Savitribai Phule Pune University

(Formerly University of Pune)

Three Year B.Sc. Degree Program in Geography

(Faculty of Science & Technology)

S.Y.B.Sc. (Geography)

Choice Based Credit System Syllabus

To be implemented from Academic Year 2020-21

Title of the Course: B.Sc. Geography

Preamble of the syllabus:

i. To introduce the students to the fundamentals concepts of Environmental Geography.
ii. To acquaint the students with environmental protection laws, acts, planning and management.
iii. To appraise the students with salient features of the Maharashtra State.
iv. To acquaint the students with the principles of surveying, its importance, and its utility in the Geographical study.

Introduction: Pattern – CBCS: Semester (15 marks internal and 35 marks University)

Title of the Course: 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	**2**
	4	Compulsory Course	GG 241	Environmental Geography-II	**2**
			GG 242	Geography of Maharashtra (Human)-II	**2**
			GG 243	Surveying-II	**2**

Equivalence of Syllabus in Geography (S.Y.B.Sc.) with effects from June 2020

Paper	Old Syllabus (2014)		New Syllabus-2020	
	Course Code	Name	Course code	Name
1	**Gg 211:**	Geography of Resources – I	**GG 231**	Environmental Geography -I
	Gg 211:	Geography of Resources – II	**GG 241**	Environmental Geography -II
2	**Gg 212:**	Watershed Management – I	**GG 232**	Geography of Maharashtra (Physical)-I
	Gg 212:	Watershed Management – II	**GG 242**	Geography of Maharashtra (Human)-II
3	**Gg 201**	Map Projections & Surveying	**GG 233**	Surveying-I
			GG 243	Surveying-II

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S.Y.B.Sc. Syllabus, Semester-III

Environmental Geography –I (Paper-I)

Course No: GG 231 **No. of Credits: 02** **No. of hours: 30**

Objectives:

i. To create environmental awareness amongst the students.
ii. To familiarize the students with fundamentals concepts of Environmental Geography.
iii. To acquaint the students to past, present, and future utility and potentials of resources at regional, national and global levels.
iv. To enable the students to understand dynamics of man–environment relationship in various region of the world.

Course Outcome:

1. Awareness regarding environmental issues both global and local, would be developed among the students.

2. Students would acquaint themselves with fundamental concepts of Environmental Geography.

3. Students would understand what are the potentials of resources and how they have been utilized in the past, present and future.

4. They would be able to appreciate utility and value of resources at regional, national and global levels.

5. Students would understand the dynamics of man–environmental relationships in various regions.

Unit No.	Topic	Sub-Topics	Learning Points	Hours
1	Introduction to Environmental Geography	Introduction and Ecosystems	1. Introduction to Environmental Geography a) Meaning and definition b) Nature, scope and significance c) Types of environment. 2. Ecosystem: a) Definition and concept b) Structure (Biotic and abiotic factors) and function (Food chain, trophic level, food web, energy flow) c) Major types of ecosystem: Equatorial and River ecosystems	**10**

2	Man and environment relationship	The relationship between human life and environment in different regions	1. Human life in the mountain region 2. Human life in the desert region 3. Human life in the coastal region	**6**
3	Environmental Problems	Global issues and India's major problems	1. Major global environmental issues: Causes and effects of a) Climate change b) Stratospheric ozone depletion c) Biodiversity depletion 2. Major environmental issues in India: causes and effects of a) Loss of biodiversity b) Water pollution c) Air pollution d) Noise pollution e) Nuclear (Atomic) pollution	**8**
4	Specific Environmental issues in India	Major environmental crises in India and efforts to resolve them	1. Energy crisis: Impact and remedial measures 2. Major environmental movements in India: a) Western Ghat Conservation b) Chipako Movement c) Narmada Bachao Andolan	**6**

