TuljaramChaturchand College, Baramati

Autonomous College

Two Year Degree Program in Geography (Faculty of Science & Technology)

Revised Syllabi for

M.A./M.Sc. (Geography) Part-I

For TuljaramChaturchand College, Baramati

Choice Based Credit System Syllabus
To be implemented from Academic Year 2022-2023

Title of the Course: M.A./M.Sc. (Geography)

Preamble

Introduction:

TuljaramChaturchand College has decided to change the syllabi of various faculties from June,2022. Taking into consideration the rapid changes in science and technology and new approaches in different areas of Geography and related subjects, Board of Studies in Geography of TuljaramChaturchand College, Baramati - Pune has prepared the syllabus of M.Sc./M. A. Semester - I and Geography course under the Choice Based Credit System (CBCS). The model curriculum as developed by U.G.C. is used as a guideline for the presentsyllabi.

A Master degree in geography will provide you the knowledge and skills you need to begin a variety of rewarding careers. Geographers work as urban planners, GIS technicians and analysts, disaster preparedness planners, teachers, environmental scientists, remote sensing analysts, transportation planners, demographers, hydrologists and in a variety of other areas. Students who complete Master degree in Geography, courses will examine the spatial organization of physical features and human activities at a variety of spatial scales from local to global. Students will be able to locate features on the surface of the earth, explain why they are located where they are, and describe how places are similar and/or different. Students will also examine human interactions with the environment and describe how physical and cultural landscapes change through time. Students completing physical geography courses will be able to describe the processes that drive earth's climate, create landforms, and govern the distribution of plants and animals. Students completing human geography will analyze and describe cultural phenomenon such as population, development, agriculture, language, and religion.

. Aims and Objectives of the new curriculum:

i) To maintain updated curriculum.
ii) To take care of fast development in the knowledge ofGeography.
iii) To enhance the quality and standards of GeographyEducation.
iv) To provide a broad common frame work, for exchange, mobility and free dialogue across the Indian Geography and associatedcommunity.
v) To create and aptitude for Geography in those students who show a promise for higher studies and creative work inGeography.
vi) To create confidence in others, for equipping themselves with that part of Geography which is needed for various branches of Sciences or Humanities in which they have aptitude for higher studies and originalwork.

Programme outcomes (Pos) (M.A./M.Sc. Geography):

PO.1. Ability of Problem Analysis: Student will be able to analyse the problems of physical as well as cultural environments of both rural and urban areas. Moreover, they will try to find out the possible measures to solve those problems.
PO.2. Conduct Social Survey Project: They will be eligible for conducting social survey project, which is necessity for the assessment of development status of a particular group or section of the society.
PO.3. Individual and teamwork: Works effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings.
PO.4. Application of modern instruments: Students will be able to apply various modern instruments for data collection and field survey.
PO.5. Application of GIS and modern Geographical Map Making Techniques: Students will learn how ~~to prepare map based on GIS by using the modern geographical map-making techniques.~~

PO.6. Critical Thinking: Students will able to understand and solve the critical problems of physical and cultural environment.
PO.7. Development of Observation Power: As a student of Geography, they will be capable to develop their observation power through field experience and in future, they will be able to identify the socio-environmental problems of a locality.
PO.8. Development of Communication Skill and Interaction Power: After the completion of the course, they will be efficient in their communication skill as well as power of social interaction.
PO.9. Effective Citizenship: Demonstrate empathetic social concern and equity centred national development and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
PO.10. Enhancement of the ability of Management: Demonstrate knowledge and understanding of the management principles and apply these to their own work, as a member and leader in a team, to manage projects. They will perform effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO.11. Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions and accept responsibility for them.
PO.12. Understand Environmental Ethics and Sustainability: Understand the impact of the acquired knowledge in societal and environmental contexts and demonstrate the knowledge of need for sustainable development.
PO.13. Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context social, environmental and technological changes.
PO.14. Presentation Skill: Students are being able to understand and write effective reports and design credentials, make effective demonstrations, give and receive clear instruction.

