Savitribai Phule Pune University

(Formerly University of Pune)

Three Year B.Sc. Degree Program in Geography

(Faculty of Science & Technology)

T.Y.B.Sc. (Geography)

Choice Based Credit System Syllabus

To be implemented from Academic Year 2021-2022

Program Outcome: B.Sc. Geography

B. Sc. Geography program is designed to make the students able to understand land, people and their interactions. Their ability to understand the global and regional issues related to land cover and landuse in the context of sustainable development would be improved. As they are acquainted with survey techniques, environmental impact assessment, GIS, etc. their demand in the job market would certainly be improved. They would be well equipped with research methodology, integrated, systematic and regional approach in geographical studies and in turn their research aptitude and ability would be improved. The multi disciplinary knowledge gained in the program would develop their abilities to carry out problem oriented studies by integrating primary and secondary. Thus, they can have opportunities like independent consultants, workers of NGOs, employees in government and business sectors.

T.Y.B.Sc. (Geography) Choice Based Credit System Syllabus

To be implemented from Academic Year 2021-2022

Course Structure

F. Y. B. Sc. GEOGRAPHY

Year	Semester	Course Type	Course code	Course Name	Credit
1	1	Compulsory Course	GG 111	Introduction to Physical Geography – I (Geomorphology)	**2**
			GG 112	Introduction to Physical Geography - II (Geography of Atmosphere and Hydrosphere)	**2**
			GG 113	Practical's in Physical Geography	**1.5**
	2	Compulsory Course	GG 121	Introduction to Human Geography	**2**
			GG 122	Population and Settlement Geography	**2**
			GG 123	Practical in Human Geography	**1.5**

S. Y. B. Sc. GEOGRAPHY

Year	Semester	Course Type	Course code	Course Name	Credit
2	3	Compulsory Course	GG 231	Environmental Geography -I	**2**
			GG 232	Geography of Maharashtra (Physical)- I	**2**
			GG 233	Surveying- I (Practical)	**2**
	4	Compulsory Course	GG 241	Environmental Geography -II	**2**
			GG 242	Geography of Maharashtra (Human) -II	**2**
			GG 243	Surveying – II (Practical)	**2**

T.Y.B.Sc. Geography

Choice Based Credit System Syllabus

To be implemented from Academic Year 2021-22

Title of the Course: T.Y.B.Sc. Geography

Year	Sem.	Course Code	Paper	Course Name	Credit
3	5	GG 351	Discipline Specific Elective Course	Regional Geography of India-I	**2**
		GG 352	Discipline Specific Elective Course	Geography of Economic Activities-I	**2**
		GG 353	Discipline Specific Elective Course	Fundamentals of Tourism	**2**
		GG 354	Discipline Specific Elective Course	Geography of Soil-I	**2**
		GG 355	Discipline Specific Elective Course	Management of Natural Disasters	**2**
		GG 356	Discipline Specific Elective Course	Geoinformatics-I	**2**
		GG 357	Discipline Specific Elective Course	Techniques in Quantitative Analysis (Practical Paper -1)	**2**
		GG 358	Discipline Specific Elective Course	Field Techniques in Geography (Practical Paper -2)	**2**
		GG 359	Discipline Specific Elective Course	Techniques in Geomorphology (Practical Paper -3)	**2**

		GG 3510	Skill Enhancement Course	Research Methodology – I	**2**
		GG 3511	Skill Enhancement Course	Elementary Surveying	**2**
	6	GG 361	Discipline Specific Elective Course	Regional Geography of India-II	**2**
		GG 362	Discipline Specific Elective Course	Geography of Economic Activities-II	**2**
		GG 363	Discipline Specific Elective Course	Tourism Activities and Management	**2**
		GG 364	Discipline Specific Elective Course	Geography of Soil-II	**2**
		GG 365	Discipline Specific Elective Course	Management of Manmade Disasters	**2**
		GG 366	Discipline Specific Elective Course	Geoinformatics-II	**2**
		GG 367	Discipline Specific Elective Course	GIS Based Project Report Practical Paper -1)	**2**
		GG 368	Discipline Specific Elective Course	Maps and Mapping Techniques Practical Paper -2)	**2**
		GG 369	Discipline Specific Elective Course	Soil and Sediment Analysis Practical Paper -3)	**2**
		GG 3610	Skill Enhancement Course	Research Methodology – II	**2**
		GG 3611	Skill Enhancement Course	Total Station Surveying	**2**

Equivalence of T. Y. B. Sc. Geography Syllabus

June 2015 (As per 2013 Pattern)				New June 2021 (CBCS 2019 Pattern)		
Course	**Sem.**	**Paper**	**Title of Paper**	**Course**	**Sem.**	**Title of Paper**
Gg-331	III	Paper I	Fundamentals of Human Geography (Part-I)	GG-351	V	Geography of Economic Activities-I
Gg-332	III	Paper III	Geography of Travel and Tourism (Part I)	GG-353	V	Fundamentals of Tourism
Gg-333	III	Paper V	Fundamentals of Geo-informatics (Part- I)	GG-355	V	Management of Natural Disasters
Gg -334	III	Paper VII	Geography of India (Part I)	GG- 351	V	Regional Geography of India-I
Gg- 335	III	Paper IX	Geography of Soils (Part- I)	GG-354	V	Geography of Soil-I
Gg- 336	III	Paper XI	Fundamentals of Geo-informatics (Part- I)	GG 365	VI	Management of Manmade Disasters
Gg-341	IV	Paper II	Fundamentals of Human Geography (Part-II)	GG-361	VI	Geography of Economic Activities-II
Gg-342	IV	Paper IV	Geography of Travel and Tourism (Part-II)	GG-363	VI	Tourism Activities and Management
Gg- 343	IV	Paper VI	Fundamentals of Geo-informatics (Part-II)	GG- 356	V	Geoinformatics-I
Gg -344	IV	Paper VIII	Geography of India (Part- II)	GG-361	VI	Regional Geography of India-II
Gg- 345	IV	Paper X	Geography of Soils (Part II)	GG-364	VI	Geography of Soil-II
Gg-346	IV	Paper XII	Fundamentals of Geo-informatics (Part II)	GG- 366	VI	Geoinformatics-II
Gg- 347	Annual	Practical-I	Map Analysis and Field Work	GG-358	V	Field Techniques in Geography
				GG-368	VI	GIS Based Project Report
Gg-348	Annual	Practical-II	Techniques of Spatial Analysis	GG-368	VI	Maps and Mapping Techniques
				GG-357	V	Techniques in Quantitative Analysis
Gg -349	Annual	Practical-III	Techniques in Geomorphology and Soil Analysis	GG-359	V	Techniques in Geomorphology
				GG-369	VI	Soil and Sediment Analysis

SAVITRIBAI PHULE PUNE UNIVERSITY

Geography T.Y.B.Sc.

(Credit System, 2019 Pattern)

Revised Syllabus (From June-2021)

Semester-V

GG 351: Regional Geography of India-I

No. of Credits: 02 **No. of Periods: 30**

Objectives:

1. To understand administration and physical divisions of India.
2. To analyze the natural resources, the importance in the regional development and its necessity of conservation and management.
3. To sensitize the students with India's natural resources and their planning in current scenario.

Course Outcome :

1. The students should be well versed with major physiographic divisions of India.
2. They can be able to understand the importance of the Indian Indian River systems in the context of agriculture and settlements, both rural and urban.
3. Generalsed knowledge of different climatic conditions in different climatic region of India.
4. Integrated knowoledge of types of Soils, its distribution and relationsip with climate and other factors.
5. Understanding of unique features associted with Origin and Mechanism of monsoon.