Reference Books:-

1. Chandna, R. C., (2002). Environmental Geography. Kalyani Publishers, Ludhiana.
2. Cunningham, W. P., and Cunningham, M. A., (2004). Principals of Environmental Science: Inquiry and Applications, Tata McGraw-Hill, New Delhi.
3. Gautam, A., (2007). Environmental Geography, Sharda Pustak Bhawan Allahabad
4. Gholap, T.N., (2000). Environment Science, Nishikant Publication, Pune (Marathi).
5. Goudie, A., (2001). The Nature of the Environment. Blackwell, Oxford.
6. Huggett, R.J., (1998). Fundamental of Biogeography. Routledge, London.
7. Kormondy, E. J., (2012). Concepts of Ecology. PHI Learning Pvt. Ltd., New Delhi.
8. Miller, G. T., (2004). Environmental Science: Working with the Earth, 5th edition, Thomson/ Brooks Cole, Singapore.
9. Odum, E. P., (2006). Fundamentals of Ecology, 6th edition, Cengage Learning India.
10. Saxena, H.M., (2017). Environmental Geography. 3rd edition, Rawat Publication, Jaipur.

11. Sharma, P.D., (2015). Ecology and Environment. Rastogi Publications, Meerut.
12. Singh, R.B., (2009). Biogeography and Biodiversity. Rawat Publication, Jaipur.
13. Singh, R.B., (1998). Ecological Techniques and Approaches to Vulnerable Environment. Oxford & IBH Pub, New Delhi.
14. Singh, S., (1997). Environmental Geography. Prayag Pustak Bhawan. Allahabad.

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S.Y.B.Sc. Syllabus, Semester-III

Geography of Maharashtra (Physical)-I (Paper II)

Course No: GG 232 **No. of Credits: 02** **No. of hours: 30**

Objectives:

i. To appraise the students with salient features of the Maharashtra State.
ii. To familiarize the students with the climatic characteristics of the State.
iii. To make the students aware of the geographic problems of Maharashtra in the view of sustainable development.

Course Outcome:

1. Students would understand the salient geographical features of Maharashtra.
2. Students would develop their knowledge base regarding physiographic and climatic characteristics of Maharashtra.
3. Students would get acquainted with the river systems of Maharashtra and issues associated with river ecology.
4. Students would learn about the types of soil and vegetation in Maharashtra for better understanding of ecological resources available for livelihood of people.

Unit No.	Topic	Sub-Topics	Learning Points	Hour
1.	Introduction to Geography of Maharashtra	Location, Extent, Administrative divisions	1. Location & extent of Maharashtra 2. Introduction to Maharashtra-Geology, Historical and political background 3. Administrative divisions of Maharashtra	06
2.	Physiography and Drainage of Maharashtra	Major physiographic divisions of Maharashtra Major rivers of Maharashtra	1. Physical Divisions of Maharashtra i. The Konkan Lowland ii. Western Ghat/Sahyadri iii. Maharashtra Plateau (*Desh*) 2. Major Rivers of Maharashtra i. East flowing rivers: Godavari, Krishna and Bhima ii. West flowing rivers- Tapi, Purna and Konkan rivers	08

3.	Climate	Characteristics and Seasons	1. Characteristics of climate in Maharashtra 2. Temperature and rainfall distribution in Maharashtra 3. Importance of monsoon in Maharashtra	08
4.	Soils and Natural Vegetation in Maharashtra	Soil: Types and distribution Soil degradation Methods of soil conservation Vegetation: Types and distribution Methods of forest conservation	A) Soils: 1. Types and distribution of Soils in Maharashtra 2. Problems of soil erosion and salinization: causes and effects 3. Methods of soil conservation: a) Afforestation b) Soil management c) Crop rotation d) Construction of dam 4. Role of Government in soil conservation in Maharashtra B) Natural Vegetation: 1. Types and distribution of forest in Maharashtra 2. Deforestation: Definition, meaning, causes and effects 3. Methods of Forest conservation a) Reforestation and afforestation b) Prevention of forest fire c) Social forestry and Tree Plantation d) Agroforestry 4. Role of Government in forest conservation in Maharashtra	08