TuljaramChaturchand College, Baramati

Autonomous College

BoardofStudiesinGeography

From 2022-23 to 2024-25

Sr.No.	Name	Designation
1.	**Dr.Asaram S. Jadhav**	Chairman
2.	**Dr. Arun S. Magar**	Member
3.	**Mr. Vinayak D. Chavan**	Member
4.	**Ms. Nayan D. Zagade**	Member
5.	**Ms. Aarti M. Borade**	Member
6.	**Dr. SantoshLagad**	Vice-ChancellorNominee
7.	**Dr. PravinKokane**	Expert from other University
8.	**Dr.T. P. Shinde**	Expert from other University
9.	**Dr. BabajiMaskare**	IndustryExpert
10.	**Mr. Ganesh Ghanawat**	Meritorious Alumni
11.	**Mr. SagarLokhnade**	Student
12.	**Miss. TamboliAysha**	Student

M.Sc. GEOGRAPHY PROGRAMME CREDIT DISTRIBUTION PATTERN (108)

Class	Semester	Core Course	Elective Course			Ability Enhancement Compulsory Courses (AECC)		Total Credit
			Discipline Specific Elective	Dissertation Project	Generic Elective Course	Ability Enhancement Compulsory Courses	Skill Enhancement Courses	
M.Sc. I	I	i) PAGG111 Principles of Geomorphology ii) PAGG112 Principles of Climatology iii) PAGG113 Principles of Economic Geography iv) PAGG114 Principles of Population and Settlement Geography	-	-	HR – I 2 Credit CS – I 2 Credit	Communication Skill 2 Credit	i) PAGG115 Practical in Physical Geography ii) Practical in Human Geography	30
	II	4 papers 4 x 4= 16 Credits	-	-	CS – II 2 Credit	-	2 Practicals = 8 Credits	26
M.Sc. II	III	3 papers 3 x 4= 12 Credits	Paper (A) 4 Credit *OR* Paper (B) 4 Credits	-	-	-	2 Practicals = 8 Credits Subject Related Skill Dev. Course 2 Credit	26
	IV	3 papers 3 x 4= 12 Credits	Paper (A) 4 Credit *OR* Paper (B) 4 Credits	1 Project = 4 Credits	-	-	1 Practical = 4 Credits Subject Related Skill Dev. Course 2 Credit	26
Total Credits		**56**	**8**	**4**	**6**	**2**	**32**	**108**

Structure of the Syllabus:

Semester – I

Sr. No.	Course Code	Core Compulsory Theory Paper (CCTP)	Choice Based Optional Paper (CBOP)	Core Compulsory Practical Paper (CCPP)	Credit
1	PAGG111	Principles of Geomorphology	-	-	04
2	PAGG112	Principles of Climatology	-	-	04
3	PAGG113	Principles of Economic Geography	-	-	04
4	PAGG114	Principles of Population and Settlement Geography	-	-	04
5	PAGG115	-	-	Practical in Physical Geography	04
6	PAGG116	-	-	Practical in Human Geography	04
				Total Credits	**24**

Mandatory 12 additional/ add-on credits for Post Graduate Programmes

Note:

1. 6 credits from Group - 1 are compulsory

2. Choose minimum 6 credits from Group - 7

Group-1	Human Rights Awareness Course (Semester-I):		02 credit
	Cyber Security Awareness Course (Semester-I)		02 credit
	Cyber Security Awareness Course (Semester-II)		02 credit
Group-2 Skill Component Courses	Subject Related Certificate Course (Sem. II) Subject Related skill development courses (Sem. III) Subject Related skill development courses (Sem. IV)		02 credits 02 credits 02 credits
Group-3	(a)	Representation in Sports at University Level	02 credits
	(b)	Representation in Sports at State Level / National level	02 credits
	(c)	Representation in Sports at International (overseas) Level	04 credits
Group-4	(a)	Selection in AVISHKAR at University Level	02 credits
Group-5	(a)	Research paper publication at National level	02 credits
	(b)	Research paper publication at International (overseas) level	02 credits
Group-6	(a)	Participation in Summer School/ Internship programme / Short term course (not less than 2 weeks duration)	02 credits
Group-7	(a)	Participation in cultural and co curricular activities/ extracurricular activities/competitions at University level / State Level	02 credit
	(b)	Participation in cultural and cocurricular activities / extracurricular activities/ competitions at International (overseas) level	02 credits

Note : 1) One Credit = 15 Lectures.

2) The Project should be initiated at on the onset of III Semester and submitted during IV Semester.

3) FY/SY --> 4 Lectures per week.

4) Theory paper be covered with 70% actual teaching (3 actual lectures per week) and 30%

Component (1 lecture per week) of self-study should be further evaluated through Group

Discussion / Seminar / Open Book Test / MCQ / Essay writing / Assignment etc.

