Khandesh College Education Society's

Moolji Jaitha College, Jalgaon

An "Autonomous College" Affiliated to
KBC North Maharashtra University, Jalgaon

KNOWLEDGE IS POWER

ESTD. 1945

SYLLABUS

Geography

T.Y.B. Sc.

(Semester V & VI)

Under Choice Based Credit System (CBCS)

[w. e. f. Academic Year: 2021-22]

MOOLJI JAITHA COLLEGE, JALGAON
GRADE 'A' CGPA-3.15 (3rd Cycle)
AUTONOMOUS

HEAD
P.G. & Research
Dept. of Geography
M.J. College, Jalgaon (Autonomous)

T.Y.B.Sc. Geography (CBCS pattern)

Program Specific Outcomes (PSO):

- T.Y. B.Sc. (Geography) graduates will have basic and applied knowledge of Geography.
- They can further continue their education as PG in Geography as well as in Geoinformatics and then Ph.D.
- After successful completion of the program, students will acquire laboratory and transferable skills which will help them to boost their career.
- Students can apply their knowledge in public as well as private sector and build successful career.

Learning Objectives:

- To acquaint the students with various branches of Geography.
- To articulate foundation and pillar level knowledge of Geography for the beneficiaries to apply them for advanced studies in the subject.
- To develop practical skills with a sound theoretical background.
- To apply the knowledge gained for higher education, research and profession of their choice.
- To analyse their interests among the various disciplines and implement them in their professional endeavours.

Exam Pattern:

- Each theory and practical course will be of 50 marks comprising of 10 marks internal and 40 marks external examination.

External Theory Examination (40 marks):

- External examination will be of two hours duration for each theory course. There shall be 4 questions each carrying equal marks (10 marks each) while the tentative pattern of question papers shall be as follows:
    - Q1 (A), Q2 (A) and Q3 (A), each will be of 6 marks (attempt any 2 out of 3 sub-questions),
    - Q1 (B), Q2 (B) and Q3 (B), each will be of 4 marks (attempt any 1 out of 2 sub-questions),
    - Q4 will be of 10 marks (attempt any 2 out of 3 sub-questions),

External Practical Examination (40 marks):

- Practical examination shall be conducted by the respective department at the end of the semester. Practical examination will be of minimum 3 hours duration and shall be conducted as per schedule. There shall be 05 marks for journal, 10 marks for *viva-voce*. Certified journal is compulsory to appear for practical examination.

Internal Theory/ Practical Examination (10 marks):

- Internal theory assessment of the student by respective teacher will be comprehensive and continuous, based on written test/ assignment. The written test may comprise of both objective and subjective type questions.
- Internal practical examination should be conducted by respective department as per schedule given.

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Structure of T.Y.B.Sc.(Geography) Curriculum Semester V

Discipline	Course Type	Course Code	Course Title	Credits	Hours/ Week (Clock Hours)	Total Teaching hours	Marks	
							Int	Ext
DSC	Core I	GG-351	Rural settlement geography	3	3	45	10	40
	Core II	GG-352	Geographical thoughts	3	3	45	10	40
	Core III	GG-353	Remote sensing	3	3	45	10	40
	Core IV	GG-354	Soil geography	3	3	45	10	40
	Core V	GG-355	Global positioning system	3	3	45	10	40
	Core VI	GG-356	Water resource management	3	3	45	10	40
SEC	Skill Based	GG-350	Fundamentals of tourism	2	2	30	10	40
DSC	Core (Practical)	GG-357	Practicals in soil analysis	2	4 / batch	60	10	40
		GG-358	Practicals in aerial photographs& satellite imageries	2	4 / batch	60	10	40
		GG-359	Practicals on statistical methods in geography	2	4 / batch	60	10	40