Reference Books:-

1. Arunachalam B., (1967), Maharashtra – A study in Physical and Regional Setting, Sheth and Co., Mumbai.
2. Bhamare, S.M., (2013). Geography of Maharashtra, Prashant Publication, Jalgaon.
3. Dasatane S., (1992). Glimpse of Maharashtra. Dasatane Ramchandra and Co., Pune.
4. Deshpande, C. D.,(1971). Geography of Maharashtra. National Book Trust, New Delhi.
5. Diddee, J., et al. (2002). Geography of Maharashtra, Rawat Publication, Jaipur.
6. Dixit, K.R., (1986). Maharashtra in Maps. Maharashtra State Board for Literature and Culture Mantralaya, Bombay (Mumbai).
7. Gadgil G. and Deshpande A., (1988), Maharashtra- Problems, potentials and prospects., Somaiya Publications, Mumbai.
8. Magar Jaykumar (2001). Bharatacha Bhugol. Vidya Publishers, Nagpur. (Marathi)
9. Patil, S. B., (2019). Geography of Maharashtra, Prashant Publication, Jalgaon.

10. Sarang Subhashchandra, (1997). Maharashtracha Bhugol, Vidya Prakashan, Nagpur. (Marathi)
11. Savadi, A.B., (2020). The Mega State -Maharashtra. Nirali Prakashan, Pune.
12. Singh, R. L., (2012). India: A Regional Geography, National Geographical Society of India (NGSI), Banaras.

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S.Y.B.Sc. Syllabus, Semester-III

Surveying –I (Paper III)

Course No. Gg. 233 No. of Credits: 02 No. of Practicals: 15 (4 Hours each Practical)

Note:
1. Each practical batch should **not have more than 12 students**.
2. A separate question paper should be set for each batch.
3. Four hours of one practical should be allotted.

Objectives:
i. To acquaint the students with the principles of surveying, its importance, and its utility in the Geographical study.
ii. To familiarize the students with the basic aspects of linear, vertical and angular measurements of surveying.
iii. To understand the importance, basic principles and uses of GPS in surveying.
iv. To identify sources and types of errors occurs during surveys.

Course Outcome:
1. Students would acquire fundamental skills of surveying and their applications in the Geographical study.
2. Students would familiarize with the basic surveying techniques.
3. Students would be able to use land surveying instruments and carry out related calculations for better understanding land cover.
4. Students would appreciate and learn some recently developed techniques of surveying.

(Per batch 12 students)

Sr. No.	Name of the Topic	Learning Points	No. of Practicals 15 (4 hours/Practical)
1	Introduction to Surveying	1. Meaning and Definition of Surveying 2. Types of Surveying, Classification of Surveys 3. Methods of Surveying. 4. Importance of Surveying in Geography 5. Introduction to recent surveying techniques: Drone, Total station, DGPS Survey, etc.	**04**

2	Plane Table Survey	1. Introduction 2. Instruments used in Plane Table Survey 3. Methods of Plane Table Survey: Radiation and Intersection Method (one example of each method) 4. Measurement and conversion of area in different units i. Sq. Meter to Guntha ii. Sq. Meter to Acre iii. Bigha to hectare iv. Sq. Foot to Acre v. Sq. Mile to hectare 5. Merits and Demerits of Plane Table Survey.	**04**
3	Prismatic Compass Survey	1. Introduction. 2. Structure and functions prismatic compass with diagram 3. Methods of Prismatic Compass Survey (Open and Close Traverse) 4. Correction of bearing and closing error by Bowditch Method 5. Merits and Demerits of Prismatic Compass Survey	**04**
4	GPS Survey	1. Introduction, Definition, and Components of GPS/ Segments of GPS 2. Applications of GPS. 3. GPS Survey (Plotting of area on a graph with the help of latitude and longitude) 4. Introduction about GPS based apps: Aarogya Setu ,Google Earth, GPS Essentials and Solar Calculator app	**03**

Reference Books:-

1. Bygott, J. (1955). Map work and Practical Geography.5th Edition, University Tutorial Press, London.
2. Davis, R.E.and Foote, F.S. (1953). Surveying, McGraw-Hill Book Co., New York.
3. Deshpande, G.B. (1991). Surveying, Everest Publishing House, Pune
4. Kanetkar T.P. and Kulkarni S.V. (1983). Surveying and Levelling (Part I and II), Vidyarthi Gruha Prakashan, Pune.
5. Mishra, R.P, and Ramesh A. (2000). Fundamental of Cartography, Concept Publishing, Company, New Delhi.
6. Monkhouse, F.X.J. & Wilkinson, H.R. (1989). Maps & Diagrams, B.I Publications, Bombay.
7. Robinson, A.H. & Sleep, R.D. (1969).Elements of Practical Geography, John Wiley publications, New York.
8. Singh Gopal (1996). Map Work and Practical Geography, Vikas Publishing House Pvt. Ltd., New

Delhi.