Semester – II

Sr. No.	Course Code	Core Compulsory Theory Paper (CCTP)	Choice Based Optional Paper (CBOP)	Theory / Practical	Credit	Core Compulsory Practical Paper (CCPP)	Credit
1	PAGG121	Geoinformatics - I					04
	One of the following according to specialization from CCTP						
2	PAGG122 (A)	Synoptic Climatology	-	-	04	-	04
	PAGG122 (B)	Population Geography	-	-	04	-	
	One of the following according to specialization from CCTP						
3	PAGG123 (A)	Monsoon Climatology	-	-	04	-	04
	PAGG123 (B)	Geography of Rural Settlements	-	-	04	-	
	Optional Paper (CBOP) (1 Theory + 1 Practical)						
4	PAGG124			Geography of Disaster Management	04		08
	PAGG125			Practicalin Surveying	04		
	Core Compulsory Practical Paper (CCPP)						
5	PAGG126					Practical of Statistical Techniques for Geography	04
		Total Credits of Semester - II					**24**

Semester – III

Course Code	Core Compulsory Theory Paper (CCTP)	Choice Based Optional Paper (CBOP)	Theory / Practical	Credit	Core Compulsory Practical Paper (CCPP)	Credit
PAGG231	Geoinformatics-II	-	-	04	-	04
PAGG232	Geographical Thoughts	-	-	04	-	04
One of the following according to specialization from CCTP						
PAGG233 (A)	Agro Meteorology	-	-	04	-	04
PAGG233 (B)	Urban Geography	-	-	04	-	
Choice Based Optional Paper (CBOP) (1Theory + 1Practical)						
PAGG234			Practical in GIS	04	-	08
PAGG234			Watershed Management	04	-	
One of the following according to specialization from CCPP						
PAGG235 (A)					Practical in Climatology	04
PAGG235 (B)					Practical in Population and Settlement Geography	
Total Credits of Semester -III						**24**

Semester – IV

	Core Compulsory Theory Paper (CCTP)	Choice Based Optional Paper (CBOP)	Theory / Practical	Credit	Core Compulsory Practical Paper (CCPP)	Credit
PAGG241	Geography of India	-	-	-	-	04
PAGG242	Oceanography	-	-	-	-	04
PAGG243	Research Methodology	-	-	-	-	04
Choice Based Optional Paper (CBOP) (1Theory + 1Practical)						
PAGG244			Geography of Soils	04		04
PAGG245			Practical in Remote Sensing	04		
Core Compulsory Practical Paper (CCPP)						
PAGG246					Dissertation / Research Project	04
Total Credits of Semester - IV						**24**

M.A. / M.Sc.Geography,SyllabusforSemesterII

Subject:Geoinformatics I

Subject Code: PAGG 121 **No.ofCredits: 04**

LearningObjectives:

1. To introduce the fundamentals ofGeographical information system.
2. To prepare for the practical work with GIS System.

Learning Outcomes:

After the completion of the course, Students will be able to-

1. Students will understand basic concepts in Geoinformatics.
2. Students will able to carry out practical work in GIS Software's.
3. Students will able create a thematic maps and location maps of study area

Topics and Learning points

Unit – 1: Introduction to GIS 1.1 Definition, potential of GIS, concept of space& time 1.2 Spatial InformationTheory 1.3 History ofGIS 1.4 Objectives ofGIS 1.5 Elements of GIS, hardware&software requirements 1.6 GISApplications 1.7 GIS Tasks- input, manipulation, management, query &analysis,visualization	**tures06**
Unit – 2: Database 2.1 Spatial: spatial relationship, functional relationship, logical relationship 2.2 Non-spatial: nominal, ordinal, ratio andcyclic	**06**
Unit – 3: Data Models 3.1 Spatial: Geometric primitives, Raster, Vector, Quad tree tessellation, comparative overviewof raster and vector models, layers andcoverage 3.2 Non-spatial: DBMS- Advantages, conceptual models; Implementational models-hierarchical, network andrelational	**12**
Unit – 4: Structuring of Spatial Data 4.1 Digitizers: manual, semi-automatic &automatic 4.2 Editing error: detection & correction, topology building	**12**
Unit – 5: Data Analysis (I) 5.1 Attribute databases: operations fromalgebraic theory 5.2 Operations from set theory SQL: attributequery	
Unit – 6 : Data Analysis (II) 6.1 Spatial Databases: map algebra, grid Operations: Local,Focal 6.2 SQL: spatial query	

Reference Books:

- **Burroughs,P. A. and McDonnell,R.A. (2002):** Principles of Geographical Information System, Oxford UniversityPress.
- **George J. (2004):** Fundamentals of Remote Sensing, Universities Press Pvt. Ltd., Hyderabad.
- **Jensen, J. R. (2003):** Remote Sensing of Environment, An Earth Resource Perspective, Pearson Education Pvt. Ltd., NewDelhi.
- Kang- Tsung-Chang, Introduction to Geographical Information System, 2002, McGrawHill.
- **Lillesand, T. M. and Kiefer R. W. (2002):** Remote Sensing and Image Interpretation, John Wiley and Sons, NewDelhi.
- **Lo C. P. and Yeung, A.K.W. (2002):** Concepts and Techniques of Geographic Information System, Prentice Hall,India.
- **Paul A. Lonfley, Michel F. Goodchild, D J. Maguire and D W. Rhind, (2002):**Introduction to Geographic Information Systems and Science, John Wiley and SonsLtd.
- Fundamentals of Remote Sensing, A Canada Centre for Remote Sensing Remote Sensing Tutorial. https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/earthsciences/pdf/resource/tutor/fundam/pdf/fundamentals_e.pdf

Subject : Synoptic Climatology

Subject Code: UAGG122 (A) **No. of Credits: 04**

LearningObjectives:

1. To introduce the fundamentals ofSynoptic Climatology.
2. To learn the various weather phenomenon and their effects.

1. After the completion of the course, Students will be able to Students will understand basic concepts in Synoptic Climatology
2. Students will understand the weather phenomenon and their effects

Topics and Learning points

Unit – 1: Introduction toSynopticClimatology 1.1 Definition, Nature and Scope 1.2 Levels of Climatological Synthesis 1.3 Approaches (Analytical approach ,Synopticapproach)	**tures06**
Unit – 2: Weather reportingand analysis 2.1Observing,reporting, collectingandanalysisof weather data by IMD 2.2Synopticchartsand maps 2.3 Synopticscalemotion,lawsofmotion	**06**
Unit – 3: Tropical WeatherSystems 3.1Easterly Waves-formation and characteristics 3.2Tropical Cyclones (formation, life cycle, structure and dynamics) 3.3Thunderstorm(origin, structure and stages of development) 3.4 Tornadoes-development andoccurrence	**12**
Unit – 4: Extra-TropicalWeatherSystems 4.1 Airmassesand fronts 4.2AirmassesofNorthAmerica,EuropeandAsia 4.3Typesoffronts 4.4 Frontalweather,frontogenesisand frontolysis 4.5 Principal zonesoffrontogenesis 4.6 Rossbywaves,wavecyclone-formation,lifecycle, Idealizedweather	**12**
Unit – 5: WeatherPatterns 5.1Clouds-classification 5.2 Precipitationprocesses 5.3 Fog- formationandtypes 5.4 Heatandcoldwaves	
Unit – 6 : Weather Forecasting Types of weather forecasting 6.2 Methods of weather forecasting Role of satellites	

Unit – 7 : Application of Synoptic Climatology 7.1 Application in pollution studies 7.2 Marineactivities 7.3 Aviation 7.4 Disaster prevention and preparedness 7.5 Agriculture	

Reference Books:

- Barry,R.G.andPerry,A.H.(1973):SynopticClimatology:MethodsandApplications,MethuenandCo.Ltd.,London.
- Lutgens,FredericK.andTarbuck,EdwardJ.(2010):TheAtmosphere:AnIntroductiontoMeteorology,PearsonPrenticeHall,NewJersey.
- Navarra,J.G.(1979):Atmosphere,WeatherandClimate,W.B.SaundersCompany,Philadelphia.
- Petterson, S.(1969):IntroductiontoMeteorology, McGrawHill, NewYork.
- RamaSastry,A.A.(1984):WeatherandWeatherForecasting,PublicationsDivision,MinistryofInformationand Broadcasting,GovernmentofIndia,NewDelhi.
- Stringer,E.T.(1972):FoundationsofClimatology,W.H.FreemanandCompany,NewYork.

Subject: Population Geography

Subject Code: UAGG 122(B) **No.ofCredits: 04**

LearningObjectives:

1. To introduce the fundamentals of Population Geography.
2. To learn the various theories of population geography.

Learning Outcomes:

After the completion of the course, Students will be able to-

1. Students will understand basic concepts in population geography.
2. Students will understand various theories regarding population dynamics

