

*Progressive Education Society's*

Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05

F. Y. B.Sc. Geography

Course Code: 19ScGeoU101

Title of the Course: Physical Geography (Geomorphology Paper I) (Part I)

Credits: --

Total Lectures: 36

**Objectives:**

1. To introduce the students to the basic concepts in physical geography.
2. To orient the students to the applications of physical geography.
3. To familiarise the students with different Geo-environmental problems.
4. To sensitize the students with urgent need of protection and conservation of different aspects of Earth and its environment.

Semester - I		Lectures
<b>Chapter 1</b>	<b>Introduction</b>	<b>4</b>
	A. Introduction to Physical Geography and its branches B. Geomorphology - Definition, Nature and Scope	
<b>Chapter 2</b>	<b>Fundamental Concepts of The Earth</b>	<b>6</b>
	A. The Earth - Size, Shape, Radius, Circumference, Graticule, Parallels of Latitudes and Meridians of Longitudes B. Time - Local time and Standard time, Time Zone, and International Date Line	
<b>Chapter 3</b>	<b>The Earth</b>	<b>12</b>
	A. The Earth - Its Interior, Composition & Structure B. Origin of Continents and Ocean basins i. Wegener's Continental Drift Theory ii. Theory of Sea Floor Spreading iii. Plate Tectonics	
<b>Chapter 4</b>	<b>Rocks</b>	<b>6</b>
	A. Rock - Definition and origin B. Types of Rocks – Igneous, Sedimentary and Metamorphic rocks C. Difference between minerals and rocks	
<b>Chapter 5</b>	<b>Crustal Movements</b>	<b>6</b>
	A. Crustal Movements – Definition, causes B. Classification of crustal movements i. Slow movements - Folding and Faulting ii. Rapid movements - Volcanism and Earthquakes	
<b>Chapter 6</b>	<b>Tools for studying the Earth</b>	<b>2</b>
	Google Earth and Introduction to GIS Discussion on Fieldwork / Experiential learning / Self study	

**Learning Outcomes:**

1. Students will understand the basic concepts in physical geography.
2. Students will understand the applications of physical geography.
3. Students will familiarise with different Geo-environmental problems.

4. Students will sensitize with urgent need of protection and conservation of different aspects of Earth and its environment.
5. Students will familiarize with the different erosional & depositional features and intervention of mankind in the natural environment.
6. Students will be able to understand various geographical phenomenon, their origin, distribution and effect on life. This study will help the students in general and society in particular to cope up with the natural calamities.

**Reference Books:**

- Bloom A.L., 2003: Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, Prentice- Hall of India, New Delhi.
- Strahler A.A. and Strahler A.N., 2002. Physical Geography.
- Husain, M., 2001. Fundamentals of Physical Geography, Rawat Publication, Jaipur.
- Siddhartha, K., 2001. The Earth's Dynamic Surface, Kisalaya Publications Pvt. Ltd, New Delhi.
- Christopherson, R.W. 2000, Geo-systems, Prentice Hall, INC. USA.
- Singh, S., 1998. Geomorphology, Prayag Pustak Bhavan, Allahabad.
- Haywood, Sarah Cornelius and Steve Carver, 1998. An Introduction to Geographical Introduction Systems.
- Hamblin, W.K., 1989 The Earth's Dynamic Systems, Macmillan Publishing Company, New York.
- Longely G., Geographical Information System and Science, Wiley publishers

*Progressive Education Society's*  
**Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05**  
**F. Y. B. Sc. Geography**  
**Course Code: 19ScGeoU102**

**Title of the Course: Physical Geography (Climatology Paper II) (Part I)**  
**No. of Credits:--** **Total Lectures: 36**

**Objectives:**

1. To introduce the students to the basic concepts in Climatology.
2. To acquaint the students with the applications of Climatology.
3. To sensitize students to the Global changing climate, its effect on environment as a whole.