9. Singh, Lekhraj & Singh R. (1973). Map work and Practical, Central Book Depot. Allahabad.
10. Singh, R.C., and Dutta (1993). Elements of Practical Geography, Kalyani Publications, New Delhi.
11. Singh, R.L., and Kanaujia L.R.S. (1963). Map Work and Practical Geography, Central Book Depot, Allahabad.
12. Singh, R.L., and Singh, R.P.B. (1997). Elements of Practical Geography, Kalyani Publishers, New Delhi.

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S.Y.B.Sc. Syllabus, Semester-IV

Environmental Geography- II (Paper-I)

Course No: GG-241 **No. of Credits: 02** **No. of Periods: 30**

Objectives:

i. To introduce the methods and assessments of the impact on the environment amongst the students.
ii. To acquaint the students with environmental protection laws, acts, planning, and management.
iii. To appraise the students with various indigenous environmental conservation measures.
iv. To make aware the students about various programs and policies carried out in the regional and global scale.

Course Outcome:

1. Students would comprehend methods of environmental impact assessments of various human activities.
2. Students would acquaint themselves with environmental protection laws, acts, planning, and management.
3. Students will acquaint themselves with various indigenous environmental conservation measures.
4. Awareness of various environmental programs and policies on the regional and global scale will develop among students

Unit No.	Topic	Sub-Topics	Learning Points	Hours
1.	Environment Impact Assessment	Nature and methods	1. Environment Impact Assessment: Definition, Nature and Scope 2. Methods of Environment Impact Assessment: i. Adhoc method (Expert opinions and Expert panel discussion) ii. Predicting the severity of environmental impacts (Delphi methods) 3. Steps in Environment Impact Assessment	8

2.	Environmental Planning and Management	Principle of Environmental planning, Management and Protection.	1. Environmental planning: Definition, Principles and Concept 2. Aspects and Approaches to environmental management 3. Major environmental laws in India: i. Wildlife (Protection) Act -1972 ii. Forest (Conservation) Act.1980 iii. Environmental Protection Act- 1986	6
3.	Environmental Conservation in India	Measures of Environmental Conservation	1. Forest conservation 2. Energy conservation 3. Water conservation with respect to Ganga action plan 4. Solid waste management 5. Role of the Government and NGO in environmental conservation	**8**
4.	Environmental Programme and Policies	Policies in developed and Developing countries	1. The United Nations Environment Programme (UNEP) and initiative: i. Stockholm conference-1972 ii. Earth Summit, Rio de Janeiro-1992 iii. Kyoto Protocol-1997 iv. World Summit on Sustainable Development, Johannesburg-2002 v. Sustainable Development Summit, New York-2015 2. Major Programme for environmental protection and conservation in India: i. Tiger conservation ii. 33 crore tree plantation program in Maharashtra	

Reference Books:-

1. Chandna, R. C., (2002). Environmental Geography. Kalyani Publishers, Ludhiana.
2. Cunningham, W. P., and Cunningham, M. A., (2004). Principals of Environmental Science: Inquiry and Applications, Tata McGraw-Hill, New Delhi.
3. Gautam, A., (2007). Environmental Geography, Sharda Pustak Bhawan Allahabad
4. Gholap, T.N., (2000). Environment Science, Nishikant Publication, Pune (Marathi).
5. Goudie, A., (2001). The Nature of the Environment. Blackwell, Oxford.
6. Huggett, R.J., (1998). Fundamental of Biogeography. Routledge, London.
7. Ingale, S.T., et al., (2013). Environmental Studies, Prashant Publication, Jalgaon.
8. Kormondy, E. J., (2012). Concepts of Ecology. PHI Learning Pvt. Ltd., New Delhi.
9. Miller, G. T., (2004). Environmental Science: Working with the Earth, 5th edition, Thomson/ Brooks

Cole, Singapore.