Topics and Learning points

Unit – 1: Introduction Population Geography 1.1 Definitions 1.2 Nature andscope of PopulationGeography 1.3 Sources of population data (Census, nationalsamplesurvey,sampleregistrationsurvey,NFHS,DLHS)	**tures06**
Unit – 2: PopulationDynamics 2.1 Populationdistributionintheworld 2.2 Densityofpopulationinthe world 2.3 Determinatesofpopulationgrowth	**06**
Unit – 3: PopulationTheory 3.1 MalthusTheory 3.2 OptimumPopulationTheory 3.3 Demographic TransitionModel	**12**
Unit – 4: Fertility 4.1 Conceptsandmeasures of Nuptialityandfertility 4.2 Levelsandtrendsoffertilityin India 4.3 Determinantsoffertility 4.4Theoriesoffertility	**12**
Unit – 5: Mortality 5.1 Conceptofmortality&morbidity 5.2 Measuresofmortality 5.3 Mortalitylevelsinworld 5.4 Mortality trendsinIndia	
Unit – 6 : Migration 6.1 Definition,types(InternalandInternational) 6.2 Concept:refugee,brain-drainmigration 6.3 Determinantsandconsequencesofmigration. 6.4 Lee'sTheoryofMigration 6.5Push-pullfactorsofmigration	

Unit – 7 : PopulationComposition 7.1 Demographic 7.2 Social 7.3 Economic 7.4 Cultural	
Unit – 8 : PopulationDevelopment andPolicies 8.1 HumanDevelopmentIndex(HDI) 8.2 GenderDevelopmentIndex(GDI) 8.3 Relationbetweenpopulationanddevelopment 8.4 Populationpolicies inIndia 8.5 New PopulationpolicyofChina	

ReferenceBooks:

- **Agarwala,S.N.(1977):**India'spopulationProblems,TataMcGrawHillpublishingCo.Ltd. ,NewDelhi.
- **BoseAshiset.al.(1974):**PopulationinIndia'sDevelopmentVikasPublishingHouse,NewDelhi,1974.
- **ChandnaR.C.(1986):**GeographyofPopulationconcepts,DeterminantsandPatterns,KalyaniPublishers ,NewDelhi
- **ClarkeJ.I:**PopulationGeography,PergamonPress,Oxford,1973.
- **ClarkeJ.I. (Ed)(1984):**Geography and Population, Approaches and Applications,PergamonPress,Oxford
- **CrookNigel:**PrinciplesofPopulationandDevelopment,PergamonPress NewYork,1997.
- **GarnierB.J.(1970):**GeographyofPopulation,Longman, London
- **Pathak,K.B.andF.Ram,(1992):**Techniquesof demographicanalysis.Bombay:HimalayaPublishinghouse
- **SundaramK.V.andSudeshNangia(Ed)(1986):**PopulationGeography,HeritagePublications,Delhi
- **UNDP(2002):**HumanDevelopmentReport,Oxford,2002.
- **WoodsR.(1970):**PopulationAnalysisinGeography,Longman,London
- **ZelinskyWilbur(1966) :** AProloguetoPopulationGeographyPrenticeHall
- **MusmadeArjun,SonawaneAmitandJyotiramMore,**(2015):Population&SettlementGeography(Marathi)-DiamondPublicationPune.

Subject: Monsoon Climatology

Subject Code: PAGG 123(A) **No.ofCredits: 04**

LearningObjectives:

1. To introduce the fundamentals ofMonsoon Climatology.
2. To learn the mechanism of Monsoon wind and effects of monsoon .

Learning Outcomes:

After the completion of the course, Students will be able to-

1. Students will understand basic concepts in Monsoon Climatology
2. Students will understand relationship between Monsoon wind and associated weather phenomenon.
3. Students will able to forecast and predict the weather patterns.

Topics and Learning points

Unit – 1: Introduction Monsoon Climatology 1.1 Introduction and scope of Monsoon Climatology 1.2 Historical background and economic 1.3 Importance of monsoon	**tures06**
Unit – 2: OriginofMonsoon 2.1 Different concepts related to origin of Monsoon (Thermal concept, Flohns concept, Aerological concept) 2.1 The Asian Monsoon : East and South Asian Monsoon 2.3 Classical Theory of Indian Monsoon 2.4 Tibetan Plateau and Monsoon	**06**
Unit – 3: MonsoonModel 3.1 Driving mechanism 3.2 Monsoononnon-rotating androtating Earth 3.3 RealisticMonsoonModel 3.4 Normaltemperature,windandpressure, 3.5 Datesof onset and withdrawal of monsoonrainfall	**12**
Unit – 4: Regional AspectsofIndianMonsoon 4.1 Semi-permanent systems- heat low, Monsoontrough, 4.2 EasterlyJet,TibetanHigh	**12**
Unit – 5: Intra-seasonalVariation 5.1 Active and break period, depressions, troughoflowPressure 5.2 Mid-troposphericdisturbances,offshoreandonshore vortices 5.3 Effectoftopography	

