sc. Hons. Respectively.**

**COURSE OBJECTIVES:** This paper is intended to acquaint the students with various concepts and distinctiveness of Human Geography as a field of learning. The spirit and philosophy of the paper is to be taught effectively in order to develop a scientific interest in human geography and gain exposure to the world.

**LEARNING OUTCOMES:** At the end of this course students will be able to gain knowledge and understand the fundamentals of human geographical concepts. They will acquire the skills to apply the knowledge to analyze the prevalent societal issues and attempt to solve such day- to-day problems with a geographical perspective.

UNIT NO.	COURSE CONTENT	MARKS WEIGHTAGE	TEACHING PERIODS
I	Nature and scope of Human Geography; Branches of human geography; Multidisciplinary approach in human geography. Man-Environment relationship; Approaches in Human Geography, Schools of Thought: Determinism, Possibilism, Neo-Determinism (Stop and Go Determinism). Cradle of Man, Evolution of man and early development and diffusion. Races of the world-Basis of their classification, chief characteristics and distribution. Racial Conflicts.	25	15/20
II	Impact of environment on mode of life of primitive and progressive societies in selected regions: Equatorial, Monsoon, Deserts, Taiga, Tundra. Major racial, ethnic and tribal groups of India. Recent racial movements and abrasions in racial integration in India.	25	15/20
III	Culture and Geography; Definition and concept of culture, cultural diffusion - cultural realms. Acculturation, cultural diversity, Regionalization of culture and cultural landscapes. Contemporary Issues of Ethnic and racial conflicts. Two case studies each from India and the World.	25	15/20
	<b>Total</b>	<b>75</b>	<b>45/60</b>

**Weightage of Marks: ISA: 15 + SEE: 60; Total= 75. Credits: \* 3 / \*\* 4**

**Instructions**

1. Thrust should be given to provide some local and national examples.

2. Questions should be set with due weightage to all the units as specified above and/or by university.

### **Suggested Readings / References**

1. Bergwan, Edward E.: Human Geography: Culture, Connections and Landscapes, Prentice Hall, N.J.
2. Carr M.: Pattern, Processes and Change in Human Geography, Macmillan, London.
3. Fellman J. L.: Human Geography: Landscapes of Human Activities, Brown & benchman, USA.
4. De Blij H. J. and Alexander: Human Geography, Culture, Society and Space, John Wiley, New York.
5. Hussain, Majid: Human Geography, Rawat Publishers, Jaipur.

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**THREE YEARS B. A. / B. SC. HONOURS DEGREE PROGRAMME  
(Goa University Choice Based Credit System) w.e.f. 2017-18  
GEOGRAPHY CORE COURSE PAPER (GPCC-III PRACTICAL)**

**CARTOGRAPHIC TECHNIQUES IN HUMAN GEOGRAPHY**

**F. Y. B. A. / B. SC.**

**SEMESTER-I / II**

**COURSE CREDITS: \* 01 / \*\* 02 for \* B. A. Hons. and for \*\* B. Sc. Hons. respectively.**

**Sessions: \* 15 / \*\* 30 Laboratory sessions of 2 hours duration each for \* B. A. Hons. and for \*\* B. Sc. Hons.**

**COURSE OBJECTIVES:** This practical component of the paper aims to develop knowledge and skills of cartographic techniques in human geography. It is expected to enhance map reading and map making abilities of the students.

**LEARNING OUTCOMES:** At the end of this practical course, students will be able to locate places on the map and interpret the same. Students will acquire basic skills of drawing inferences from the maps.

<b>UNIT NO.</b>	<b>COURSE CONTENT</b>	<b>MARKS WEIGHTAGE</b>	<b>NO. OF SESSIONS</b>
I	<b>Sources of data: Primary and Secondary.</b> Population Statistics, Population Census and vital statistics; Method of Conducting population Census- Date System and Period System, Sample survey and analysis.	10	7 /14
II	<b>Exercises on Calculation of Socio-Economic Indices</b> Growth Rate: Annual and decadal, Population Literacy Rate, Population Concentration Index, Age and Sex Ratio, Fertility Rates, Crude Birth Rate, Child–Woman ratio, Crude Death Rate, Infant Mortality Rate, Work participation rate and Dependency Ratio, Occupational structure and rates.	10	8/16
III	<b>Journal &amp; Viva</b>	5	
	<b>Total</b>	<b>25</b>	<b>15/30</b>

**Weightage of marks: 25.**

**Credit: 1 /2**

**Instructions**

1. Every candidate shall complete the laboratory course prescribed by the University entering all the experiment exercise in the laboratory journal, which shall be produced at the time of Practical Examination along with a certificate signed both by the course Teacher and the Head of the Department of Geography of the concerned college to the effect that he/she has completed the prescribed course in a satisfactory manner.
2. A batch shall consist of not more than 20 students.
3. Workload - one lab session of 2 hrs. Total number of laboratory sessions: 15 /30. Credit: 1/2.
4. The duration of practical exam: 2/4 hrs carrying 25 marks.

5. Practical examination is to be conducted at the end of Semester prior to the Theory (exam) in Geography laboratory or exclusively designated place/s.

### **Suggested Readings / References**

1. Singh, Gopal: Map works and practical Geography.
2. Singh and Kanaujia: Elements of Practical Geography.
3. Monkhouse F. J.: Maps and Diagrams.
4. Raise: Principles of Cartography.
5. Mishra R. P. and Ramesh: Fundamentals of Cartography.