10. Odum, E. P., (2006). Fundamentals of Ecology, 6th edition, Cengage Learning India.
11. Saxena, H.M.,(2017). Environmental Geography. 3rd edition, Rawat Publication, Jaipur.
12. Sharma, P.D., (2015). Ecology and Environment. Rastogi Publications, Meerut.
13. Singh, R.B., (2009). Biogeography and Biodiversity. Rawat Publication, Jaipur.
14. Singh, R.B.,(1998). Ecological Techniques and Approaches to Vulnerable Environment. Oxford & IBH Pub, New Delhi.
15. Singh, S., (1997). Environmental Geography. Prayag Pustak Bhawan, Allahabad

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Geography of Maharashtra (Human)-II (Paper-II)

Course No: GG-242 **No. of Credits: 02** **No. of Periods: 30**

Objectives:

i. To acquaint the students with the relationship between man and environment in Maharashtra State.
ii. To familiarize the students with the agricultural pattern, problems and prospects in the state.
iii. To study and understand the industrial sector, spatial distribution, development and problems faced within the state.
iv. To know the status of transport and communication in Maharashtra state.

Course Outcome:

1. Students would get knowledge about the population characteristics of Maharashtra.
2. Students would understand agriculture patterns, problems, and prospects in Maharashtra.
3. Students would get information about industrial development and problems in Maharashtra.
4. Students would acquaint themselves with the status of transport and communication in Maharashtra

Sr. No.	Topic	Sub-Topic	Learning Points	Hour
1.	Population of Maharashtra	Population growth and distribution	1. Population growth in Maharashtra. 2. Population distribution in Maharashtra 3. Spatial distribution of religions in Maharashtra 4. Migration in Maharashtra: i. Interstate migration ii. Rural to Urban, Urban to urban migration	06
2.	Agriculture in Maharashtra	Types Problems and Prospects of Agriculture	1. Major food crops (Wheat, Rice, Bajra and Jowar) in Maharashtra 2. Major cash crops (Cotton, Sugarcane, Grapes and Onion) in Maharashtra 3. Problems and Prospects of Agriculture in Maharashtra	08

3.	Industries in Maharashtra	Types of Industries Industrial Development in Maharashtra	1. Major industries in Maharashtra (Cotton textile, IT industry) 2. MIDC and Industrial Development in Maharashtra 3. Problems and prospects of Agro-based industries in Maharashtra (Sugarcane and Wine Industry)	08
4.	Transport and Communication in Maharashtra	1.Transport 2.Communication	A) Transportation in Maharashtra (Road, Railway, Air and Water Transportation) B) Major Transportation Projects in Maharashtra: Express Highway, Samaruddhi Marg and Metro C) Communication in Maharashtra: Print media, Electronic media, Social media, etc.	08

Reference Books:-

1. Arunachalam B., (1967), Maharashtra – A study in Physical and Regional Setting, Sheth and Co., Mumbai.
2. Bhamare, S.M., (2013). Geography of Maharashtra, Prashant Publication, Jalgaon.
3. Census Report – 2011, Government of India.
4. Deshpande, C. D.,(1971). Geography of Maharashtra. National Book Trust, New Delhi.
5. Diddee, J., et al. (2002). Geography of Maharashtra, Rawat Publication, Jaipur.
6. Dixit, K.R., (1986). Maharashtra in Maps. Maharashtra State Board for Literature and Culture Mantralaya, Bombay (Mumbai).
7. Government of India: The Gazetteer of India,-1965. Vol. I & II, Publication Division, New Delhi.
8. Hange, A.K., and Waghmare, H.S.(2018). Geography of Maharashtra. Kailas Publications, Aurangabad. (Marathi)
9. Majid Hussain (2014): Geography of India, McGraw Hill Education (India) Private education, New Delhi.
10. Memoria, C. B.,(1986). Geography of India, Shivlal Agrawal & Co., Agra.
11. Negi, B. S. (1998). Economic and Commercial Geography of India, Kedarnath Ramnath Publications, New Delhi.
12. Savadi, A.B., (2020). The Mega State -Maharashtra. Nirali Prakashan, Pune.
13. Sharma, T.C., and Coutihno O. (1998). Economic and Commercial Geography of India. Vikas Publishing House, India.
14. Tirtha, R. (2002): Geography of India, Rawat Publication, Jaipur.