Semester – I		Lectures
<b>Chapter 1</b>	<b>Introduction to Climatology</b>	<b>8</b>
	A. Definition, nature and scope of Climatology B. Definition of weather and climate C. Elements of weather and climate	
<b>Chapter 2</b>	<b>Atmosphere</b>	<b>8</b>
	A. Origin of the Atmosphere B. Composition and Structure of the Atmosphere	
<b>Chapter 3</b>	<b>Insolation</b>	<b>8</b>
	A. Meaning & Definition - Insolation, Solar Constant, Albedo of the Earth B. Effects of atmosphere on solar radiation - Scattering, Diffusion, Absorption, Reflection C. Factors affecting the distribution of Insolation	
<b>Chapter 4</b>	<b>Temperature</b>	<b>12</b>
	A. Heat & temperature B. Process of heat transfer - Conduction, Convection, Radiation C. Factors affecting distribution of temperature D. Lapse rate and temperature inversion E. Global warming, El Niño and La Niña F. Discussion on Fieldwork / Experiential learning / Self study	

**Learning Outcomes:**

1. Students will understand the important concepts like origin of the Atmosphere, elements of weather and climate and different theories related to the Climatology and its processes
2. Students will understand different aspects of climate and its effect on human health and wealth.
3. Students will understand mechanism of Monsoon onset and withdrawal.

**Reference Books:**

- Critchfield, H.J., 1997. General Climatology, Prentice Hall of India Pvt. Ltd, New Delhi.
- Dasgupta, A and Kapoor, A.N., Principles of Physical Geography.
- D.S. Lal, Climatology, Sharda Pustak Bhandar, Allhabad
- K. Siddhartha, Climatology-Atmosphere, Weather and Climate, Kitab Mahal.
- Savindra Singh, Physical Geography, PravalikaPrakashan, Allahabad.
- Strahler, A.A. and Strahler, A.N., 2002. PhysicalGeography
- Lutgens, Frederic K. & Tarbuck, Edward J. (2010): 'The Atmosphere: An Introduction to Meteorology', Pearson Prentice Hall, New Jersey

*Progressive Education Society's*

Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05

F. Y. B.Sc. Geography

Course Code: 19ScGeoU201

Title of the Course: Physical Geography (Geomorphology Paper I) (Part II)

Credits:--

Total Lectures: 36

**Objectives:**

1. To introduce the students to the basic concepts in physical geography.
2. To orient the students to the applications physical geography.
3. To familiarise the students with different Geo-environmental problems.
4. To sensitize the students with urgent need of protection and conservation of different aspects of Earth and its environment.

Semester – II		Lectures
<b>Chapter 1</b>	<b>Weathering</b>	<b>7</b>
	<b>A. Definition of Weathering</b> <b>B. Factors affecting Weathering</b> <b>C. Types of Weathering - Mechanical, Chemical and Biological</b>	
<b>Chapter 2</b>	<b>Mass Wasting / Movement</b>	<b>6</b>
	<b>Concept, classification - processes, slow and rapid movements</b>	
<b>Chapter 3</b>	<b>Agents of Erosion and Deposition</b>	<b>8</b>
	<b>Landforms created by following agents</b> <b>i. Rivers</b> <b>ii. Sea – waves</b> <b>iii. Wind</b>	
<b>Chapter 4</b>	<b>Application of Physical Geography</b>	<b>9</b>
	<b>A. Human Activities and Resource Planning - Land use / Land cover</b> <b>B. Environmental Hazards &amp; Assessment -</b> <b>i. Landslides</b> <b>ii. Tsunami</b> <b>iii. Soil Degradation</b> <b>iv. Floods</b>	
<b>Chapter 5</b>	<b>Tools for studying the Earth</b>	<b>6</b>
	<b>A. Introduction and Use of Global Navigational Satellite System (GNSS)</b> <b>B. Introduction to Remote Sensing and its application</b> <b>C. Field visit for observations and identification of landforms, using earth observation tools (field visit not more than two days - Study tour report is compulsory)</b> <b>D. Discussion on Fieldwork / Experiential learning / Self study</b>	

**Learning Outcomes:**

1. Students will understand the important concepts like origin of the Atmosphere, elements of weather and climate and different theories related to the Climatology and its processes
2. Students will understand different aspects of climate and its effect on human health and wealth.
3. Students will understand mechanism of Monsoon onset and withdrawal.