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**THREE YEARS B. A. / B. SC. DEGREE HONOURS PROGRAMME**  
**(Goa University Choice Based Credit System) w.e.f. 2017-18**  
**GEOGRAPHY CORE COURSE PAPER (GPCC IV / V THEORY)**  
**PRINCIPLES OF GEOMORPHIC PROCESSES**

F. Y. B. SC.

SEMESTER – II

**COURSE CREDITS: \* 03 for \* B. A. Hons. and \*\* 04 for \*\* B. Sc. Hons.**

**Total Periods / Lectures: \* 45 / \*\* 60 of 1 Hour Duration Each for \* B. A. Hons. and \*\* B. Sc. Hons.**

**COURSE OBJECTIVES:** This paper will deal with the geomorphic processes of the earth. It is intended to acquaint the students with physical and geomorphologic systems as a scientific and distinctive field of Geography learning. The guiding principle of the paper is to be taught with deeper understanding of the processes in order to develop a keen interest in the subject.

**LEARNING OUTCOMES:** At the end of this Paper students will be able to gain an insight of physical geography. They will also acquire the skills to apply this knowledge to appreciate natural events on the earth's surface. They will be able to use the skill to get to the bottom of geomorphic processes events.

UNIT NO.	COURSE CONTENT	MARKS WEIGHTAGE	TEACHING PERIODS
I	Geomorphic Processes and The agents Denudation: Agents of denudation; Genetic classification of drainage system, River molded landscapes. Glacial Landscapes in mountains and plains. Aeolian landscapes in hot desert. Karst landscapes. Cycle concepts in geography: W. M. Davis & Walter Penck	25	15/20
II	Soils: Soil forming processes. Factors controlling forming processes, classification and world distribution of soil (with special reference to India). i) Geomorphology and Environment, ii) Geomorphology and Mining, iii) Geomorphology and Agriculture, iv) Geomorphology and settlements, v) Geomorphology and Surface Transport.	25	15/20
III	Human responses to Coastal developments: Coastal landforms, Types of coasts, coastline of emergence and submergence, sea level changes. Contemporary issues of National / International Interests. Coastal Regulation Zone, Exclusive Economic Zone. Coastal area Threats and Security.	25	15/20
	<b>Total</b>	<b>75</b>	<b>45/60</b>

**Weightage of Marks: ISA: 15 + SEE: 60; Total= 75. Credits: 3/4**

**Instructions**

1. Thrust may be given to local, regional and national examples while teaching and learning.
2. Questions should be set with due weightage to all the units as specified above and/or GU pattern.

3. The Current relevant topic/s of Regional & National interest should be incorporated by referring to subject journals, viz. Down to Earth, Current Science, Yojana and Other relevant materials.

#### **Suggested Readings / References**

1. Wooldrige S. W. & Morgan R.S.: An outline of Geomorphology, Longman & Co., London.
  2. Thornbury W. D.: Principles of Geomorphology, Wiley & Sons.
  3. Strahler A. N.: Physical geography, John Wiley & Sons.
  4. Sparks B. W.: Geomorphology, Longman Green & Co., London.
  5. Monkhouse F. J: Principles of Physical Geography, Hodder & Stoughton, London.
  6. Steers J. A: The Unstable Earth, Kalyani Publishers, New Delhi.
  7. Tinch & Trewartha: Elements of Physical Geography, Kethuem, London/ N.Y.
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**THREE YEARS B. A. / B. SC. HONOURS DEGREE PROGRAMME  
(Goa University Choice Based Credit System) w.e.f. 2017-18  
GEOGRAPHY CORE COURSE PAPER (GPCC-IV / V PRACTICAL)**

**GEO MORPHOLOGIC MAP INTERPRETATION AND ANALYSIS  
SEMESTER-II**

**COURSE CREDITS: \*01 / \*\*02 for \* B. A. Hons. and for \*\* B. Sc. Hons. respectively.**

**Total sessions: \*15 / \*\*30 Laboratory sessions of 2 hours duration each for \* B. A. and \*\* B. Sc. Hons.**

**COURSE OBJECTIVES:** This practical paper will deal with the maps and cartograms related to geomorphic processes of the earth. It is intended to acquaint the students with physical and geomorphologic features through laboratory exercises. The paper is to be taught with some field orientation for deeper understanding of the processes and in order to develop interest in the subject.

**LEARNING OUTCOMES:** At the end of this practical Paper, the students will be able to gain an insight to physical geography practical. They will also acquire the skills to apply this identification and drawing knowledge to appreciate natural events on the earth's surface. They will be able to use the skill to do the field based survey to identify watersheds, regional features, etc.

UNIT NO.	COURSE CONTENT	MARKS WEIGHTAGE	NO. OF SESSIONS
I	Exercises on the Identification of Drainage Patterns, Density and Order. Section drawing with vertical exaggeration for contour patterns. Slope analysis methods (minimum Two).	10	7/14
II	S. O. I. toposheets: Importance, Source, Classification, Interpretation of S. O. I. topographical Maps (3 exercises on different themes-Mountains, Plateaus, Plains, Coastal and Deserts): Detailed study of Topography, Drainage, Vegetation, Land cover, Land use pattern, settlement, transport and communication.	10	8/16
III	<b>Journal &amp; Viva</b>	<b>5</b>	
		<b>25</b>	<b>15/30</b>

**Weightage of marks: 25.**

**Credit: 1 /2.**

**Instructions**

1. Every candidate shall complete the laboratory course prescribed by the University entering all the experiment exercise in the laboratory journal, which shall be produced at the time of Practical Examination along with a certificate signed both by the course Teacher and the Head of the Department of Geography of the concerned college to the effect that he/she has completed the prescribed course in a satisfactory manner.
2. A batch shall consist of not more than 20 students.
3. Workload - one lab session of 2 hrs. Total number of laboratory sessions: 15/30; Credit: 1/2.
4. The duration of practical exam: 2/4 hrs carrying 25 marks.

5. Practical examination is to be conducted at the end of Semester prior to the Theory (exam) in Geography laboratory or exclusively designated place.