Unit – 6 : InterannualVariation 6.1 Variabilityofsummermonsoonrainfall 6.2 MeteorologicalTeleconnections:(ENSO) 6.3 IndianOceanDipole(IOD) 6.4 NorthAtlanticOscillation(NAO) 6.5 WalkerCirculation 6.6 Roleofoceananduppperatmosphere	
Unit – 7 : Forecasting ofMonsoon 7.1 Differenttimescales 7.2 Factors of forecasting 7.3 Powerregressionandparametricmodel 7.4 Currentmonsoonforecasting systemofIndiaMeteorologicalDepartment MONEXand IIOE	

Reference Books:

- **Das, P. K.(1991):** Monsoons,National Book Trust,NewDelhi.
- **Fein, J. S. and Stephens, P.L. (1987):**Monsoons, John Wiley and Sons, New York.
- **Keshavmurty, K.N.(1992):**The Physics of Monsoons, Allied Publishers Limited, New Delhi.
- **Pant, G. B. and RupaKumar,K.(1997):**Climates of South Asia, John Wiley and sons,Chichester.
- **Rao,Y.P.(1976):**Meteorological Monograph, Meteorology No.1/1976, Southwest Monsoon, India Meteorological Department.

Subject: Geography of Rural Settlements

Subject Code: PAGG 123(B) **No.ofCredits: 04**

LearningObjectives:

1. To introduce the fundamentals of Geography of Rural Settlements
2. To learn hierarchy evolution types and patterns of rural settlement.

Learning Outcomes:

After the completion of the course, Students will be able to-

1. Students will understand basic concepts in rural settlement.
2. Students will know different types and pattern of rural settlement.

Topics and Learning points

Unit – 1: Introduction toGeography ofRuralSettlements 1.1 Definition 1.2 Evolutionofsettlements 1.3 Sequence of occupancy fromNeolithictomodernperiod 1.4 Historical, cultural and geographical aspects ofsettlementsreflectedinplacenames	**tures06**
Unit – 2: GrowthandDistribution 2.1 Site,situation,location 2.2 Various factors affecting onsettlementsiteandsituations 2.3 Dispersionandnucleation 2.4 Factorsaffectingdispersionandnucleation 2.5 Methods of the measuringdegree ofdispersion 2.6 Factors affecting growth ofsettlements 2.7 Systemoflanddivision 2.8 Water rightssystemofagriculture	**06**
Unit – 3: Theories ofRuralLandUse 3.1 Intensityof landuse 3.2 Labourcost 3.3 Marketingofproduct 3.4 VonThunen Theory 3.5 Ricardo Theory	**12**
Unit – 4: RuralEconomicActivities 4.1 Functionalanalysisofservicevillage andtradingCenter 4.2 Centrality and hierarchy of ruralservice centers 4.3 CentralPlaceTheory	**12**
Unit – 5: Morphogenesis ofRuralSettlementsandTransformation 5.1 Social 5.2 Cultural 5.3 Economicorganizationwithinvillages 5.4 Functionalgrowth 5.5 Socio-economic transformationinruralareas	

Unit – 6 : DemographicCharacteristics ofRuralSettlement 6.1 Age, Sex,Education,Occupation,Caste 6.2 Migration: causes &consequence ofmigrationinruralareas 6.3 Seasonalmigration 6.4 Commutingpatterns	
Unit – 7 : RuralHouse Types 7.1 Primitive, vernacular and modernhighrise 7.2 Physical,social,culturalandeconomicfactors 7.3 Size,functionaluseandarchitecturalstyle 7.4 Buildingmaterial	
Unit – 8 : RuralSettlementsinMaharashtra 8.1 Variouspatterns 8.2 House types and settlement patternsintheMaharashtra 8.3 Modernforms ofruralsettlements	

ReferenceBooks:

- **Alam,S.M.et.al.(1982):**SettlementSystemofIndiaOxfordandIBHPublicationCo.,NewDelhi.
- **ChisholmM.(1967):** RuralSettlementandLanduse.JohnWiley,NewYork.
- **Clout,H.D.(1977):**RuralGeography,Pergamon,Oxford.
- **Doniel,P.andHopkinson,M.(1986):**TheGeographyofsettlementOliver&Byod,Edinburgh.
- **Grover,N.(1985):**RuralSettlement:ACulturalGeographicalAnalysis.InterIndiaPublication,Delhi.
- **Hudson,F.S. (1976):**AGeographyofSettlements, MacdonaldandEvans, NewYork.
- **Ramchandran,H.(1985):**VillageclustersandRuralDevelopment.ConceptPublication,NewDelhi.
- **RaoR. N.(1986):**StrategyforIntegratedRuralDevelopment. B.R.Publication, Delhi.
- **Sen,L.K.(1972):**ReadingsinMicro-levelPlanningandRuralGrowthCenters,NationalInstituteof CommunityDevelopment,Hyderabad.
- **SrinivasM.N.(1968):**VillageIndia,AsiaPublicationHouse,Bombay.
- **WanmatiS.(1983):**ServiceCentersinRuralIndia,B.R.PublicationCorporation,Delhi.
- **MusmadeAH,SonawaneAE,MoreJC,(2015):**Population&SettlementGeography,(Marathi),DiamondPublication,Pune