Sr. No.	Topic	Sub-Topic	Learning Points	Periods
1	Introduction	Geographical Information of India	1. Location and Extent 2. Historical Background 3. India's frontiers 4. India's Political Division	07
2	Physiography	Major Physical Divisions of India	1. Himalayan Mountainous Region 2. Northern Plain Region 3. Peninsular Plateau 4. Coastal Plains 5. Islands	08
3	Drainage	A. The Himalayan River System B. The Peninsular River System	1. The Indus , The Ganga , The Brahmaputra 2. East Flowing Rivers- Mahanadi, Godavari, Krishna, Kaveri. 3. West Flowing Rivers- Narmada & Tapi	07

4	Climate, Soil & Natural Vegetation	A. Climate B. Soil C. Natural Vegetation	1. Monsoon: Origin and Mechanism. 2. Various Seasons and weather associated with them 3. Types of Soils and its distribution 4. Soil degradation and conservation 5. Types of Natural Vegetation and its Distribution	08

Reference Books:

1. Alka Gautam (2009): Geography of India, Sharada Pustak bhawan, University Road, Allahabad – UP.
2. Deshpande C.D: India-A Regional Interpretation Northern Book Centre, New Delhi.1992.
3. Farmer, B.H.: An Introduction to South Asia. Methuen, London, 1983.
4. Khullar, D.R. (2009): India: A Comprehensive Geography, Kalyani Pub., New Delhi.
5. Majid Husain (2014): Geography of India, McGraw Hill Education (India) Private Education, New Delhi
6. P. G. Saptarshi, J. C. More, V. R. Ugale & A. H. Musmade: A Geographical Region of India :Diamond
7. Sharma TC and Coutinho O (2005): Economic and Commercial geography of India, Vikas Publishing House ltd., New Delhi-14
8. Singh, R.L.: India: A Regional Geography. National Geographical Society. India, Varanasi, 1971.
9. Spate, O.H.K. and Learmonth, A.T.A.; India and Pakistan - Land, People and Economy Methuen & Co.,London, 1967.
10. Tiwari, R.C. (2010): Geography of India, Prayag Pustak Bhawan, Allahabad.

SAVITRIBAI PHULE PUNE UNIVERSITY
Geography T.Y.B.Sc. (Credit System)
Revised Syllabus (From June-2021)
Semester: V
GG 352: Geography of Economic Activities-I

Objectives:

1. To acquaint the students of various economic activities
2. To make students aware of the importance of natural resources and economic activities
3. To understand the applications of various theories in Economic activities

Course Outcame :

1. Conceptual understanding of economic activities and their classification.
2. Impact of physical, climatological, biological, economic and technological factors affecting on economic activity.
3. Application of the knowledge of natural and manmade resources at national level for rsource development at local level.
4. Ability to understand the role of energy resources in economic activities and to inerpret global energy crisis in the context of Climate Change.
5. Broad understanding of various theories and models so that their application can be possible.

No. of Credits: 02 **No. of Periods: 30**

Sr. No.	Topic	Sub-Topic	Learning Points	Periods
1	Introduction to Economic Activities	Definition, Classification and Concepts.	1. Types of Economic Activities: Primary, Secondary, Tertiary, Quaternary and Quinary with Examples 2. Pre and Post Industrialization development of Economic Activities	06
2	Determinants of Economic Activities	Importance and its effect on economic activities	1. Physical factors 2. Climatological factors 3. Biological factors 4. Economic Factors 5. Technological factors	08
3	Resources	Classification & Distribution	1. Resource Classification, Natural and Manmade resources. 2. Significance of Land, Labour and Capital in Economic Activities. 3. Major Resource Planning policy of Govt. of India.: Water and Forest 4. Role of Energy Resources in Economic Activities and Global Energy Crisis	08

4	Theories and Models of Economic Activities	Theories, Models and its application in Economic Activities	1 Christaller's Central Place Theory 2 Weber's Model of Industrial Location 3 Flow Theory and Network Analysis 4 Indices of Network Analysis	08

Reference Books:

1. Alexander, J.W. (1977): Economic Geography, Prentice Hall of India Pvt. Ltd., New.
2. Chorley, R.J. and Haggett, P. (1970): Socio Economic Models in Geography, Concept publishing Company Pvt. Ltd., New Delhi.
3. Garnier, B.J. and Delobez, A. (1979): Geography of Marketing, Longman. Hartshorne, T.A. and Alexander, J.W. (2010): Economic Geography, PHI Learning, New Delhi
4. Kanan Chatterjee (2015): Basics of Economic Geography. Knox, P., Agnew, J. and McCarthy, L. (2008): The Geography of the World Economy, Hodder Arnold, London.
5. Lloyd, P. and Dicken, B. (1972): Location in Space: A Theoretical Approach to Economic Geography, Harper and Row, New York Methuen.
6. Mitra, A. (2002): Resource Studies, Sreedhar publishers, Kolkata.
7. Patil, S.G., Suryawanshi, R.S., Pacharne, S. and Choudhar, A.H. (2014): Economic Geography, AtharavPrakashan, Pune.
8. Ray, P.K. (1997): Economic Geography, New Central Book Agency (P) Ltd., Calcutta.
9. Majid Husain (2016) Models in Geography, Rawat Publication, New Delhi

SAVITRIBAI PHULE PUNE UNIVERSITY

Geography T.Y.B.Sc. (Credit System, 2019 Pattern)

Revised Syllabus (From June-2021)Semester: V

GG 353: Fundamentals of Tourism

No. of Credits: 02 **No. of Periods: 30**

1. To know the fundamental concepts of Geography of Tourism.
2. To understand tourism and its various types and its importance in Indian economy.
3. To make aware about the recent trends in tourism and changing nature of tourism in pandemic period.
4. To sensitize the students with positive and negative impact of tourism.

Course Outcome :

1. Simple understanding of tourism, its stakeholders, role in national and local economies, envionmental impact, etc.Knowledge of various types of tourism i.e. nature tourism, ecotourism, cultural tourism, medical tourism and pilgrimage tourism.
2. Acquire knowledge about recent trends in tourism.
3. Understand the positive and negative impact of tourism on economy, environment and society.

Sr. No.	Topic	Sub-Topic	Learning Points	Periods
1	Introduction to Tourism Geography	Nature and Scope	1. Definition and Concepts of Tourism 2. Nature and Scope 3. Concepts of Recreation and leisure	07
2	Types of Tourism	Types of Tourism	1. Nature Tourism 2. Cultural Tourism 3. Medical Tourism 4. Pilgrimage Tourism 5. Geotourism	08
3	Recent trends in tourism	Recent trends in tourism	1. Changing nature of International Tourism in Pandemic Periods 2. Role of MICE (Meetings, Incentives, Conventions and Exhibitions) 3. Agro-tourism 4. Sustainable Tourism	08
4	Impact of Tourism	Positive & Negative Impact of Tourism	1. Economy 2. Environment 3. Society	07

Reference Books

1. Bhatia A.K. (1996): Tourism Development: Principles and Practices, Sterling Publishers, New Delhi
2. Bhatiya, A.K.(1991): International Tourism - Fundamentals and Practices, Sterling, New Delhi
3. Chandra, R.H.(1998): Hill Tourism: Planning and Development, Kanishka Publishers, New Delhi,
4. Hunter, C and Green, H.(1995): Tourism and the Environment: A Sustainable Relationship, Routledge, London,
5. Inskeep, E. (1991): Tourism Planning: An Integrated and Sustainable Development Approach,Van Nostrand and Reinhold, New York,
6. Kaul, R.K. (1985): Dynamics of Tourism & Recreation. Inter-India, New Delhi.
7. Kaur, J.(1985): Himalayan Pilgrimages & New Tourism Himalayan Books, New Delhi,
8. Lea, J.(1988): Tourism and Development in the Third World, Routledge, London,
9. Milton, D. (1993): Geography of World Tourism Prentice. Hall, New York,
10. R. and Prasad, K. (2005): Tourism Geography, Shree Publishers & Distributors, New Delhi.
11. Robinson, H.A. (1996): Geography of Tourism. Macdonald and Evans, London,
12. Sharma, J.K. (ed.)(2000): Tourism Planning and Development - A new perspective, Kanishka Publishers, New Delhi,
13. Shaw, G. and Williams, A.M.(1994): Critical issues in Tourism-A Geographical Perspective, Oxford: Blackwell,
14. Sinha P. C. (ed.) (1998): Tourism Impact Assessment, Anmol Publishers, New Delhi,
15. Suryawanshi, R.S. (2012): Assessment of Potential for Eco- Tourism, Northern Thane District, Maharashtra. Lap Lambert Academic Publishing, Germany
16. Theobald, W. (ed.)(1994): Global Tourism: The Next decade, Oxford, Butterworth, Heinemann, Oxford,
17. Voase, R.(1995): Tourism: The Human Perspective Hodder& Stoughton, London

Savitribai Phule Pune University, PuneT.Y.B.Sc. Geography Syllabus (Credit System, 2019 Pattern)

Revised Syllabus (From June-2021)Semester-V

Gg: 354: Geography of Soil-I

No. of Credits: 02 **No. of Periods: 30**

Objectives:

1) To acquaint the students with concepts in Soil Science.
2) To familiarize the students with the importance of soil science in Geography.
3) To develop an understanding of the origin, classification, and distribution of soils and their relationship to people and food production.
4) To develop an understanding of the environmental impact of soil use.