**Suggested Reading / Reference**

1. Singh, Gopal: Map works and practical Geography.
  2. Singh and Kanaujia: Elements of Practical Geography.
  3. Monkhouse F. J.: Maps and Diagrams.
  4. Raise: Principles of Cartography.
  5. Mishra R. P. and Ramesh: Fundamentals of Cartography.
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**THREE YEARS B. A. / B. SC. DEGREE HONOURS PROGRAMME**  
**(Goa University Choice Based Credit System) w.e.f. 2017-18**  
**GEOGRAPHY CORE COURSE PAPER (GPCC V THEORY)**  
**FUNDAMENTALS OF CLIMATOLOGY AND OCEANOGRAPHY**  
**F. Y. B. SC.**

**SEMESTER – II**

**COURSE CREDITS: \* 03 for \* B. A. Hons. and \*\* 04 for \*\* B. Sc. Hons.**

**Total Periods: \* 45 / \*\* 60 Lectures of 1 Hour Duration Each for \* B. A. Hons. and \*\* B. Sc. Hons.**

**COURSE OBJECTIVES:** This paper will deal with the geomorphic processes of the earth. It is intended to acquaint the students with physical and geomorphologic systems as a scientific and distinctive field of Geography learning. The guiding principle of the paper is to be taught with deeper understanding of the processes in order to develop a keen interest in the subject.

**LEARNING OUTCOMES:** At the end of this Paper students will be able to gain an insight of physical geography. They will also acquire the skills to apply this knowledge to appreciate natural events on the earth's surface. They will be able to use the skill to get to the bottom of geomorphic processes events.

<b>UNIT NO.</b>	<b>COURSE CONTENT</b>	<b>MARKS WEIGHTAGE</b>	<b>TEACHING PERIODS</b>
I	Atmosphere in general: Weather and climate; Meaning and definition and Significance of climatology, Climatic elements. The Atmosphere - its composition & structure, Insolation: Horizontal & Vertical Distribution.	5+15	9/12
II	Factors affecting temperature: Temporal distribution of temperature, inversions horizontal heat transport, Theories of precipitation and spatio-temporal patterns of precipitation.	5+15	9/12
III	Dynamics of Atmosphere. Atmospheric motion: Laws of horizontal motion, types of winds, Divergences, vertical motion; local winds, global pressure variations and wind belts; seasonal shifts, recent views on circulation: Jet streams; Air masses, Fronts and Depressions: Concept, classification, properties, frontogenesis, warm and cold fronts, Occlusions, Zones of frontal development - frontal depressions.	5+15	9/12
IV	Atmospheric Disturbances: Tropical Weather; climate; Tropical and temperate cyclones: characteristics, origin and tracks with special reference to Indian seas. The Asian and Indian monsoon: recent views, jet stream. Classification: Basis of Koppen's and Thornthwaite's climatic classification and types.	5+15	9/12

V	<p>Oceanography</p> <p>Oceans: Their configuration and relief, A detailed study of Indian Ocean relief.</p> <p>Water characteristics; salinity, density, temperature, their regional and global distributional patterns.</p> <p>Ocean Circulations: Waves, tides, currents, their effects, tide theories.</p> <p>Surface current, circulation of the Pacific, Atlantic and Indian Oceans; deep-water circulation, natural catastrophes of Lithosphere, Atmosphere, Hydrosphere.</p>	5+15	9/12
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**Weightage: I.S.A: 15 + S.E.E: 60 Total= 75.**

**Credits: 03 /04.**

### **INSTRUCTION**

1. Treatment in this paper will be with reference to India; Regional and local examples may be chosen wherever possible.
2. The main thrust is to highlight the place of Climatology as a main discipline in order to understand the Land-Atmosphere-Oceans interactions with different concepts or theories and their processes responsible for changes in their interactions.

### **References / Suggested Readings**

1. Strahler A. M. and Strahler A.H. - Elements of Physical Geography, John Wiley and Sons, 1983.
2. Bunnett R.B. - Physical geography in Diagrams (Longman, 1993)
3. Tikka - R.N. - Physical Geography.
4. Monkhouse, F.J. - Physical Geography (Latest Edition).
5. P. Birot, General Physical Geography (Longman, Green & Co)
6. Trewartha - Introduction to climate
7. Critchfield - General Climatology
8. Barry & Charley - Atmosphere, weather & climate
9. Lal - Climatology
10. Stringer - Foundation of Climatology
11. Negi - Climatology & Oceanography
12. Gerald - General Oceanography
13. King - Oceanography
14. Sharma & Vetal - Oceanography for geographers.

**THREE YEARS B. A. / B. SC. HONOURS DEGREE PROGRAMME  
(Goa University Choice Based Credit System) w.e.f. 2017-18  
GEOGRAPHY CORE COURSE PAPER (GPCC- V PRACTICAL)  
PRACTICALS IN CLIMATOLOGY AND OCEANOGRAPHY  
SEMESTER-II**

**COURSE CREDITS: \* 01 / \*\* 02 for \* B. A. Hons. and for \*\* B. Sc. Hons. respectively.**

**TOTAL: \* 15 / \* 30 Laboratory sessions of 2 hours duration each for \* B. A. Hons. and \*\* B. Sc. Hons.**

**COURSE OBJECTIVES:** This practical paper will deal with the maps and cartograms related to climatic and oceanographic processes of the earth. It is intended to acquaint the students with meteorological features through laboratory exercises. The paper is to be taught with some field orientation for deeper understanding of the processes and in order to develop interest in the subject.

**LEARNING OUTCOMES:** At the end of this practical Paper, the students will be able to gain an insight to climatology and oceanography practical. They will also acquire the skills to apply this identification and drawing knowledge to appreciate natural events on the earth's surface. They will be able to use the skill to do the field based survey to identify weather and oceanic related features.