Structure of T.Y.B.Sc.(Geography) Curriculum Semester VI

Discipline	Course Type	Course Code	Course Title	Credits	Hours/ Week (Clock Hours)	Total Teaching hours	Marks	
							Int	Ext
DSC	Core I	GG-361	Urban settlement Geography	3	3	45	10	40
	Core II	GG-362	Geography of resources	3	3	45	10	40
	Core III	GG-363	Population geography	3	3	45	10	40
	Core IV	GG-364	Agriculture geography	3	3	45	10	40
	Core V	GG-365	Disaster management	3	3	45	10	40
	Core VI	GG-366	Geography of environmental issues	3	3	45	10	40
SEC	Skill Based	GG-360	Thematic maps	2	2	30	10	40
DSC	Core (Practical)	GG-367	Practicals on Morphometric analysis	2	4 / batch	60	10	40
		GG-368	Practicals on Interpretation of SOI topographical maps and IMD weather maps	2	4 / batch	60	10	40
		GG-369	Village survey and project report	2	4 / batch	60	10	40

DSC: Discipline Specific Core Courses/Core Practical; **SEC:** Skill Enhancement Course;
Int : Internal examination; **Ext :** External examination

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T.Y.B.Sc. (Geography): Semester-V
Discipline Specific Core (DSC) Course
GG-351: Rural settlement geography

Total Hours: 45 **Credits: 3**

Course objectives:

- To study the environmental factors affecting on rural settlement.
- To study the morphology of settlements in various climatic regions.
- To study the dynamic structures of settlements.
- To study the characteristics of settlement in India.

Course outcomes:

Student will be able to:

- Understand nature of rural settlements.
- Understand various functions and patterns of settlements.
- Understand the systematic growth of settlements.
- Understand house types in different parts of India.

. Unit-I: Introduction to rural settlement **(10 h)**

- Definition
- Nature and scope of rural settlement
- Factors affecting on location of rural settlement (Physical, cultural, social, historical, economical)

. Unit-II: Shape and Pattern of Rural Settlement **(10 h)**

- Site and situation
- Pattern (rectangular, circular, linear, double nucleated, square, polygonal)
- Types (compact, dispersed)

. Unit-III: Functions of Rural Settlement and Service Centre **(10 h)**

- Functions (administrative, cultural and economic)
- Christaller's theory
- Service centres (rural service centres, rural – urban centres)

. Unit-IV: Rural Settlements in India **(15 h)**

- Nature of rural settlement in India
- Characteristics of rural settlements in India
- Rural settlements in Maharashtra
- House types in India
  a) House types in different states of India
  b) Building materials used in India

References:

- Alam, M., & Gopi, K. N. (1982), Settlement System of India. New Delhi: Oxford and IBH Publication.
- Bose, A. (1980), India's Urbanisation. New Delhi: Tata McGraw Hill.

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- Carter, H. (1979), The Study of Urban Geography. London: Arnold Heinemann.
- Haggett, P. (1965), Locational Analysis in Geography. London: Edward Arnold.
- Hall, T. (2006), Urban Geography, London: Routledge.
- Mandal, R. B. (2001), Introduction to Rural Settlement. New Delhi: Concept Publishing Company.
- Maurya S. D. (2014), Settlement Geography. Allahabad. Sharda Pustak Bhavan.
- Pacione, M. (2009), Urban Geography. New York: Routledge.
- Ramchandran, R. (1997), Urbanization and Urban Systems in India. New Delhi: Oxford University Press.
- Sivaramakrishnan, K. C., Kundu, A., & Singh, B. N. (2005), Handbook of urbanization in India: an analysis of trends and processes. Oxford University Press, USA.
- Siddharth, K., & Mukherjee, S. (2013), Cities, Urbanization and Urban System, New Delhi: Kisalaya Publishing.
- Singh, R.Y. (1994), Geography of Settlements, Jaipur: Rawat Publications.

Methods of Teaching:

- Classroom teaching, Lecture method, ICT enabled teaching

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T.Y.B.Sc. (Geography): Semester-V
Discipline Specific Core (DSC) Course
GG-352: Geographical thoughts

Total Hours: 45 **Credits: 3**

Course Objectives

- To study historical development in geographical thoughts.
- To know the trends of geographical thoughts.
- To study dualism in geography.
- To study the conceptual development in geography.