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S.Y.B.Sc. Syllabus, Semester-IV

Surveying – II (Paper-III)

Course No. GG-243 Total no. of Credits: 02 No. of Practicals: 15 (4 Hours each Practical)

Note:

1. Each practical batch **should not have more than 12 students each.**
2. A separate question paper should be set for each batch.
3. Four hours of one practical should be allotted.

Objectives:

i. To acquaint the students with the principles of surveying, its importance and utility in the Geographical study.
ii. To familiarize the students with the basic aspects of linear, vertical, and angular measurements of surveying.
iii. To introduce the importance, basic principles, and uses of GPS in surveying.
iv. To identify sources and types of errors occurs during surveys.

Course Outcome:

1. **Students would get knowledge of the principles of modern surveying techniques.**
2. Students would familiarize themselves with modern surveying techniques.
3. Students would develop their skill to use modern land surveying instruments and related calculations.
4. Students would be able to appreciate applications of recent surveying techniques to understand landuse and land cover.

Sr. No.	Name of the Topic	Learning Points	No. of Practicals 15 (4 Hours/Practical)
1	Dumpy/Auto Level Survey	1. Introduction 2. Structure and function of Dumpy Level / Auto Level with allied instruments 3. Methods of Dumpy Level/Auto Level Survey i. Collimation Method ii. Rise and Fall Method (One field survey of each method) 4. Examples on Collimation Method and Rise and Fall Method (One example each) with Arithmetic Check	**05**

2	Theodolite Survey	1. Definitions, concepts, and importance of Theodolite survey 2. Components of Theodolite survey, adjustments in theodolite 3. Types of Theodolite and Methods of Theodolite Surveys: Transit and non-transit theodolite Surveying and plotting: intersection method and Tacheometric (One example each)	**04**
3	Field Survey	1. Dumpy Level/Auto Level survey with plotting and report writing 2. Theodolite survey with plotting and report writing (Per batch one separate field survey for both the surveys)	**04**
4	Excursion or Village Survey	Visit to any geographically significant location anywhere in the country for all the students together. Or Socio-economic village survey	**02**

Reference Books:-

1. Bygott, J. (1955). Map work and Practical Geography.5th Edition, University Tutorial Press, London.
2. Davis, R.E.and Foote, F.S. (1953). Surveying, McGraw-Hill Book Co., New York.
3. Deshpande, G.B. (1991). Surveying, Everest Publishing House, Pune
4. Kanetkar T.P. and Kulkarni S.V. (1983). Surveying and Levelling (Part I and II), Vidyarthi Gruha Prakashan, Pune.
5. Mishra, R.P, and Ramesh A. (2000). Fundamental of Cartography, Concept Publishing, Company, New Delhi.
6. Monkhouse, F.X.J. & Wilkinson, H.R. (1989). Maps & Diagrams, B.I Publications, Bombay.
7. Robinson, A.H. & Sleep, R.D. (1969).Elements of Practical Geography, John Wiley publications, New York.
8. Singh Gopal (1996). Map Work and Practical Geography, Vikas Publishing House Pvt. Ltd., New Delhi.
9. Singh, Lekhraj & Singh R. (1973). Map work and Practical, Central Book Depot. Allahabad.
10. Singh, R.C., and Dutta (1993). Elements of Practical Geography, Kalyani Publications, New Delhi.
11. Singh, R.L., and Kanaujia L.R.S. (1963). Map Work and Practical Geography, Central Book Depot, Allahabad.
12. Singh, R.L., and Singh, R.P.B. (1997). Elements of Practical Geography, Kalyani Publishers, New Delhi.