UNIT NO.	COURSE CONTENT	MARKS WEIGHTAGE	NO. OF SESSIONS
I	<p>Exercises on the Identification of Atmospheric Weather and Climatic elements about the state and the district in general:</p> <p>The Atmosphere and its composition around the college &amp; plot them on graph. Insolation: Diurnal and seasonal Distribution.</p> <p>Collection of data pertaining to Atmospheric climatic data and construction of Temperature graphs for a year, month and diurnal variation. Rainfall graphs for a year, month and diurnal variation.</p> <p>Humidity graphs for a year, month and diurnal variation. Ergograph.</p> <p>Drawing of Isothermal lines, isobars, isohyets on maps.</p>	10	7/14
II	<p>Weather maps and IMD Datasheets: Importance, Source, Classification, Interpretation of IMD IDWR (6 exercises on different seasons and months: Detailed study of Isobars, Cloud Variations Departure from Mean Monthly Temperature, Pressure (3 exercises).</p> <p>Analysis of Flood and Drought Days and Years in India, Northern and Eastern India, Goa.</p> <p>Oceanography:</p> <p>Analysis of Data pertaining to Oceanic Water characteristics: salinity, density, temperature, their regional and global patterns.</p>	10	8/16

	Tides Data analysis. Natural catastrophes Data collection and Analysis (3/6 Exercises).		
III	<b>Journal &amp; Viva</b>	<b>5</b>	
		<b>25</b>	<b>15/30</b>

**Weightage of marks: 25.**

**Credit: 1 /2.**

### **Instructions**

1. Every candidate shall complete the laboratory course prescribed by the University entering all the experiment exercise in the laboratory journal, which shall be produced at the time of Practical Examination along with a certificate signed both by the course Teacher and the Head of the Department of Geography of the concerned college to the effect that he/she has completed the prescribed course in a satisfactory manner.
2. A batch shall consist of not more than 20 students.
3. Workload - one lab session of 2 hrs. Total number of laboratory sessions: 15/30; Credit: 1/2.
4. The duration of practical exam: 2/4 hrs carrying 25 marks.
5. Practical examination is to be conducted at the end of Semester prior to the Theory (exam) in Geography laboratory or exclusively designated place.

### **Suggested Reading / Reference**

1. Strahler A. M. and Strahler A.H. - Elements of Physical Geography, John Wiley and Sons, 1983.
2. Bunnett R.B. - Physical geography in Diagrams (Longman, 1993)
3. Critchfield - General Climatology
4. Barry & Chorley - Atmosphere, weather & climate
5. Gerald - General Oceanography
6. King - Oceanography
7. Sharma & Vetal - Oceanography for geographers.
8. Singh, Gopal: Map works and practical Geography.
9. Singh and Kanaujia: Elements of Practical Geography.
10. Monkhouse F. J.: Maps and Diagrams.
11. Raise: Principles of Cartography.
12. Mishra R. P. and Ramesh: Fundamentals of Cartography.

**THREE YEARS B. A. / B. SC. GENERAL AND HONOURS DEGREE PROGRAMME**  
**(Goa University Choice Based Credit System) w.e.f. 2017-18**  
**GEOGRAPHY GENERIC ELECTIVE GPGE-I**  
**RESOURCE GEOGRAPHY OF GOA**  
**F. Y. B. A. / B. SC.**  
**SEMESTER I**

**COURSE CREDITS: 04**

**Total Lectures: 60 Lectures of 1 Hour Each.**

**COURSE OBJECTIVES:** The main objective of this paper is to orient the students to know the physical and economic settings of Goa. It aims at enabling students to appreciate the prospects of the State of Goa and enlighten them of its imminent problems. Compulsory field work will enable the students to visit places of geographical interest in the state and motivate the students to carry out further study and research in these areas.

**LEARNING OUTCOMES:** At the end of this Foundation course, the students will be able to appreciate physical, social, economic and cultural resources available in the State of Goa. The information will enable the students to become rational citizen and express their understanding before others. Finally the students will acquire basic skills of taking judicious decisions and stand about the state and its activities.

UNIT NO.	COURSE CONTENT	MARKS WEIGHTAGE	TEACHING PERIODS
I	Introduction to Goa <b>Geographical Setting and Physical Resources of Goa</b> Location: Relative and Absolute, Areal extent. Physical Divisions: Mountains, Plains and Plateaus. Geology and Mineral Wealth. Climate: Characteristics and Seasons. River systems and lakes. Soils: Types and distribution. Forest Wealth: Types and distribution.	25	15
II	<b>Human Resources: (pre &amp; post liberation, 21<sup>st</sup> Century)</b> Population: Growth- decadal and annual, factors. Distribution: Taluka-wise and District-wise Density: Taluka-wise and District-wise Age-sex structure Literacy and Education Rural- Urban composition Migration: Intra-state, Interstate and International. Occupational structure: Taluka wise and Rural and Urban Future of Population: Short term and long term.	25	15
III	<b>Resource Utilization: pre &amp; post liberation, 21<sup>st</sup> Century</b> Power resources and its limitations. Water Supply Works and Irrigation Projects Transport: Modes and Distribution Role of Banking and Insurance resource utilization Health care and educational facilities	25	15

	Communication (traditional & modern) Information Technology (IT): infrastructure and utility.		
IV	<b>Regional Disparity and Regional Planning in Goa</b> Variations in Levels of Socio-Economic Development (High, Medium And Low) in Coastal, Mid-Land and Ghat Talukas. Rural -Urban Divide and Rural- Urban Continuum Measures and Efforts of Regional Development in Goa	25	15
	<b>TOTAL</b>	<b>100</b>	<b>60</b>

**Weightage of marks: ISA 20 + SEE 80 Total= 100. Course Credit: 4**

### Instructions

1. Thrust may kindly be given to draw national and regional examples by the teachers.
2. Field orientation should be attempted by the teachers and the Institutions for verifying ground truths.
3. The Current topics of Local, Regional & National interest have to be updated by referring to subject journals, newspapers, websites and other relevant materials.
4. Questions should be set with due weightages to all the units as specified above and/or Goa University instructions.