Course Outcome :

1. Brief knowledge of soils as the result of various natural and cultural processes.
2. Ability of understanding soil profile in major soil types according to vertical movement of moisture.
3. Understand vertical structure of soil and soil horizons with their physico-chemical characters.
4. Acquire knowledge about the physical and chemical properties of soil.
5. The course will enhance the knowledge of the students about soil-climate relationship and soil as a resource.

No.	**Topic**	**Sub topic**	**Learning Points**	**Periods**
1	Introduction	Definition, Nature & Scope, Approaches.	A. Definition of Soil B. Definition of Soil Geography (Pedology) C. Nature & Scope of Soil geography D. Approaches to The Study of Soil Geography i. Pedagogical Approach ii. Edapological Approach E. Importance of soil studies in Geography.	07

2	Soil Formation & Soil Profile	Processes, Factors responsible and Soil Profile	A) Processes of Soil Formation i. Weathering & Pedogenesis Processes ii. Carbonation iii. Humification iv. Laterisation v. Calcification vi. Podzolisation B) Factors Responsible For Soil Formation i. Parent Rock ii. Precipitation iii. Temperature iv. Biological Factors: Plants, Animals & Micro Organisms C) Soil Profile: Meaning & Horizons.	08
3	Soil Properties	Soil Complex, Physical, Chemical, and Biological Properties	A) Soil Complex meaning and Soil Complex-Components B) Properties of Soil: 1)Physical Properties a) Texture and Structure b) Soil Moisture c) Temperature d) Color e) Porosity f) Density (Particle & Bulk density) g) Compaction h) Soil water relationship 2) Chemical Properties a) Soil PH and NPK b) Soil Solution c) Salinity d) Soil clays e) Cation exchange f) Humus 3) Biological Properties a) Soil organic matter b) Soil organism	08
4	Soil Water Relationship	Terms related to Soil Water Relationship	A) Soil Water Relationship B) Terms related to Soil Water Relationship: a) Field Capacity b) Wilting point in soil c) Soil water or Soil moisture d) Irrigation efficiency B) Limiting Soil moisture condition C) Soil-Water-Air Relationship D) Measurement of soil moisture content	07

Reference Books:

1) Ecology and Environment, P.D.Sharma, Rastogi Publications, Meerut.
2) Watershed management, Madan Mohan Das, PHI Private LTD. New Delhi.
3) Soil Science Simplified, Khonke and Franzmeier, Waveland Press, Pune.
4) Weathering Pedology and Geo-morphological Research, Birkland P., Oxford University Press, New York.
5) Hydrology, Madan Mohan Das, PHI Private LTD. New Delhi.
6) Fundamentals of Soil Science, Foth, Henry.D., Wiley Books.
7) A text book of Soil Science: Biswas T.D.&Mukharji ; Tata Mc Grow Hill Mumbai
8) A Text Book of Soil Science: Daji J.A. ; Tata Mc Grow Hill, Mumbai
9) Soil Geography: Sarkar Himanshu ; (Nikhil) K.D. Kolkatta.
10) Soil Geography, Vinayak Kale, Himalayan Publ. House, Mumbai.

SAVITRIBAI PHULE PUNE UNIVERSITY
Geography T.Y.B.Sc. (Credit System)
Revised Syllabus (From June-2021)
Semester-v
GG 355: Management of Natural Disaster

Objectives:

1. To make students understand concept of disaster management.
2. To acquaint students with principles of disaster management.
3. To understand causes and effects of disasters.

Course Outcome :

1. Understand the concept of disaster management and its application at local level.
2. Gain the knowledge about the Geo-physical disasters in India.
3. Understand the causes, impact and distribution of atmospheric disasters in India.
4. Acquire the knowledge of responses and mitigation measures for disasters

No. of Credits: 02 **No. of Periods: 30**

Sr. No.	Topic	Sub-Topic	Learning Points	Periods
1	Introduction to Disaster Management	Definition and Concepts.	1 Disaster, Hazards, Risk, Vulnerability, Capacity 2 Classification of Disasters 3 Disaster Management cycle	6
2	Geo-physical disaster in India	Geo-physical disaster	1 Causes, Impact, Distribution 2 Landslide, Earthquake, Tsunami, changing sea level 3 Disaster Mapping in India	8
3	Atmospheric Disaster in India	Atmospheric Disaster	1 Causes, Impact, Distribution 2 Flood, Drought and tropical Cyclones 3 Disaster Mapping in India	8
4	Disaster Risk Reduction	Response and Mitigation to Disasters:	1 Mitigation and Preparedness: Survival Kit, Medicinal Kit, Warning and Alarm System 2 Community Based Disaster Management 3 Do's and Don'ts during and Post Disaster 4 Role and Responsibilities of GO's and NGO's 5 Application of RS and GIS in disaster planning and management	8

Reference Books:

1. Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
2. Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.

3. Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.
4. Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi.Chapter 1, 2 and 3
5. Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
6. Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.
7. Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht.
8. Singh Jagbir (2007) "Disaster Management Future Challenges and Oppurtunities", 2007.Publisher- I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).

SAVITRIBAI PHULE PUNE UNIVERSITY

Geography T.Y.B.Sc. (Credit System)

Revised Syllabus (From June-2021)

Semester: V

GG 356: Geoinformatics -I

Objectives:

1. To acquaint the students with new concepts and approaches in Geography.
2. To familiarize the students with the wide application fields in Geography

Course Outcome :

1. Understand the concept, advantages and importance of Geoinformatics in
2. the context of recent trends in geography.
3. Gain knowledge about the various data sources used in GIS and their utility.
4. Ability of editing and attribute linking in GIS for specific purposes in
5. geographical and other studies.
6. Application of query analysis techniques in GIS for topographic analysis

No. of Credits: 02 **No. of Periods: 30**

Sr.No.	Topic	Sub-Topic	Learning Points	Periods
1	Introduction to Geoinformatics	Definition of Geoinformatics and its importance and History of GIS	1. Definition of Geoinformatics 2. Scope and Importance of Geoinformatics 3. History of GIS 4. Components of GIS 5. Functions of GIS:GIS tasks-Input, Manipulation, Management, Query analysis, Visualization	08
2	Sources and types of GIS data	A. Sources and Types B. Data Models	1. Toposheets, Surveying, Aerial photographs, Satellite data and images 2. Data types-Spatial and Non spatial 3. Raster data and their characteristics 4. Vector data and their characteristics	07
3	GIS data editing And attribute data linking	Relationship between entities attribute data linking	1. Topology building topological errors, Locational errors, edge matching 2. Attribute data linking	07
4	Spatial and non-spatial data analysis	Based on spatial and non-spatial data	1. Query analysis-Spatial, Non spatial, Spatiotemporal, dissolve, Overlay analysis, merge, buffer analysis, 2. TIN Spatial analysis, Multicriteria analysis, Overlay analysis, 3. Topographic analysis (DEM and DTM)	08

Reference Books:

1. Kang-tsung Chang (2003) Geographic Information Systems, Tata McGraw Hill, New Delhi

2. Star J, and J. Estes, (1994), Geographic Information Systems: An Introduction, Prentice Hall, New Jersey.

3. Michael F. Goodchild and Karen K. Kemp (1990) Introduction to GIS, National Center for Geographic Information and Analysis, University of California, Santa Barbara.

4. Clarke, Keith C. (1999) Getting Started with Geographic Information Systems, Prentice Hall, New Jersey
5. Lo Albert, C.P., and Young, K.W (2003) Concepts and Techniques of Geographical Information Systems, Prentice Hall of India Pvt. Ltd., New Delhi.
6. Williams J. (1995): Geographic information from space, John Wiley and Sons, England,
7. DeMers Michel N.(2000): Geographic Information Systems, John Wiley and Sons.