Subject: Geography of Disaster Management

Subject Code: PAGG 124 **No.ofCredits: 04**

Learning Objectives:

1. To introduce the fundamentals of Disaster Management.
2. To learn the role of geographical factors in Disaster Management.
3. To introduce various mitigation strategies for disaster management.

Learning Outcomes:

After the completion of the course, Students will be able to-

1. Students will understand basic concepts in disaster management
2. Students will know relationship between geographical condition and disaster management
3. Students will get acquainted with standard operating procedure of disaster management.

Topics and Learning points

Unit-1 Introduction to Disaster Management 1.1 Concept and definition 1.2 Difference between hazard and disaster 1.3 Geographical Conditions and disasters 1.4 Classification of disasters	tures06
Unit-2 Basic Concepts in Disaster Management 2.1 Concept of Management 2.2 Aims and Objectives 2.3 Pre-Disaster Management 2.4 Post-Disaster management	06
Unit-3 Disaster management and measures 3.1 Phases of disaster management cycle 3.2 Importance of first aid 3.3 standard operating procedure of management on governmental level 3.4 Role of media in disaster management	12
Unit-4 Natural Disaster and management (Causes, effects and mitigation) 4.1 Earthquake 4.2 Volcano 4.3 Landslide 4.4 Tsunami 4.5 Cyclone 4.6 Flood	12
Unit-5 Man-made Disaster and management (Causes, effects and mitigation) 5.1 Deforestation 5.2 Forest fire 5.3 Soil Degradation 5.4 Terrorism 5.5 Major man-made disaster examples in India	

Unit-6 Technologies for Disaster Management 6.1 Application of Modern Technologies for the emergency communication 6.2 Application of remote sensing, GIS and GPS in disaster management	

Reference books

- Agarwal, A. and Narain S. (Ed) (1999): State of India's Environment. The Citizens Report, Centre for Science and Environment, New Delhi
- Bryant Edward (2000): Natural Hazards, Cambridge University Press
- Daly, H.E. (1996): Beyond Growth, Beacon Press, Boston
- Daly, H.E and Twonseed K.N. (Ed) (1993): Valuing the earth – Economics, Ecology and Ethics, MIT Press, London
- Dupont, R.R. Baxter, T.E. and Theodore, L. (1998): Environmental Management: - Problems and Solutions, CRC Press
- Hart M. G. (1986): Geomorphology, Pure and Applied, George Allen and Unwin,London
- Morrisawa M (Ed) (1994): Geomorphology and Natural Hazards, Elsevier, Amsterdam
- Singh Savindra (2000): Environmental Geography, ParagPustakBhavan, Allahabad
- Smith, K. (2001): Environmental Hazards: Assessing Risk and Reducing Disaster,Routledge
- Turk J. (1985): Introduction to Environmental Studies, Saunders, College Publication,Japan
- Saptarshi PG, More JC, Ugale VR, (2009): Geography and Natural Hazards, (Marathi), Diamond Publishing
- Musmade AH, More JC (2014): Geography of Disaster Management, (Marathi), Diamond Publication, Pune.

Subject: Practical in Surveying

Subject Code: PAGG 125 **No.ofCredits: 04**

LearningObjectives:

1. To introduce the fundamentals ofPractical in Surveying.
2. To prepare the plans and maps that is for the representation of the measured plot of the area.

Learning Outcomes:

After the completion of the course, Students will be able to-

1. Students will understand basic concepts in Practical in Surveying
2. Students will able to prepare the plans and maps of the measured area.