**Reference Books:**

- Strahler,A.A. and Strahler, A.N., 2002. PhysicalGeography
- Critchfield, H.J., 1997. General Climatology, Prentice Hall of India Pvt. Ltd, New Delhi.
- Dasgupta,A and Kapoor,A.N., Principles of Physical Geography.
- D.S.Lal, Climatology, ShardaPustakBhandar, Allhabad
- K. Siddhartha, Climatology-Atmosphere, Weather and Climate, Kitab Mahal.
- Savindra Singh, Physical Geography, PravalikaPrakashan, Allahabad.
- Rashid S.M., Remote Sensing in Geography, Manak Publication

*Progressive Education Society's*  
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**F. Y. B. Sc. Geography**  
**Course Code: 19ScGeoU202**

**Title of the Course: Physical Geography (Climatology Paper II) (Part II)**  
**No. of Credits: --** **Total Lectures: 36**

**Objectives:**

1. To introduce the students to the basic concepts in Climatology.
2. To acquaint the students with the applications of Climatology.
3. To sensitize students to the Global changing climate, its effect on environment as a whole.

<b>Semester – II</b>		<b>Lectures</b>
<b>Chapter 1</b>	<b>Atmosphere Pressure</b>	<b>10</b>
	<b>A. Air Pressure and its measurement</b> <b>B. Concept of pressure gradient</b> <b>C. Vertical and horizontal distribution of pressure</b> <b>D. Formation of pressure belts and their relation with wind</b>	
<b>Chapter 2</b>	<b>Wind System</b>	<b>8</b>
	<b>A. Wind and its measurement</b> <b>B. Formation and factors affecting wind system</b> <b>C. Types of winds - Planetary winds, Periodic winds (monsoon winds), Local winds (land &amp; sea breezes, mountain &amp; valley winds)</b>	
<b>Chapter 3</b>	<b>Clouds</b>	<b>6</b>
	<b>A. Formation of clouds</b> <b>B. Classification of clouds</b>	
<b>Chapter 4</b>	<b>Atmosphere Moisture &amp; Precipitation</b>	<b>6</b>
	<b>A. Humidity and its Measurement - Absolute, Specific, Relative</b> <b>B. Forms of Precipitation</b> <b>C. Types of Rainfall - Convective, Orographic and Cyclonic</b>	
<b>Chapter 5</b>	<b>Air masses &amp; Fronts</b>	<b>6</b>
	<b>A. Air masses, Source regions &amp; classification of Air masses</b> <b>B. Fronts, its characteristics &amp; classification of Fronts</b> <b>C. Discussion on Fieldwork / Experiential learning / Self study</b>	

**Learning Outcomes:**

1. Students will understand the important concepts like origin of the Atmosphere, elements of weather and climate and different theories related to the Climatology and its processes
2. Students will understand different aspects of climate and its effect on human health and wealth.
3. Students will understand mechanism of Monsoon onset and withdrawal.

**Reference Books:**

- Strahler, A.A. and Strahler, A.N., 2002. Physical Geography
- Critchfield, H.J., 1997. General Climatology, Prentice Hall of India Pvt. Ltd, New Delhi.
- Dasgupta, A and Kapoor, A.N., Principles of Physical Geography.
- D.S.Lal, Climatology, ShardaPustakBhandar, Allahabad
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F. Y. B. Sc. (Geography)

Course Code: 19ScGeoU103

Title of the Course: Techniques in Physical Geography-I

No of Credits:

No of Practicals: 12

**Objectives:**

1. To acquire the knowledge of various techniques in Physical Geography.
2. To enable the student to use techniques of specific maps and their geographical interpretation.
3. To acquaint the students with the weather instruments and their utility and applications in geographical phenomena.

	<b>Semester – I</b>	<b>Practicals</b>
<b>Chapter 1</b>	<b>Maps</b>	<b>1</b>
	<b>A. Definition</b> <b>B. Elements of Map - Scale, Direction, Projection, Conventional signs and symbols, Legends</b> <b>C. Types of Maps</b> <b>D. Significance of Maps</b>	
<b>Chapter 2</b>	<b>Map Scales</b>	<b>2</b>
	<b>A. Definition</b> <b>B. Types - Verbal Scale (VS), Representative Fraction (RF), Graphical Scale</b> <b>C. Conversion of scale - VS into RF and RF into VS (Minimum 2 examples each)</b> <b>D. Exercise on simple graphical scale (Minimum 2 exercises)</b> <b>E. Reading distance on a map</b>	
<b>Chapter 3</b>	<b>Relief</b>	<b>2</b>
	<b>A. Methods of relief representation</b> <b>i. Qualitative - Hachures, Hill shading, Layer tint</b> <b>ii. Quantitative - Contours, Form lines, Spot height, Bench mark, Triangulation point</b> <b>B. 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 and cliff</b>	
<b>Chapter 4</b>	<b>Representation of Data</b>	<b>3</b>
	<b>Thematic maps -</b> <b>i. Symbol Methods</b> <b>ii. Dot methods</b> <b>iii. Choropleth method</b> <b>iv. Isopleth method</b>	