SAVITRIBAI PHULE PUNE UNIVERSITY
Geography T.Y.B.Sc. (Credit System)
Revised Syllabus (From June-2021)
Semester: V
GG 357: Techniques in Quantitative Analysis (Practical Paper-1)

Objectives:

- To familiarize the students with statistical analysis and its applications in Geography

Course Outcome :

1. Understanding the significance of statistical analysis and its application in geography.
2. Ability to crate proper database and analyze the same for socioeconomic and physiographic studies in geography
3. Recognize the importance and application of Statistics in Geography
4. Interpret statistical data for a holistic understanding of geographical phenomena.
5. Knowledge of different types of sampling methods.
6. Skill for classification, tabulation and graphical representation of data for gaining knowledge about correlation

No. of Credits: 02 **No. of Periods: 30**

- **Each Practical batch will be comprised of 12 students**

Sr. No.	Topic	Sub-Topic	Learning Points	Periods
1	Geographical data	Nature Scales of measurement	1. Spatial and Temporal 2. Discrete and Continuous data 3. Grouped and Ungrouped data 4. Nominal, ordinal, Interval and ratio scales	04
2	Statistical data	Frequency distribution	1. Tally marks and frequency table 2. Frequency histogram, polygon and curve 3. Cumulative frequency and Ogive curves	04
3	Central Tendency	Measures of central tendencies	1. Meaning and description of central tendencies.- Mean, Median, Mode 2. Calculation of Mean, Median, Mode for ungrouped and grouped data.(2 Examples)	04

4	Dispersion	Measures of dispersion	Mean deviation, absolute deviation, variance, Standard deviation and coefficient of variation.	04
5	Population and sample analysis	Population and samples	1. Definition of population and sample. Meaning of unbiased random sample. 2. Methods of sampling: Random, Systematic and stratified	04
		Introduction to hypothesis	1. Meaning and definition of: 1. Null and alternative hypothesis 2. Level of significance (Rejection level) 3. Degrees of freedom 4. Parametric and non-parametric tests	04

Note:

1. Use of map stencils, log tables, statistical tables and calculators is allowed at the time of examination.
2. Journal completion by the student and the certificate of completion by the practical in charge and the` Head of the department is compulsory.
3. Candidate without a certified journal should not be allowed for the practical examination.

6	Bivariate analysis	Hypothesis testing Correlation and Regression	1. Application of following tests: 1. Chi squared test (one way only) 2. Student's t test (comparison of sample means) 3. Concept of bivariate correlation and regression. 4. Meaning of coefficient of correlation. 5. Calculation of Pearson's product moment 6. Correlation coefficient (two examples) 7. Spearman's rank order correlation coefficient. (Two examples). 8. Calculation, plotting and interpretation of Simple regression equation (two examples).	06

Reference Books:

1. Ebdon David, 1989, Statistics for Geographers
2. S. N. Karlekar and M. Kale (2006) : Statistical analysis of geographical data, Diamond Publication, Pune 3. King, 1975, Statistical Geography
3. Norcliffe G.B. (1977). Inferential statistics for Geographers (Hutchinson, London)
4. Rogerson P.A. (2001). Statistical methods for Geography (SAGE pub., London, New Delhi)

SAVITRIBAI PHULE PUNE UNIVERSITY

Geography T.Y.B.Sc. (Credit System)

Revised Syllabus (From June-2021)

Semester-V

Course No: GG 358: Field Techniques in Geography (Practical Paper-2)

No. of Credits: 02 **No. of hours: 30**

Objectives:

1. To acquaint the students with field techniques in Geography
2. To familiarize the students with identification of rocks and minerals in field.

Course Outcome :

1. Understand the role, value and ethics of fieldwork.
2. Gain knowledge about various methods of geographical data collection.
3. Develop an idea about various keys to recognize minerals.
4. Understand the various keys to recognize rocks and also to study selected specimens of rocks.

- **Each Practical batch will be comprised of 12 students**

Unit No.	Unit	Sub-Unit	No. of Hrs.
1	Fieldwork in Geographical Studies	1. Fieldwork in Geographical Studies- Role, value and ethics of fieldwork 2. Defining the field and identifying the case study: Rural/ Urban / Physical / Human / Environmental 3. Field Techniques-Merits, Demerits and Selection of the appropriate techniques for Rural/Urban / Physical / Human / Environmental Study	07
2	Fieldwork techniques in Human Geography	1. Methods of collection of geographical data in the field: Observation, Interview, Recording, Sketching, Measuring, Sampling, Questionnaire, Survey Map Reading, Photo Reading, Documentary Method 2. Essentials equipment for the fieldwork: Stationary, Field Compass, Binoculars, Maps, Excavation Tools, Measurement equipment, weather instruments, Camera, Audio/Video recorders, Aerial photographs, Aneroid cell phone for Google maps and Google Earth search, etc.	08

3	Fieldwork Techniques in Physical Geography Part I : Identification of Minerals	1. Keys to recognizing minerals: i) Luster ii) Hardness iii) Colour iv) Streak v) Cleavage vi) Fracture vii) Specific gravity. 2. Study of selected specimens of minerals: Bauxite, Borax, Calcite, Diamond, Dolomite, Graphite, Gypsum, Haematite, Hornblende, Kaolinite, Limonite, Magnetite, Pyrite, Quartz, Talc, Topaz, Zircon 3. Observation and identification of minerals in the field	08
4	Fieldwork Techniques in Physical Geography Part II: Identification of rocks	1. Keys to recognizing rocks: i)Texture ii) Structure iii) Colour iv) Acid test v) Mineral content 2. Study of selected specimens of rocks: Basalt, Coal, Conglomerate, Gabbro, Gneiss, Granite, Limestone, Marble, Pumice, Quartzite, Sandstone, Schist, Slate, Shale 3. Observation and identification of rocks in the field	07

Note:

1. Use of map stencils, log tables, statistical tables and calculators are allowed at the time of examination.
2. Completion of journal and certification by Practical-in-charge and Head of the Department is must.
3. Candidate without certified journal should not be allowed for the practical examination.

Reference Books:

1. Asis Sarkar (2015), Practical Geography, A Systematic Approach, Orient Black Swan
2. Singh, R.L., (2005). Elements of Practical Geography. Kalyani Publishers, New Delhi. India.
3. Singh R.L. and Singh R.P.B., (1999), Elements of Practical Geography, Kalyani Publishers.
4. Robert H. Stoddard (1982), Field Techniques and Research Methods in Geography Kendall/ Hunt Publishing Company.
5. Richard Phillips and Jennifer Johns, (2012), Fieldwork for Human Geography, Sage Publication

SAVITRIBAI PHULE PUNE UNIVERSITY
Geography T.Y.B.Sc. (Credit System)
Revised Syllabus (From June-2021)
Semester-V

Course No: GG 359: Techniques in Geomorphology-Practical Paper-3

No. of Credits: 02 **No. of hours: 30**

Objectives:

1. To introduce students with techniques in geomorphology.
2. To apply geomorphic techniques to produce new insight in geomorphology.
3. To make use of geomorphic analysis to arrive at conclusions about landforms.
4. To acquaint students with the role of geomorphic techniques in geography as the scientific method for understanding landforms.

Course Outcome :

1. Prepare the slope profile and the block diagram.
2. Understand the stream ordering methods of Stahlers and Harton and calculate the stream orders and bifurcation ratio.
3. Understand the relief analysis of drainage basin and prepare the slope map, relative relief map and absolute relief map.
4. Acquire knowledge about drainage network analysis.