Course outcomes:

Student will be able to:

- Understand the thought of Greek, Roman and Indian philosopher.
- Understand contribution of different thinkers.
- Understand the process of regionalization

Unit-I: Historical Development of Geographical Thoughts **(10 h)**

- Greeks contribution
- Romans contribution
- Indians contribution

Unit-II: Geographical Development in Modern Period **(10 h)**

- Founders of modern geographical thoughts- Humboldt and Ritter
- German contribution- Ratzel and Penck
- French contribution- Vidal de Lablache and Jean Brunhes
- American contribution- W. M. Davis, E. Sempleand Huntington

Unit-III: Dualism in Geography **(10 h)**

- General (Systematic) geography versus regional geography
- Physical geography versus human geography
- Determinism geography versus possibilism

Unit-IV: Conceptual Development in Geography **(15 h)**

- Concept of areal differentiation
- Concept of region with classification
- Spatial organization
- Models in geography
- Remote sensing & GIS applications

References:

- Husain Majid (2015), Evolution of Geographical Thought, 6th edition, Rawat Publication, Jaipur.
- Harvey M. E. (2016), Themes in Geographic Thought, Rawat Publication, Jaipur.
- LalitaRana (2015), Geographical Thoughts- Systematic Record of Evolution, Concept Publishing Company, New Delhi – 110059.

- Peet R. (2011), Modern Geographical Thought, Wiley Publishers.
- David Harvey (2013), Explanation in Geography, Rawat Publication
- Peter Haggett (1984), Geography A Modern Synthesis, Longman Higher Education; 3rd edition
- Dickinson R. E. (2014), The Makers of Modern Geography, Taylor & Francis.
- Brian P Fitzgerald (1974), Development in Geographical Method Science in Geography, Oxford University Press.
- Pal, Saroj K. (1982), Statistical Techniques: A Basic Approach to Geography, McGraw-Hill Inc.,US
- Chandna R. C. (2015), Geography Of population, Kalyani Publishers, Delhi.
- George Joseph (2004), Fundamentals of Remote Sensing, University Press Pvt. Ltd. Hydrabad.
- Kang – Tsung (2002), Introduction to Geographic Information System, McGraw Hill Publishing Co. Ltd.

Methods of Teaching:

- Classroom teaching, Lecture method, ICT enabled teaching

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T.Y.B.Sc. (Geography): Semester-V
Discipline Specific Core (DSC) Course
GG-353: Remote sensing

Total Hours: 45 **Credits: 3**

Course objectives:

- To study the basic concept of remote sensing.
- To study types of platform and sensor
- To study the types of satellite
- To learn visual interpretation of satellite imageries.

Course outcomes:

Student will be able to:

- Understand the principles of remote sensing techniques.
- To analyze the energy interactions in the atmosphere and earth surface features.
- To identify the earth surface features from satellite images.
- Understand the properties and use of different satellite data.

Unit-I: Remote Sensing **(15 h)**

- Working principle of remote sensing system, advantages and limitations of remote sensing system
- Types of remote sensing on the basis of source – active and passive, on the basis of number of spectral bands-panchromatic, multispectral and hyperspectral, on the basis of types of spectral bands-optical, thermal and microwave
- Electro-magnetic radiation, electro-magnetic spectrum, energy interaction with atmosphere, concept of atmospheric window
- Spectral signatures, Spectral reflectance curve, interaction of EMR with earth's surface materials - water, vegetation, soil and snow

Unit-II: Remote Sensing Sensor and Platforms **(10 h)**

- Sensors: introduction, sensor resolution- spectral, spatial, radiometric and temporal
- Examples of sensor: MSS, TM, ETM, PAN, LISS III and LISS IV
- Remote sensing platforms: introduction, types - ground borne, air borne and space borne