Topics and Learning points

Unit-1 Introduction to Disaster Management 1.1 Definitions andmethods 1.2 Benchmarks 1.3 Spotheights 1.4 Reducedlevels 1.5 Interpolation and contouring	tures06
Unit-2 Basic Concepts in Disaster Management 2.1 Various components and commonterms used in dumpy levelsurvey 2.2 Collimation method and Rise and Fall method 2.3 Profile drawing and blockcontouring	06
Unit-3 Disaster management and measures 3.1 Various components and commonterms used inTheodolite 3.2 Intersection method andTachometric method	12
Unit-4 Natural Disaster and management 4.1 Various components and commonterms used in TotalStation 4.2 Area and profiledrawing	12

Reference books

- **AsisSarkar (2015):** Practical Geography, A Systematic Approach, Orient BlackSwan
- **Duggal, S.K. (2013):** Surveying Vol. 2, McGraw Hill Publication, NewYork.
- **Kanetkar, T.P. and Kulkarni, S.V. (2010):** Surveying and Leveling Vol. II, Pune VidyarthiPublication,Pune.
- **Maslov, AV., Gordeev, A.V. and Batrakov, Yu.G. (1984):** Geodetic surveying, Mir Publishers,Moscow.
- **Rangwala, S.C. (2011):** Surveying and Leveling, Charotar Publishing HousePvt. Ltd. Anand, (Gujarat),India.
- **Punmia, B.C., Jain A. and Jain A. (2011):** Surveying, Vol. II. and III, Laxmi Publication - NewDelhi.

Subject: Practical of Statistical Techniques for Geography

Subject Code: PAGG 126 **No.ofCredits: 04**

LearningObjectives:

1. To introduce various techniques used in geography.
2. To learn and apply various statistical techniques for geographical problems .

Learning Outcomes:

After the completion of the course, Students will be able to-

1. Students will understand the different techniques used in geography.
2. Students will able to apply various statistical techniques for geographical problems in their research work. .

Topics and Learning points

Unit-1 Introduction to Statistical Techniques in Geography 1.1 Introduction and applications ofstatistical techniques in Geography 1.2 Types of statistics: descriptiveand inferentialstatistics 1.3 Geographicaldata Primary and secondarydata Spatial and temporaldata Discrete and continuousdata Grouped and ungroupeddata 1.4 Scales of measurement: nominal,ordinal, interval andratio	tures06
Unit-2 Descriptive Statistics 2.1 Introduction to descriptivestatistics 2.2 Central tendency: mean, mode,median 2.3 Dispersion: variance and standarddeviation 2.4 Skewness andkurtosis (Calculations of above parametersfor ungrouped and groupeddata)	06
Unit-3 Probability and Probability Distributions 3.1 Introduction toprobability 3.2 The Normal ProbabilityDistribution 3.3 The Binomial ProbabilityDistribution 3.4 The Poisson ProbabilityDistribution	12
Unit-4 Inferential Statistics 4.1 Introduction to inferentialstatistics 4.2 Population andsample 4.3 Hypothesis testing: Null andalternate hypothesis 4.4 The Chi-square test (Two samplecase) 4.5 Student's 't' test (Two sampletests) 4.6 ANOVA (Analysis of variance)/ F ratiotest	12

Unit-5 Correlation and Regression Analysis 5.1 Introduction to bi-variate correlationand regression 5.2 The product-moment correlationcoefficient 5.3 Significance testing in correlationanalysis 5.4 Linear regressionequation 5.5 Exponential regressionequation 5.6 Power-law regressionequation 5.7 Concept of residuals and explainedvariance	
Unit-6 Time Series Analysis 6.1 Introduction and definition of timeseries 6.2 Applications of time seriesanalysis 6.3 Components of timeseries 6.4 Calculation and plotting of movingaverages (3 and5) 6.5 Curve fitting by method of leastsquares	
Unit-7Fieldwork and Data Collection 7.1 Collection of primary and/or secondarydata by fieldwork or fieldvisit 7.2 Analysis of data by usingappropriate statistical technique 7.3 Reportwriting	

Reference Books:

- **AsisSarkar (2015):** Practical Geography, A Systematic Approach, Orient BlackSwan
- **David, E. (1989):** Statistics forGeographers.
- **Elhance, D.L., Elhance, V. and Aggarwal B.M. (2014):** Fundamentals of Statistics, KitabMahal,Allahabad.
- **Hammond, R. and McCullagh, P. (1978):** Quantitative Techniques in Geography, Clarendon Press. Oxford,London.
- **Karlekar, S. and Kale, M. (2006):** Statistical Analysis of Geographical Data, Diamond Publication,Pune.
- **Liendsor, J. M. (1997):** Techniques in Human Geography,Routledge.
- **Norcliffe, G.B. (1977):** Inferential Statistics for Geographers, Hutchinson,London.
- **Rogerson, P.A. (2015):** Statistical Methods for Geography, SAGE Publication,London.
- **Wheller, D., Shaw, G. and Barr, S. (2010):** Statistical Techniques in Geographical Analysis, David Fulton, Routledge, New York.
- **Yeats, M. H. (1974):** An Introduction to Quantitative Analysis in HumanGeography.