- **Each Practical batch will be comprised of 12 students**

Unit No.	Unit	Sub-Unit	No. of Hrs.
1	Relief analysis	1. Profiles i) Cross Profile: Drawing and description of a regional cross profile with proper vertical exaggeration ii) Longitudinal Profile: Drawing and description of longitudinal profile of a river iii) Construction of superimposed, projected and composite profiles 2. Relief analysis i) Map showing absolute and relative relief by Smith's method ii) Slope map by grid method iii) Slope map by Wentworth's method	10
2	Drainage basin analysis	1. Demarcation of drainage basin from SOI toposheet and calculation of drainage area by graphical method 2. Stream ordering by Strahler's method 3. Stream number counting according to each order 4. Measurement of basin area under each order by graphical method	10

3	Drainage network analysis	1. Measurement of stream lengths and calculation of basin mean Length of each order. 2. Calculation of drainage density, stream frequency and bifurcation ratio 3. Stream order and number relationship (Calculation and plotting) 4. Stream order and length relationship (Calculation and plotting) 5. Stream order and area relationship (Calculation and plotting)	10

Note:

1. Use of map stencils, log tables, statistical tables and calculators are allowed at the time of examination.
2. Completion of journal and certification by Practical-in-charge and Head of the Department is must.
3. Candidate without certified journal should not be allowed for the practical examination

Reference Books:

1. Aackombe, R. V. and Gardiner, V. (1983): Geomorphological Field Manual
2. Chorley, R. J., Schumm, S. A. and Sugden, D.E. (1984) : Geomorphology, Methuen, London
3. Goudie, A. (1990): Geomorphological Techniques, Unwin Hyman, London
4. Hart, M. G. (1986): Geomorphology, Pune and Applied George Allen and Unwin
5. Kale, V. S. and Gupta, A. (2001): Introduction to Geomorphology, Orient Longman, Culcutta
6. King, C.A.M. (1966): Techniques in Geomorphology, Edward Arnold, London

SAVITRIBAI PHULE PUNE UNIVERSITY
Geography T.Y.B.Sc. (Credit System)
Revised Syllabus (From June-2021)
Semester-V
Course No: GG 3510: Research Methodology-I
(Skill Enhancement Course)

No. of Credits: 02 **No. of hours: 30**

Objectives:

1. To develop the understanding of the basic concept of research
2. To develop the understanding of the basic framework of sampling and data collection
3. To develop the understanding of various sampling methods and techniques

Course Outcome :

1. Understand the concept, objective and characteristics of research.
2. Learn the concept, purpose and characteristics of research design.
3. Understand the research problem and techniques involved in defining problem.

Topic No.	Topic	Sub-Topic	Periods
1	Introduction to Research Methodology	i. Meaning and objectives of research ii. Characteristics of Research iii. Types of Research iv. Various steps in Research Process	10
2	Research Design	i. Introduction of Research Design ii. Purpose of Research Design iii. Characteristics of Good Research Design	10
3	Research Problem	i. Definitions of the Research Problem ii. Identification of a Research Problem iii. Technique involved in defining a problem	10

References

1. Montello Daniel R. and Sutton Paul C. (2006) – Introduction to scientific research
2. Methods if Geography. By Saga Publication
3. Kothari, C. R. (2004) – Research Methodology -Methods and techniques, New Age.
4. Mishra, H.N. and Sing, V.P. (1998)- research Methodology in Geography, Rawat Publication
4. Clifford, N. Fresh S, Valentine, G. (2010) - Key Methods in Geography , Saga
5. Publication
5. Gregory , K. J. (2000) – The changing Nature of Physical Geography, Arnold, London
6. Gomez basil and Jones, III John Paul (editor) (2010) – Research Methods in geography : A Critical, Wiley – Blackwell
7. Harvey, David (1971) – Explanation in Geography, Edward Arnold , London
8. Chorley, R. J. and P. Hagg-tt(ed) (1967) – Models in Geography , Methuen

SAVITRIBAI PHULE PUNE UNIVERSITY
Geography T.Y.B.Sc. (Credit System)
Revised Syllabus (From June-2021)
Semester-V
GG 3511: Elementary Surveying
(Skill Enhancement Course)

No. of Credits: 02 **No. of Periods: 30**

Objectives:

1. To understand various techniques in surveying.
2. To analyses the principles and various methodologies involved in surveying.
3. To generate the drawings using advanced surveying equipment & application software.
4. To sensitize the students with advanced surveying equipment.

Course Outcome :

1. Acquire the knowledge of surveying.
2. Knowledge and interaction of different types of surveying instruments like plane table surveying, prismatic compass surveying, dumpy level surveying and theodolite surveying.
3. Understand recent surveying instruments like drone, total station and DGPS survey.
4. Gain knowledge about instruments, characteristics, functions and arts of total station.
5. Understand handling and setting of total station instrument.

Sr. No.	Topic	Learning points	Periods
1	Introduction of surveying	a. Introduction of surveying b. Definition and types of surveying c. Instruments used in surveying d. Methods of surveying e. Importance and Applications of surveying	10
2	Types of Surveying	a. Plane Table surveying - Introduction, Functions and methods b. Dumpy level surveying- Introduction, Functions and methods c. Theodolite surveying Introduction, Functions and methods d. Recent surveying instrument – Drone, Total Station , DGPS survey	10
3	Introduction to Total Station	a. Introduction to Total Station instrument b. Characteristics of Total Station instrument c. Functions performed by Total Station instrument d. Parts of Total Station instruments e. Handling and setting up of a Total Station instrument	10

Reference:

1. Asis Sarkar (2015): Practical Geography, A Systematic Approach, Orient Black Swan
2. Duggal, S.K. (2013): Surveying Vol. 2, McGraw Hill Publication, New York.
3. Kanetkar, T.P. and Kulkarni, S.V. (2010): Surveying and Leveling Vol. II, Pune Vidyarthi Publication, Pune.
4. Maslov, AV., Gordeev, A.V. and Batrakov, Yu.G. (1984): Geodetic surveying, Mir Publishers, Moscow.
5. Rangwala, S.C. (2011): Surveying and Leveling, Charotar Publishing HousePvt. Ltd. Anand, (Gujarat), India.
6. Punmia, B.C., Jain A. and Jain A. (2011): Surveying, Vol. II. and III, Laxmi Publication - New Delhi.
7. Roy S. K. Fundamentals of Surveying CD Program on GPS and GIS by Learning Materials Development Project

SAVITRIBAI PHULE PUNE UNIVERSITY

Geography T.Y.B.Sc.

(Credit System, 2019 Pattern)

Revised Syllabus (From June-2021)

Semester: VI

GG 361: Regional Geography of India-II

No. of Credits: 02 **No. of Periods: 30**

Objectives:

1. To understand India's population resource and its demographic characteristics.
2. To analyze the mineral and energy distribution and its role in economic development.
3. To assess the status of agricultural, industrial and infrastructure status in India.

Course Outcome :

1. Aware about the population growth and Settlement distribution in India
2. Understand the distribution and production of major minerals and its role in industrial development of India.
3. Understand the importance and types of agriculture.
4. Aware about the importance and type's transportation in India.

Sr. No.	Topic	Sub-Topic	Learning Points	Periods
1	Population and Settlement	Population and Settlement	1. Population- Growth and distribution 2. Rural Settlement Types and Patterns	06
2	Minerals and Energy Resources	A. Minerals B. Energy Resources	1. Distribution and Production of Major Mineral : iron ore and bauxite 2. Distribution and Production of Major Power Resources :Coal and hydroelectricity	08
3	Agriculture & Industries	A. Importance of Agriculture B. Types of Agriculture C. Major Industries in India	1. Importance of Indian Agriculture 2. Major Types of Agriculture 3. Distribution and Production of major crops: Rice, Wheat, Sugarcane and Cotton 4. Major Industries in India: Cotton Textile, Iron-Steel, Automobile & I.T.Industry	08
4	Transportation and Communication	A. Types of Transportation B. Types of Communication	1. Types of Transportation in India 2. Means of Communication 3. Importance of Transportation and Communication in India	08

Reference Books:

1. Alka Gautam (2009): Geography of India, Sharada Pustak bhawan, University Road, Allahabad – UP.
2. Chandna R.C. (1986) :Geography of Population concepts, Determinants and Patterns, Kalyani Publishers, New Delhi
3. Khullar, D.R. (2009): India: A Comprehensive Geography, Kalyani Pub., New Delhi.
4. Majid Husain (2014): Geography of India, McGraw Hill Education (India) Private Education, New Delhi
5. Musmade Arjun, Sonawane Amit and Jyotiram More, (2015): Population & Settlement Geography (Marathi) -Diamond Publication Pune.
6. P. G. Saptarshi, J. C. More, V. R. Ugale & A. H. Musmade: A Geographical Region of India :Diamond
7. Pagar, Thorat & More (2015): Agriculture Geography, (Marathi), Atharv Publication, Pune
8. Sharma TC and Coutinho O (2005): Economic and Commercial geography of India, Vikas Publishing House ltd., New Delhi-14
9. Singh, J. and Dhillon, (1984): Agricultural Geography, Tata McGraw-Hill Publishing Company Limited, New Delhi.
10. Singh, R.L.: India: A Regional Geography. National Geographical Society. India, Varanasi, 1971.
11. Tiwari, R.C. (2010): Geography of India, Prayag Pustak Bhawan, Allahabad.