### Suggested Readings / References

1. Govt. of India: Gazetter of Goa, Daman & Diu, Govt. Printing Press, Panaji-Goa.
2. Angle, P. S.: An Economic Review of Goa, 1992.
3. Goa University, Goa through the Ages – Vol. I, II & III, Publications Dept.
4. Govt. of Goa (1988), Regional Plan for Goa 2001, Govt. Printing Press, Panaji, Goa.
5. Govt. of Goa, Statistical Pocket Books, Govt. Printing Press, Panaji.
6. Eco-Forum, Fish Curry and Rice, An other India Press Publication.
7. NCAER, Techno Economic Survey of Goa by Govt. Printing Press, Panaji.
8. Goa Chamber of Commerce and Industry, Thirty years of Economic Development, 1992, Panaji.
9. Daily newspapers published from Goa (Publication Houses).
10. Olivinho J. F. Gomes, Goa published by National Book Trust India.
11. Govt. of Goa, Economic Survey of Goa, DPSE publication, Govt. Printing Press, Panaji, Goa.

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**THREE YEARS B. A. / B. SC. GENERAL AND HONOURS DEGREE PROGRAMME**  
**(Goa University Choice Based Credit System) w.e.f. 2017-18**  
**GEOGRAPHY GENERIC ELECTIVE-GPGE-II**  
**F. Y. B. A. / B. SC.**  
**SEMESTER II**  
**GEOGRAPHY OF RESOURCE UTILIZATION IN GOA**

**COURSE CREDITS: 04**

**Total Lectures: 60 Lectures of 1 Hour duration each.**

**COURSE OBJECTIVES:** To orient the students to comprehend the prevailing pattern and limitations of Resource Utilization in Goa. It aims at enabling the students to appreciate the prospects of the State and take pro active stand to solve its problems. 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.

**LEARNING OUTCOMES:** At the end of this Foundation course, the students will be able to appreciate physical, social, economic and cultural resources utilization in the State of Goa. The information will enable the students to become rational citizen and express their understanding before others. Finally the students will acquire basic skills of taking judicious stand about the state and its prospective activities.

UNIT NO.	COURSE CONTENT	MARKS WEIGHTAGE	TEACHING PERIODS
I	<p><b>Geographical Study of primary activities in Goa</b></p> <p><b>Agriculture:</b>            Significance of agriculture to the State's economic Surge.            Factors affecting agriculture in Goa: physical, economic, social and technological.            Status of agriculture during pre-liberation, Changes in post-liberation and post-liberalization period, Current problems associated with Goan agriculture.            Farming Types: Kharif &amp; Rabi, humid farming, horticulture, plantation; <i>Vaingan, Puran Xeti, Kumeri, Kulagar.</i>            Major Crops: Factors of Growth, methods of cultivation, distribution and production of cereal crops (rice, millets), cash crops (cashew, sugarcane), garden crops (coconut, beetle nut).</p> <p><b>Animal Husbandry:</b>            Types of livestock, dairy and poultry farming and their place in Goan economy, Government schemes to promote poultry and dairy farming in the State.</p> <p><b>Fishing:</b>            Types (shore and inland fisheries), species, fishing seasons, fishing jetties, production, marketing, changes, problems and future prospects.</p>	25	15
II	<p><b>Geographical Study of Mining &amp; Manufacturing in Goa</b></p> <p><b>Mining:</b>            History of mining in Goa, mining methods, production and trade of minerals (iron ore, manganese, bauxite), Benefits of</p>		

	<p>mining to the economy and society, Negative socio-economic and environmental impacts of mining, Current issues related to mining in the State.</p> <p><b>Manufacturing:</b>  Industrial scenario in pre-liberation Goa, Stages of Industrial Development during post-liberation and post liberalization period; Role of GIDC, Industrial Estates, Broad Industrial Policy; Types of Industries: House Hold, Handicrafts, Small Scale Industries, Medium and Large Scale Industries.  Study of Industries: Sugar, Chemicals and Fertilizers, Pharmaceutical, Shipbuilding, Forest based industries, and Software industries.  Importance of Industries to Goa, Problems associated with Industrialization in Goa, Environmental movements and their impact on Industrialization of Goa.</p>	25	15
III	<p><b>Geographical study of tertiary activities-I</b>  <b>Tourism:</b>  Meaning, types of tourists; tourist seasons and arrivals. Major tourist attractions (natural, historical, religious-socio-cultural), leading destinations and tourism infrastructural facilities in the State. Factors promoting tourism in Goa. Positive and negative impacts of tourism in Goa: Economic, socio-cultural, political and environmental. Role of GTDC. Diversification efforts and future prospects and problems.  <b>Transport:</b>  Development of transport network, modes and their functional significance (air, roadways, railways and waterways), problems of transport system, future prospects.</p>	25	15
IV	<p><b>Geographical Study of Tertiary Activities-II</b>  <b>Trade:</b>  Internal (intra-state and inter-state) and foreign trade–composition, direction, changes and future prospects.  <b>Ports:</b>  Major and minor ports, Mormugao and Panaji Port– history, hinterland, major developments, prospects and problems.  <b>Study tour and report*</b>  Local study tour to / local survey in a place of physical, social, economic and cultural importance and submission of a Report to that effect is compulsory <b>(to be Pre submitted and Assessed before the announcement of SEE Schedule).</b></p>	15  10	10  05
	<b>Total</b>	<b>100</b>	<b>60</b>

Weightage of marks: ISA: 20+SEE: 80 (inclusive of Field Study component: 10) Total = 100