	<ul style="list-style-type: none"> <li>v. Flow diagram</li> <li>vi. Representation and interpretation of thematic maps using computer techniques</li> </ul>	
<b>Chapter 5</b>	<b>S.O.I. Toposheets</b>	<b>2</b>
	<ul style="list-style-type: none"> <li>A. Introduction to toposheets, Types of Toposheet, Indexing of toposheets <ul style="list-style-type: none"> <li>i. 1: 1000000 Series Sheet</li> <li>ii. 1: 250000 Series Sheet</li> <li>iii. 1: 125000 Series Sheet</li> <li>iv. 1: 50000 Series Sheet</li> <li>v. 1: 25000 Series Sheet</li> </ul> </li> <li>B. Marginal Information, Grid Reference, Conventional Signs and Symbols</li> </ul>	
<b>Chapter 6</b>	<b>Toposheet Reading</b>	<b>1</b>
	<p>At least one from the following regions</p> <ul style="list-style-type: none"> <li>i. Mountain</li> <li>ii. Plateau</li> <li>iii. Plain</li> </ul>	
<b>Chapter 7</b>	<b>Field Visit</b>	<b>1</b>
	<p>One day field excursion for orientation of Toposheet, observation of landforms, identification of landforms and preparation of brief report</p>	

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**F. Y. B. Sc. (Geography)**  
**Course Code: 19ScGeoU203**

**Title of the Course: Techniques in Physical Geography-II**

**No of Credits: --**

**No of Practicals: 12**

**Objectives:**

1. To acquire the knowledge of various techniques in Physical Geography.
2. To enable the student to use techniques of specific maps and their geographical interpretation.
3. To acquaint the students with the weather instruments and their utility and applications in geographical phenomena.

	<b>Semester – II</b>	<b>Practicals</b>
<b>Chapter 1</b>	<b>Weather Maps</b>	<b>2</b>
	<b>A. Introduction to weather maps</b> <b>B. Indian Meteorological Department (IMD) weather signs and symbols</b> <b>C. Use of satellite images in weather forecasting</b>	
<b>Chapter 2</b>	<b>Isobaric Patterns</b>	<b>2</b>
	<b>Drawing of isobaric patterns and associated weather- cyclone, anticyclone, ridge, trough, wedge, secondary depression, col</b>	
<b>Chapter 3</b>	<b>Weather Instruments - Mechanism and functioning</b>	<b>4</b>
	<b>A. Measurement of temperature</b> i. Simple thermometer ii. Maximum and minimum thermometer iii. Thermograph <b>B. Measurement of humidity</b> i. Hygrometer ii. Hygrograph <b>C. Measurement of air pressure</b> i. Aneroid barometer ii. Barograph <b>D. Measurement of precipitation</b> Rain gauge	
<b>Chapter 4</b>	<b>Weather Map Reading</b>	<b>2</b>
	<b>Reading of weather map</b> i. Monsoon ii. Summer iii. Winter	
<b>Chapter 5</b>	<b>Village survey / Urban survey / Tour Report</b>	<b>2</b>
	<b>A. Visit to different places and report writing</b> <b>B. One day visit to nearby weather station</b> <b>C. Discussion on Fieldwork / Experiential learning / Self</b>	

	<b>study</b>	
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**Reference books:**

- Siddhartha, K., 2006. Geography through maps, Kisalaya Publications Pvt. Ltd, Delhi
- Singh, G., 2005. Map work and practical geography. Vikas Publishing House Pvt. Ltd., New Delhi
- Singh, R.L., 2005. Elements of Practical Geography. Kalyani Publishers, New Delhi. India.
- Ramamurthy, K., 1982. Map Interpretation, Rex Printers, Madras.
- Singh, L.R. and Singh, R., 1973. Map work and practical geography, Central Book Allahabad
- Monkhouse, F.J. and Wilkinson, H.R., 1971. Maps and Diagrams. Methuen and Co. Ltd., London. K.
- Steers, J.A., 1970. An Introduction to Study of MapProjections. University of London Press Ltd., London Various websites of internet
- Singh, R.L., and Dutt, P.K., 1968. Elements of practical geography, Students' Friends, Allahabad