SAVITRIBAI PHULE PUNE UNIVERSITY
Geography T.Y.B.Sc. (Credit System)
Revised Syllabus (From June-2021)
Semester: VI
GG 362: Geography of Economic Activities-II

Objectives:

1. To acquaint students with modern trends in Economic activities
2. To understand the problems of various sectors of economy
3. To understand the characteristics and distribution of major economic activities

Course Outcome :

1. Understand the characteristics and distribution of agricultural & allied economic activities.
2. Gain knowledge of manufacturing based economic activities.
3. Understand the technology based economic activities.
4. Understand the characteristics and distribution of Web-based economic Activities

No. of Credits: 02 **No. of Periods: 30**

Sr. No.	Topic	Sub-Topic	Learning Points	Periods
1	Agricultural & Allied Economic Activities	Global Distribution & Characteristics	1.Commercial Grain Farming 2.Plantation Agriculture 3 Dairy Industry 4 Industrial Fishing	06
2	Manufacturing based Economic Activities	Global distribution & Characteristics	1 Commercial Mining of Iron ore 2 Copper mining 3 Mineral Oil production 4 Chemical Industries and Fertilizer Manufacturing	08
3	Technology Based Economic Activities	Major Industrial hubs and their factors of development	1. Silicon Valley of USA 2. Auto Clusters in India 3. Electronic goods production in China 4. Major IT Parks in India	08
4	Web-based Economic Activities	Need of Development and Characteristics	1. E-Commerce platforms 2. Use of web-based platforms in Tourism 3. Transportation and Service industry 4. Use of GIS in Economic Activities	08

Reference Books:

1. Alexander, J.W. (1977): Economic Geography, Prentice Hall of India Pvt. Ltd., New
2. Chorley, R.J. and Haggett, P. (1970): Socio Economic Models in Geography, Concept publishing Company Pvt. Ltd., New Delhi
3. Garnier, B.J. and Delobez, A. (1979): Geography of Marketing, Longman. Hartshorne, T.A. and Alexander, J.W. (2010): Economic Geography, PHI Learning, New Delhi
4. Kanan Chatterjee (2015): Basics of Economic Geography
5. Knox, P., Agnew, J. and McCarthy, L. (2008): The Geography of the World Economy, Hodder Arnold, London.
6. Lloyd, P. and Dicken, B. (1972): Location in Space: A Theoretical Approach to Economic Geography, Harper and Row, New York Methuen.
7. Mitra, A. (2002): Resource Studies, Sreedhar publishers, Kolkata.
8. Patil, S.G., Suryawanshi, R.S., Pacharne, S. and Choudhar, A.H. (2014): Economic Geography, Atharav Prakashan, Pune.
9. Ray, P.K. (1997): Economic Geography, New Central Book Agency (P) Ltd., Calcutta.
10. Majid Husain (2016) Models in Geography, Rawat Publication, New Delhi
11. Sujit Choudhury, Deepankar Chakrabarti, Suchandra Choudhury, An Introduction to Geographic Information Technology (2008) Kindle Edition

SAVITRIBAI PHULE PUNE UNIVERSITY

Geography T.Y.B.Sc.

(Credit System, 2019 Pattern)

Revised Syllabus (From June-2021)

Semester: VI

GG 363: Tourism Activities and Management

No. of Credits: 02 **No. of Periods: 30**

Objectives:

1. To understand the importance of tourism activity in various terms.
2. To make aware about the tourism mapping and employability of tourism.
3. To acquaint the skill of tour plan and management and the utilization of infrastructure in context of India.

Course Outcome:

1.Understand tourism as an economic activity and the potential for local tourism development.
2.Gain knowledge about tourism and allied activities, employment generation through tourism.
3.Understand tourism planning and management, tour plan and educational tour planning.
4.Aware about tourism infrastructure, ITDC, MTDC, and the various national tourism policy.

Sr. No.	Topic	Sub-Topic	Learning Points	Periods
1	Tourism Activity	Tourism Activity	1. Tourism as an economic activity 2. Concept of Tourism Product 3. Foreign Exchange Earnings. 4. Promotion of Tourism 5. Potential for local tourism development	08
2	Employability of Tourism	A. Employability of Tourism B. Tourism Mapping	1. Tourism and allied activities: Hotel, Transportation and Online booking 2. Employment Generation 3. Tourism Mapping 4. Travel Agency, Agent and Tourist Guide,	07
3	Tourism Planning and Management	A) Tourism Planning B) Management	1. Meaning and definition of Tourism Planning and Management 2. Tour Plan 3. Educational Tour Planning	07
4	Tourism in India	A. Infrastructure B. Case Studies	1. Tourism Infrastructure in India 2. India Tourism Development Corporation 3. MTDC 4. National Tourism Policy in India 5. Case Studies: Shimla, Jaisalmer , Ajanta and Gao	8

Reference Books

1. L. E. Hudman and R. H. Jackson (1999) – "Geography of Travel and Tourism" ,Delmar Publishers,New York.
2. Sharma, J.K. (ed.)(2000): Tourism Planning and Development - A new perspective, Kanishka Publishers, New Delhi
3. J. K. Sharma (2000): "Tourism Planning Development", Kanishka Publishers, Distributors, NewDelhi.
4. Chandra, R.H.(1998): Hill Tourism: Planning and Development, Kanishka Publishers, New Delhi,
5. Y. K. Sharma and P. Sharma (2006): "Handbook of Tourism" Pointer Publishers,Jaipur.
6. Robinson, H. (1996): Geography of Tourism, Macdonald and Evans, London.
7. Sinha P. C. (ed.) (1998): Tourism Impact Assessment, Anmol Publishers, New Delhi

Savitribai Phule Pune University, Pune
T.Y.B.Sc. Geography Syllabus
(Credit System, 2019 Pattern)
Revised Syllabus (From June-2021)
Semester-VI
Gg: 364: Geography of Soil-II

No. of Credits: 02 **No. of Periods: 3**

Objectives:

1. To acquaint the students with concepts in Soil Science.
2. To familiarize the students with the importance of soil science in Geography.
3. To develop an understanding of the management and conservation of soils.

Course Outcome :

1.Understand the classification of tropical soils.
2.Know about organic matter and its role in soil fertility and productivity.
3.Understand the impact of manmade activities on soil erosion and degradation.
4.Ability to promote and practice soil conservation methods in local areas.

Sr. No.	Topic	Sub topic	Learning Points	Periods
1	Soil Classification and Soil Types	Classification and Types	A) Classification of Tropical soils B) Basis of classification, Zonal, Intrazonal and Azonal Soils C) Types of Soil	07
2	Soil organic matter and Soil Dynamics	Organic Composition of Soil, Soil Dynamics	A) Meaning and Determination of Organic carbon and matter. B) Fractionation of organic matter C) Carbon cycle C:N ratio Organic Colloids– Soil Organic Matter D) Factors Affecting Soil Organic Matter E) Decomposition of Soil Organic Matter F) Soil Dynamics	08
3	Soil Degradation	Soil Degradation Types, Causes and Effects	A) Meaning of Soil degradation. B) Types of Soil degradation C) Causes of Soil degradation D) Effects of Soil degradation E) Soil degradation control measures	08

4	Soil conservation And	Soil Conservation & Soil	A) Meaning and Definition of Soil Conservation. B) Methods of soil conservation	07
	Management	management	C) Need of soil conservation D) Soil resource management in India	

Reference Books:

1. Ecology and Environment, P.D.Sharma, Rastogi Publications, Meerut.
2. Watershed management, Madan Mohan Das, PHI Private LTD. New Delhi.
3. Soil Science Simplified, Khonke and Franzmeier, Waveland Press, Pune.
4. Weathering Pedology and Geo-morphological Research, Birkland P., Oxford University Press, New York.
5. Hydrology, Madan Mohan Das, PHI Private LTD. New Delhi.
6. Fundamentals of Soil Science, Foth, Henry.D., Wiley Books.
7. A text book of Soil Science: Biswas T.D.&Mukharji ; Tata Mc Grow Hill Mumbai
8. A Text Book of Soil Science: Daji J.A. ; Tata Mc Grow Hill, Mumbai
9. Soil Geography: Sarkar Himanshu; (Nikhil) K.D. Kolkata.
10. Soil Geography, Vinayak Kale, Himalayan Publ. House, Mumbai.