Credit: 4

### Instructions

1. Thrust must be given to draw examples from national and regional issues as well.

2. The day to day up-dating of Current events of local, Regional & National interests should to be disseminated to the students by referring the subject related journals, reference to news papers and electronic media and other relevant materials so that the students can keep themselves abreast with latest information.
3. Questions should be set with due weightage to all the units as specified above and/or GU pattern.
4. **The field trip / survey mentioned above in the curriculum carries the workload for 5 hours per day for a batch of maximum 60 students (one division). The field trip / survey is to enable the students to collect first hand information or primary data and verify the concepts taught in the class.**

**Suggested Readings / References:**

1. Govt. of India: Gazetteer of Goa, Daman & Diu, Govt. Printing Press, Panaji-Goa
  2. Angle P. S.: An Economic Review of Goa.
  3. Govt. of Goa (1988), Regional Plan for Goa 2001, Govt. Printing Press, Panaji, Goa.
  4. Govt. of Goa, Statistical Pocket Books, Govt. Printing Press, Panaji.
  5. Fish Curry and Rice, An Eco-Farm Publication.
  6. NCAER, Techno Economic Survey of Goa by Govt. Printing Press, Panaji.
  7. Goa Chamber of Commerce & Industry, Thirty years of Economic Development by 1992, Panaji.
  8. Daily newspapers published from Goa (Publication House) and Television News covering Goa.
  9. Gomes, Olivinho J. F., Goa by National Book Trust India, New Delhi.
  10. Faces of Goa, Larsen, Karin, Gyan Publishing House, New Delhi, 1998.
  11. Govt. of Goa, Economic Survey of Goa, DPSE publication, Govt. Printing Press, Panaji, Goa.
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**THREE YEARS B. A. / B. SC. GENERAL AND HONOURS DEGREE PROGRAMME**  
**(Goa University Choice Based Credit System) w.e.f. 2017-18**  
**GEOGRAPHY GENERIC ELECTIVE GPGE-I**  
**FUNDAMENTALS OF ECOLOGY**  
**F. Y. B. A. / B. SC.**  
**SEMESTER I**

**COURSE CREDITS: 04**

**Total Lectures: 60 Lectures of 1 Hour Each.**

**COURSE OBJECTIVES:** This foundation Course aims to provide the students of all disciplines an overview of Ecology and its interface with environment. It also aims to create awareness of major ecological components and their influences on life. To provide ecological knowledge and information to the students. Finally it endeavors to cultivate interest and concern towards conservation of nature and sustainable development.

**LEARNING OUTCOMES:** Students from Arts and Science disciplines will be able to understand the basic necessities of the ecological systems around their habitat and the ecological preservation after the successful completion of this foundation course. The course will provide the basic skills to protect the ecology and environment for sustainable development of human beings in relation to their environment.

UNITS	COURSE CONTENT / TOPICS	MARKS WEIGHTAGE	TEACHING PERIODS
I	<p><b>Ecology</b> Introduction, meaning, objectives, sub-divisions, scope. Historical background and major contemporary developments in Ecology: World and India.</p> <p><b>Earth as the only Suitable Habitat for Life</b> Solar system, origin of the earth, Theories of origin of the earth (Nebular and Big Bang), Major components of physical environment (atmosphere, lithosphere and hydrosphere) and general factors influencing life.</p>	25	15
II	<p><b>Biosphere</b> Meaning, phases of the origin of life on the earth (chemical and organic).</p> <p><b>Ecosystem</b> Concept, general characteristics, structural components of an ecosystem (biotic and abiotic), types of ecosystem (artificial, natural and incomplete ecosystem).</p>	25	15
III	<p><b>Functional Aspects of Ecosystem</b> Energy flow in ecosystem: Sun as the ultimate source of energy, Laws of thermodynamics, Pathways of energy flow in the ecosystem. Primary and secondary production-factors influencing, distribution. Food chain: Meaning, importance and types. Food web, trophic structure and ecological pyramids.</p>	25	15
IV	<p><b>Population and Community</b> Concept of population and population attributes (natality,</p>	25	15

	mortality, density, age structure and growth forms). <b>Biotic Relationships</b> Interspecific interactions: Ammensalism, commensalism, neutralism, mutualism, parasitism, prey-predation and competition; Intraspecific interactions: scramble and contest. <b>Biotic Succession</b> Concept of community, meaning of ecological succession, Types and general process of ecological succession, trends in succession, significance of ecological succession		
	<b>Total</b>	<b>100</b>	<b>60</b>

**Weightage and Marks: ISA: 20 + SEE: 80, Total: 100**

**Credit: 4.**

### Instructions

1. Thrust must be given to draw examples from national, regional and local issues.
2. The day to day up-dating of Current events of Local, Regional & National interests should to be disseminated to the students by referring the subject related journals, reference to news papers, electronic media and other relevant materials so that the students can keep themselves abreast with latest information.
3. Questions should be set with due weightage to all the units as specified above and/or GU pattern.

### Suggested Readings / References and Books Recommended for study

1. P. S. Verma & V. K. Agarwal, Environmental Biology, S. Chand & Co. Ltd.
  2. P. D. Sharma, Ecology and Environment.
  3. Benu Singh, Ecology and Environment, Vista International Publishing House, Delhi.
  1. M. P. Arora, Ecology by Himalaya Publishing House.
  4. M. C. Dash, Fundamentals of Ecology by Tata McGraw Hill Publishing Co. Ltd., New Delhi.
  5. E. P. Odum, Ecology by Oxford & IBH Publishing Co. Pvt. Ltd.
  6. H. D. Kumar, Modern Concepts of Ecology by Vikas Publishing House Pvt. Ltd.
  7. Pramod Singh, Ecology of Urban India.
  8. Singh K Ecology of Rural India.
  9. S. C. Santra, Environmental Science.
  10. Mahesh Rangnathan, Environmental issues in India.
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**THREE YEARS B. A. / B. SC. GENERAL AND HONOURS DEGREE PROGRAMME**  
**(Goa University Choice Based Credit System) w.e.f. 2017-18**  
**GEOGRAPHY GENERIC ELECTIVE-GPGE-II**  
**SPATIAL AND FUNCTIONAL ASPECTS OF ECOLOGY**  
**F. Y. B. A. / B. SC.**  
**SEMESTER II**

**COURSE CREDITS: 04**

**Total Lectures: 60 Lectures of 1 Hour Each.**

**COURSE OBJECTIVES:** This Paper aims to provide the students a multi-disciplinary approach to the spatial and functional overview of ecology and environment. It also aims to create effective awareness of major ecological components and their influences on their life through Field Trip and Field Survey.