SAVITRIBAI PHULE PUNE UNIVERSITY
Geography T.Y.B.Sc. (Credit System)
Revised Syllabus (From June-2021)
Semester: VI
GG 365: Management of Man-Made Disaster

No. of Credits: 02 **No. of Periods: 30**

Objectives:

1. To acquaint students of various types of disasters.
2. To understand the causes, effects and management of disasters.
3. To make students aware of current development in disaster management.

Course Outcome :

1. **Understand the concept of man-made disaster.**
2. Awareness about causes, effects and management of physical hazards.
3. Awareness about causes, effects and management of Chemical hazards.
4. Gain the knowledge about biological hazards.
5. Understand case-studies of man-made disasters.

Sr. No.	Topic	Sub-Topic	Learning Points	Periods
1	Man-Made Disasters	Definition and Concepts.	1 Classification: Physical, Chemical and Biological Pollution 2 Factors contributing to man-made disaster	06
2	Physical hazards	Causes, Effects and Management	1. Man induced Landslide 2. Forest Fires 3. Desertification 4. Soil Erosion 5. Ground and surface water depletion 6. Case study of Australian Forest fires	08
3	Chemical Hazards	Causes, Effects and Management	1. Nuclear Hazard 2. Oil Spills 3. Industrial Chemical Accidents 4. Arsenic contamination of Ground Water 5. Case Study: Chernobyl nuclear disaster	08
4	Biological Hazards	Causes, Effects and Management	1. Pandemic Diseases: Covid-19 2. Locust Swarms 3. Eutrophication 4. Case study of Bhopal Gas Tragedy	08

Reference Books:

1. Singh Savindra (2000) Environmental Geography, Parag Pustak Bhava, Allahabad
2. Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.

3. Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.
4. Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi.Chapter 1, 2 and 3
5. Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
6. Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.
7. Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht.
8. Singh Jagbir (2007) "Disaster Management Future Challenges and Opportunities", 2007.Publisher- I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).
9. Arsenic Contamination of Groundwater: A Review of Sources, Prevalence, Health Risks, and Strategies for Mitigation, Shiv Shankar, Uma Shanker, Shikha, Publised in Scientific World Journal, 2014 Link https://doi.org/10.1155/2014/304524

SAVITRIBAI PHULE PUNE UNIVERSITY

Geography T.Y.B.Sc. (Credit System)

Revised Syllabus (From June-2021)

Semester: VI

GG 366: Geoinformatics -II

Objectives:

1. To acquaint the students with new concepts and approaches in Geography
2. To familiarize the students with the wide application fields in Geography

Course Outcome :

1. Understand the concept of remote sensing
2. Acquire information about EMR and EMS
3. Understand basic geometric concept of aerial photographs.
4. Gain the knowledge about satellite imaging and image interpretation

No. of Credits: 02 **No. of Periods: 30**

Sr.No.	Topic	Sub-Topic	Learning Points	Periods
1	Introduction to Remote sensing	History and Development	1. Historical development 2. Definition 3. A tool for resource surveys Applications	07
2	Electromagnetic energy	Electromagnetic Radiation and Spectrum	1. Electromagnetic Radiation: Definition Properties of electromagnetic waves: velocity, wavelength, frequency. Atmospheric interactions, scattering, Reflection, emission, transmission. 2. Division of spectrum in various spectral regions Imaging Systems: Normal color photos, IR color photos and IR scanners	08
3	Aerial Photography	Basic Concepts, Geometry of Aerial Photographs	1. Aerial cameras 2. Types of photographs: vertical, oblique and terrestrial Aerial photographs 3. Central perspective projection, Photo nadir, air base, flying height, Scales, swing and tilts	07
4	Satellite Imaging & Image Interpretation	A) Types of Satellites by their orbital characteristics, Sensors and platforms, scanners B) Image Interpretation	1. Geostationary and Sun Synchronous, Passive and active sensors ERTS, LANDSAT, SPOT, INSAT, IRS & IKONOS Satellite platforms, Optical mechanical scanners, Infrared scanners 2. Elements of interpretation, interpretation key	08

Reference Books:

1. Sabins Floyd (1987): Remote sensing: Principles and applications. Freeman and Company, London
2. Curran P. J. (1995): Principles of Remote Sensing, John Wiley and Sons, England,
3. Lillesand T. & Kiefer R.W. (2000): Remote sensing and Image Interpretation. John Wiley and Sons.
4. Online Learning CCRS Canada Centre for Remote Sensing http://landmap.mimas.ac.uk/ipc/ccrs/fundam_e.html NASA Remote Sensing Tutorial http://rst.gsfc.nasa.gov

SAVITRIBAI PHULE PUNE UNIVERSITY
Geography T.Y.B.Sc. (Credit System)
Revised Syllabus (From June-2021)

Semester VI

Course No: GG 367: GIS Based Project Report (Practical Paper-1)

No. of Credits: 02 **No. of hours: 30**

Objectives:

1. To introduce students with GIS software and open data sources.
2. To prepare of a set of maps and interpret each map from geographical perspective.
3. To make use of GIS techniques to arrive at conclusions.
4. To acquaint students with the significance of GIS techniques in geography as the scientific method to understand geographical phenomena.

Course Outcome :

1. Learn the techniques of map making using GIS software's.
2. Acquire the skill for the preparation of various thematic map using different data sources

Each Practical batch will be comprised of 12 students

Unit No.	Unit	Sub-Unit	No. of Hrs.
1	Project Work	Preparation of maps using GIS software and open data sources Preparation of a set of maps and the description each map showing relief, soils, vegetation, climate, settlements and land use at village/taluka level from Maharashtra OR Preparation of set of Maps and description of each map showing relief, soils, vegetation, climate, settlement, land use at third order river basin	30

Note:

4. Completion of project report and certification by Practical-in-charge and Head of the Department is must.
5. Candidate without certified project report should not be allowed for the practical examination.

SAVITRIBAI PHULE PUNE UNIVERSITY
Geography T.Y.B.Sc. (Credit System)
Revised Syllabus (From June-2021)
Semester VI

Course No: GG 368: Maps and Mapping Techniques (Practical Paper-2)

No. of Credits: 02 **No. of hours: 30**

Objectives:

1. To acquaint the students with techniques of different types of map interpretation in Geography
2. To familiarize the students with geographical data representation techniques

Course Outcome :

1. Interpret the SOI Toposheet
2. Interpret the IMD weather maps
3. Acquire knowledge of various methods of relief representation.
4. Understand preparation and application of thematic and cartographic map.

Each Practical batch will be comprised of 12 students

Unit No.	Unit	Sub-Unit	No. of Hrs.
1	Toposheets and Toposheet Reading	1. Introduction to SOI toposheets Marginal information, grid reference, conventional signs and symbols, Indexing of toposheets 2. Types of toposheet i) 1: 1000000/Million sheet ii) 1:250000/Degree sheet/Quarter inch sheet iii) 1:100000/Half inch sheet iv) 1:50000/One inch sheet v) 1:25000 3. Toposheet Reading At least one from the following regions- Mountainous, Plateau, Plain	08
2	Weather Maps and Weather Map Reading	1. Introduction to IMD weather maps Introduction and drawing of weather map signs and symbols 2. Weather Map Reading Reading of weather maps of three seasons : i) Summer ii) monsoon iii) winter (Satellite images indicating different weather Phenomena should be shown to the students).	07

3	Relief Representation	1. Methods of relief representation i) Qualitative methods: hachures, hill shading, layer tint ii) Quantitative methods: contours, form lines, spot height, bench mark, Triangulation station.	07
		2.Representation of following features by contours: uniform slope, concave slope, convex slope, terraced slope, conical hill, plateau, ridge, saddle, V-shaped valley, U-shaped valley, waterfall, gorge, spur, cliff	
4	Thematic and Cartographic Map Techniques	1. Preparation, uses and limitations of following techniques: i) Choropleth maps ii) Isoline maps iii) Climograph iv) Scatter graphs v) Proportional symbol Maps vi) Pie charts vii) Composite Bar Diagrams viii) Age-Sex Pyramids 2. Preparation of all maps given above using suitable computer techniques	08

Note:

1. Use of map stencils, log tables, statistical tables and calculators are allowed at the time of examination.
2. Completion of journal and certification by Practical-in-charge and Head of the Department is must.
3. Candidate without certified journal should not be allowed for the practical examination.

Reference Books:

1. Dent B.D., 1999. Cartography: Thematic Map Design, (Vol. 1), McGraw Hill.
2. Gupta K.K and Tyagi V.C., 1992. Working with Maps, Survey of India, DST, New Delhi.
3. Mishra R.P. and Ramesh A., 1989. Fundamentals of Cartography, Concept Publishing.
4. Singh, R.L., 2005. Elements of Practical Geography. Kalyani Publishers, New Delhi. India.
5. Ramamurthy, K., 1982. Map Interpretation, Rex Printers, Madras.
6. Singh R.L. and Singh R.P.B., 1999. Elements of Practical Geography, Kalyani Publishers.
7. Singh, G., 2005. Map work and practical geography. Vikas Publishing House Pvt. Ltd., New Delhi.
8. Siddhartha, K., 2006. Geography through maps, Kisalaya Publications Pvt. Ltd, Delhi.
9. AsisSarkar (2015): Practical Geography, A Systematic Approach, Orient Black Swan
10. Liendsor, J.M. (1997): Techniques in Human Geography, Routledge.

SAVITRIBAI PHULE PUNE UNIVERSITY
Geography T.Y.B.Sc. (Credit System)
Revised Syllabus (From June-2021)
Semester VI

Course No: GG 369: Soil and Sediment Analysis
(Practical Paper-3)

No. of Credits: 02 **No. of hours: 30**

Objectives:

1. To introduce students with soil and sediment analysis in geography.
2. To apply soil and sediment analysis techniques to understand geographical phenomena.
3. To make use of soil and sediment analysis to arrive at conclusions.
4. To acquaint students with the importance of soil and sediment analysis in geography as the scientific method.

Course Outcome :

1. Know various methods of soil sampling.
2. Understand the physical properties of soils.
3. Identify the chemical properties of soils.

Each Practical batch will be comprised of 12 students

Unit No.	Unit	Sub-Unit	No. of Hrs.
1	Concept of soil sampling	Various methods of soil sampling and at least one field sampling by using soil augur or core tubes	05
2	Study of physical properties of soils	Laboratory determination of i) Soil texture ii) Soil Moisture iii) Bulk density and Specific gravity iv) Percentage porosity	10
3	Study of chemical properties of soils	Laboratory determination of i) Soil pH ii) Soluble salts by gravimetric method iii) Soil EC iv) $CaCO_3$ v) Organic carbon vi) Organic matter vii) NPK viii) $Fe_2 O_3$ ix) $Al_2 O_3$ x) SiO_2	15

Note:

1. Use of map stencils, log tables, statistical tables and calculators are allowed at the time of examination.
2. Completion of journal and certification by Practical-in-charge and Head of the Department is must.
3. Candidate without certified journal should not be allowed for the practical examination.

Reference Books:

1. Briggs, 1979, Soils
2. King 1994, Techniques in geomorphology
3. Miller Austin, 1979, Skin of the earth
4. Piper, 1975, Soil chemical analysis
5. Wilkinson and Monkhouse 1975, Maps & Diagrams

SAVITRIBAI PHULE PUNE UNIVERSITY
Geography T.Y.B.Sc. (Credit System)
Revised Syllabus (From June-2021)
Semester VI

Course No: GG 3610: Research Methodology–II
(Skill Enhancement Course)

No. of Credits: 02 **No. of hours: 30**

Objectives:

1. To identify various sources of information for data collection.
2. Understanding of the conducting survey on various issues and develop the Report writing skill of students

Course Outcome :

1. Understand the various method of data collection.
2. Know about various types of research report.
3. Developed skill of research report, thesis and dissertation writing.

Topic No.	Topic	Sub-Topic	Periods
1	Methods of Data Collection	**A) Primary Data** Questionnaire Method i.) Questionnaire – definition ii.) Characteristics of a good questionnaire iii.) Merits and demerits Questionnaire Method **B) Secondary Data** i) Government Sources ii) Syndicated Sources iii) Other Types of Sources	10
2	Types of Research Report	i. Dissertation and Thesis, ii) Research paper, review article iii) Characteristics of Good Research Report Writing	10
3	Techniques of Research Report Writing	i) Structure and organization of research reports: Title, abstract, key words, introduction ii) Methodology, results, discussion, conclusion, references, footnotes, iii) Concepts of Case Study	10

References:

1. Gaum, Carl G., Graves, Harod F., and Hoffman, Lyne, S.S., (1950): Report Writing, 3rd ed., New York: Prentice-Hall.
2. Kothari, C.R. (2004): Research Methodology: Methods and Techniques, New Age International (P) Ltd.,New Delhi – 110002.
3. Kothari, C.R., (1984): Quantitative Techniques, 2nd ed., New Delhi: Vikas Publishing House Pvt. Ltd.
4. Mishra Shanti Bhushan and Shashi A. (2011): Handbook of Research Methodology, Educreation Publishing, New Delhi – 110075.
5. Pandey, P. and Pandey, M.M. (2015): Research Methodology: Tools and Techniques,Bridge Center, Romania, European Union.
6. Tandon, B.C., (1979): Research Methodology in Social Sciences. Allahabad, Chaitanya Publishing House.
7. Ullman, Neil R. (1978): Elementary Statistics, New York: John Wiley & Sons, Inc.
8. Yamane, T., Statistics (1973): An Introductory Analysis, 3rd ed., New York: Harper and Row.

SAVITRIBAI PHULE PUNE UNIVERSITY
Geography T.Y.B.Sc. (Credit System)
Revised Syllabus (From June-2021)
Semester-VI

Course No: GG 3611: Total Station Surveying

(Skill Enhancement Course)

No. of Credits: 02 **No. of hours: 30**

Objectives:

1. To understand various techniques in surveying.
2. To analyses the principles and various methodologies involved in surveying.
3. To generate the drawings using advanced surveying equipment & application software.
4. To sensitize the students with advanced surveying equipment's.

Course Outcome :

1. Acquire knowledge of various techniques in surveying.
2. Develop skill of total station handling and surveying.
3. Mapping using total station data and software's

Sr. No.	Topic	Learning points	Periods
1	Angle and Distance Measurement using Total Station	a. Relationship of angle and distances b. Measuring horizontal angles with Total Station c. Measuring from required the horizontal angle d. Repetition angle measurement	07
2	Distance Measurement by Total Station	a. Setting of atmospheric correction b. Setting of correction of prism and non-prism c. Distance measurement (Single measurement) d. Distance measurement (Continuous) e. Offset measurement	08
3	Coordinate Measurement by Total Station	a. Setting coordinate value for occupied point b. Setting height of instrument c. Setting height of target (Prism height) d. Execution of coordinate measurement	07
4	Field Measurement by Total Station and its plotting	a. Survey of a beach b. Cross and long profile of a stream/river reach c. Measurement of agricultural farm d. Preparation of college campus map	08

Reference:

1. Asis Sarkar (2015): Practical Geography, A Systematic Approach, Orient Black Swan
2. Duggal, S.K. (2013): Surveying Vol. 2, McGraw Hill Publication, New York.
3. Kanetkar, T.P. and Kulkarni, S.V. (2010): Surveying and Leveling Vol. II, Pune Vidyarthi Publication, Pune.
4. Maslov, AV., Gordeev, A.V. and Batrakov, Yu.G. (1984): Geodetic surveying, Mir Publishers, Moscow.
5. Rangwala, S.C. (2011): Surveying and Leveling, Charotar Publishing HousePvt. Ltd. Anand, (Gujarat), India.
6. Punmia, B.C., Jain A. and Jain A. (2011): Surveying, Vol. II. and III, Laxmi Publication - New Delhi.
7. Roy S. K. Fundamentals of Surveying CD Program on GPS and GIS by Learning Materials Development Project