**LEARNING OUTCOMES:** The Students will be able to comprehend the ecological systems and their functionality. 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.

UNITS	TOPICS	MARKS WEIGHTAGE	TEACHING PERIODS
I	<p><b>Biogeochemical Cycles</b>  Meaning, Phases, Biogenic nutrients, compartments of biogeochemical cycles, classification.  Oxygen cycle, carbon cycle, nitrogen cycle, phosphorus cycle and hydrological cycle – its functional aspects, human interference and possible adverse effects.  Cycling of non essential elements.</p>	25	15
II	<p><b>Diversity &amp; Spatial Distribution of Major Ecosystems</b>  a) <b>Aquatic Ecosystem:</b>  Classification (Freshwater ecosystems - lentic and lotic; estuarine and ocean waters) and characteristics.  b) <b>Terrestrial Ecosystems:</b>  i) Forest – characteristics, ecological significance, deforestation-causes and effects, conservation.  ii) Grasslands – Characteristics, comparative study of tropical and temperate grasslands.  iii) Desert ecosystem – Physical environment, plant life, animal life and their adaptations.  iv) Wetlands – Types of wetlands, ecological and economic significance of wetlands, threats to wetlands and protection of wetlands.</p>	25	15
III	<p>a) <b>Biodiversity</b>  Definition, levels of biodiversity, value of biodiversity (ecological, economic and cultural), threats to biodiversity.  Species – endemic species, endangered species, critically endangered species, vulnerable species and extinct species.  Hotspots of Biodiversity. Extinction of species.</p>	25	15

	In-situ and Ex-situ conservation of biodiversity. b) <b>Biodiversity in Indian Scenario</b> Bio geographical regions in India. Present status of Biodiversity with special reference to Western Ghats and Eastern Himalayas. Wildlife Management in India (National Parks, Wild Life Sanctuaries).		
IV	a) <b>Global Climate Change</b> Causes and consequences. Impact Of Climate Change On India and Goa Remedial measures – International Initiatives (Montreal Protocol, Rio Earth Summit, Kyoto Protocol), PARIS DECLARATION-2015 B) <b>Ecological Field Study/ Trip/ Survey And Report</b>	15	10
	<b>TOTAL</b>	<b>100</b>	<b>60</b>

**Weightage of marks: ISA: 20 + SEE: 80 (inclusive of Field Study: 10). Total: 100 Credit: 4.**

### Instructions

1. Thrust must be given to draw examples from national, regional and local issues.
2. The day to day up-dating of Current events of Local, Regional & National interests should to be disseminated to the students by referring the subject related journals, reference to news papers, electronic media and other relevant materials so that the students can keep themselves abreast with latest information.
3. Questions should be set with due weightage to all the units as specified above and/or GU pattern.
4. **The field trip / survey mentioned above in the curriculum carries the workload for 5 hours per day for a batch of maximum 60 students (one division). The field trip / study / survey are to enable the students to collect first hand information or primary data and verify the concepts taught in the class.**

### Suggested Readings / References and Books Recommended for study

1. Environmental Biology by P. S. Verma & V. K. Agarwal, S. Chand & Co. Ltd.
2. Ecology and Environment by P. D. Sharma.
3. Ecology and Environment by Benu Singh, Vista International Publishing House, Delhi.
2. Ecology by M. P. Arora, Himalaya Publishing House.
4. Fundamentals of Ecology by M. C. Dash, Tata McGraw Hill Publishing Co. Ltd., New Delhi.
5. Ecology by E. P. Odum, Oxford & IBH Publishing Co. Pvt. Ltd.
6. Modern Concepts of Ecology by H. D. Kumar, Vikas Publishing House Pvt. Ltd.
7. Ecology of Urban India by Pramod Singh.
8. Ecology of Rural India by Singh K.
9. Environmental Science by S. C. Santra.
10. Environmental issues in India by Mahesh Rangnathan.

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**THREE YEARS B. A. / B. SC. GENERAL AND HONOURS DEGREE PROGRAMME  
(Goa University Choice Based Credit System) w.e.f. 2017-18  
GENERIC ELECTIVE GPGE-I**

**SUSTAINABLE DEVELOPMENT**

**F. Y. B. A. / B. SC.**

**SEMESTER I**

**COURSE CREDITS: 04**

**Total Periods / Lectures: 60 Lectures of 1 Hour Duration Each.**

**COURSE OBJECTIVES:** This paper will deal with the Sustainable Development of the world with special reference to India. It is intended to acquaint the students with the global development patterns as a scientific and distinctive field of Geography learning to be taught with reference to current topics in the field of sustainable geographical perspective in order to develop a keen interest in the subject.

**LEARNING OUTCOMES:** At the end of this Paper students will be able to gain an insight of sustainable development through geography. They will also acquire the skills to apply this knowledge to appreciate the diversity on the earth's surface. They will be able to broaden their horizon to become global citizen.

<b>UNIT NO.</b>	<b>COURSE CONTENT</b>	<b>MARKS WEIGHTAGE</b>	<b>TEACHING PERIODS</b>
I	1. Sustainability: Definition, Components and Sustainability for Development. 2. The Millennium Development Goals: National Strategies and International Experiences 3. Sustainable Development: Need and examples from different Ecosystems.	25	20
II	4. Inclusive Development: Education, Health; Climate Change: The role of higher education in sustainability; The human right to health; Poverty and disease; Sustainable Livelihood Model; Policies and Global Cooperation for Climate Change Geography and development-Types of economies (LDC and MDC and other global classifications) on social economic and demographic parameters. Globalization and its impact on countries especially on India.	25	20
III	5. Sustainable Development Policies and Programmes: Rio+20; Goal-Based Development; Financing for Sustainable Development; Principles of Good Governance; National Environmental Policy, CDM. Contemporary Issues- Gender and inequality, Race-ethnicity and equality, Nutrition, health and diseases (medical geography issues). Fundamentalism, terrorism and naxalism. Global and National peace initiatives.	30	20
	<b>Total</b>	<b>80</b>	<b>60</b>

**Weightage of Marks: ISA: 20 + SEE: 80; Total= 80. Credits:4**

## Instructions

1. Thrust should be given to provide some local and national examples.
2. Questions should be set with due weightage to all the units as specified above and/or by university.

## Suggested Readings / References /Reading List

1. Agyeman, Julian, Robert D. Bullard and Bob Evans (Eds.) (2003) *Just Sustainabilities: Development in an Unequal World*. London: Earthscan. (Introduction and conclusion.).
2. Ayers, Jessica and David Dodman (2010) "Climate change adaptation and development I: the state of the debate". *Progress in Development Studies* 10 (2): 161-168.
3. Baker, Susan (2006) *Sustainable Development*. Milton Park, Abingdon, Oxon; New York, N.Y.: Routledge. (Chapter 2, "The concept of sustainable development").
4. Brosius, Peter (1997) "Endangered forest, endangered people: Environmentalist representations of indigenous knowledge", *Human Ecology* 25: 47-69.
5. Lohman, Larry (2003) "Re-imagining the population debate". *Corner House Briefing* 28.
6. Martínez-Alier, Joan et al (2010) "Sustainable de-growth: Mapping the context, criticisms and future prospects of an emergent paradigm" *Ecological Economics* 69: 1741-1747.
7. Merchant, Carolyn (Ed.) (1994) *Ecology*. Atlantic Highlands, N.J: Humanities Press. (Introduction, pp 1-25.)
8. Osorio, Leonardo et al (2005) "Debates on sustainable development: towards a holistic view of reality". *Environment, Development and Sustainability* 7: 501-518.
9. Robbins, Paul (2004) *Political Ecology: A Critical Introduction*. Blackwell Publishing.

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**THREE YEARS B. A. / B. SC. GENERAL AND HONOURS DEGREE PROGRAMME**  
**(Goa University Choice Based Credit System) w.e.f. 2017-18**  
**GENERIC ELECTIVE GPGE-II**  
**SPATIAL INFORMATION TECHNOLOGY**  
**F. Y. B. A. / B. SC.**  
**SEMESTER II**

**COURSE CREDITS: 04**

**Total Periods / Lectures: 60 Lectures of 1 Hour Duration Each.**

**COURSE OBJECTIVES:** This paper will deal with the Spatial Information Technology for Sustainable Development of the world with special reference to India. It is intended to acquaint the students with the global development patterns as a scientific and distinctive field of Geography learning. 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.

**LEARNING OUTCOMES:** At the end of this Paper students will be able to gain an insight of **Spatial Information Technology** for sustainable development and geography. They will also acquire the skills to apply this knowledge to appreciate the diversity on the earth's surface. They will be able to broaden their horizon and use the skill to become global citizen.

UNIT NO.	COURSE CONTENT	MARKS WEIGHTAGE	TEACHING PERIODS
I	1. Introduction: Definitions, Concept and Historical Development of SIT. Components and Sustainability for Development. Sustainable Development: Need and examples from different Ecosystems.	25	20
II	2. Spatial Information/Data: Web data sources; Registration and projection; Data structures; Data interpolation and modeling. 3. Working of spatial information system 4. Functions of Spatial information system: Information retrieval; Topological modeling; Networks; Overlay; Data output. Globalization and its impact on countries especially on India.	25	20
III	5. Application of Spatial Information Technology On Contemporary Issues- Gender and inequality, Race- ethnicity and equality, Nutrition, health and diseases. Fundamentalism, terrorism and naxalism.	30	20
	<b>Total</b>	<b>80</b>	<b>60</b>

**Weightage of Marks: ISA: 20 + SEE: 80; Total= 80. Credits: 4.**

**Reading List / Suggested Reading**

1. C. Esperança and H. Samet, An overview of the SAND spatial database system, to appear in Communications of the ACM, 1997. <http://www.cs.umd.edu/~hjs/pubs/sandprog.ps.gz>
2. G. Hjaltason and H. Samet, 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, 1995, 83-95. <http://www.cs.umd.edu/~hjs/pubs/incnear.ps>
3. H. Samet, Spatial Data Structures in Modern Database Systems: The Object Model,

Interoperability, and Beyond, W. Kim, Ed., Addison-Wesley/ACM Press, 1995, 361-385.

<http://www.cs.umd.edu/~hjs/pubs/kim.ps>

6. H. Samet, The Design and Analysis of Spatial Data Structures, Addison-Wesley, Reading, MA, 1990. ISBN 0-201-50255-0.

7. H. Samet and W. G. Aref, Spatial Data Models and Query Processing in Modern Database Systems: The Object Model, Interoperability, and Beyond, W. Kim, Ed., Addison-Wesley/ACM Press, 1995, 338-360. <http://www.cs.umd.edu/~hjs/pubs/kim2.ps>

8. C. D. Tomlin, Geographic Information Systems and Cartographic Modeling, Prentice-Hall, Englewood Cliffs, NJ, 1990. ISBN 0-13-350927-3.

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