Unit-III: Basics of Satellite **(10 h)**

- Satellite: definition, types - earth observation, meteorological, communication and navigation, orbits: sun-synchronous and geo-synchronous
- Medium resolution remote sensing satellites: IRS-P6 and Landsat 8
- High resolution remote sensing satellites: SPOT 7, IKONOS, Quick Bird, GeoEye-1 and WorldView-3

Unit-IV: Image Interpretation **(10 h)**

- Satellite image visualization: gray scale image, true color and false color composites
- Image interpretation: Introduction, visual and digital interpretation methods, elements of image interpretation: tone, texture, pattern, shape, size, shadow and association

References:

- Bhatta, Basudeb (2011), Remote Sensing and GIS. Oxford University Press, New Delhi.
- Paul Wolf, Bon DeWitt, and Benjamin Wilkinson(2014), Elements of Photogrammetry with Application in GIS.USA: Mc-Graw Hill Education.
- Avery, T.E., and G.L. Berlin(1992), Fundamentals of Remote Sensing and Airphoto Interpretation, Macmillan, New York.
- Campbell, J.B. (1996), Introduction to Remote Sensing, Guilford, New York.
- Curran, Paul J.(1985), Principles of Remote Sensing, Longman, London & New York.
- Joseph, G. (2005), Fundamentals of Remote Sensing, Universities Press Hyderabad.
- Lillisand, T.M. and P. W. Kiefer (1986), Remote Sensing and Image Interpretation, New York. John Wiley & Sons.
- Burrough, P.A. and McDonnell, R.A. (1998) Principles of Geographic Information System. Oxford: Oxford University Press.
- Chang, Kang-tsung (2006), Introduction to Geographic Information Systems. New Delhi: Tata McGraw-Hill.

Methods of Teaching:

- Classroom teaching, Lecture method, ICT enabled teaching

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T.Y.B.Sc. (Geography): Semester-V
Discipline Specific Core (DSC) Course
GG-354: Soil geography

Total Hours: 45 **Credits: 3**

Course Objectives:

- To know the factors and properties of soil.
- To study the various soil forming processes.
- To learn the measures of soil conservation.
- To study the causes and remedies of soil erosion.

Course outcomes:

Student will be able to:

- Understand importance of soil conservation.
- Understand excess and deficiency of physical and chemical parameters.
- Know the role of climatic factor in soil formation.
- Understand the causes and measures of soil degradation.

Unit-I: Introduction to soil geography **(12 h)**

- Definition of Soil Geography
- Nature & Scope of Soil Geography
- Approaches to The Study of Soil Geography
  a) Pedagogical Approach
  b) Edapological Approach

Unit-II: Soil Formation & Soil Profile **(12 h)**

- Processes of soil formation
  a) Weathering & pedogenesis processes
  b) Carbonation
  c) Humification
  d) Laterisation
  e) Calcification
  f) Podzolisation
- Factors responsible for soil formation
  a) Parent rock
  b) Precipitation
  c) Temperature
  d) Biological factors: plants, animals & micro organisms
- Soil profile: meaning & concept.

Unit-III: Soil Properties and Classification **(12 h)**

- Physical properties of soil
- Chemical properties of soil
- Biological properties of soil
- Soil classification

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a) Zonal soil
b) Azonal soil
c) Intra zonal soil

Unit-IV: Soil Degradation & Conservation **(09 h)**

- Soil erosion: meaning, causes and effects
- Soil degradation: soil salinization
- Soil conservation: meaning & methods of soil conservation.

References:

- Pitty A.F. (1978), Geography And Soil Properties, Methuen and Company Ltd., London.
- White R.E. (1987), Introduction to The Principles And Practice of Soil Science, Blackwell Scientific Publications, London.
- Fenwick I. M. and Knapp B.J. (1982), Soils - Process and Response, Unwin Brothers Ltd., The Greshman Press, Surrey.
- Birkeland P.W. (1999): Soil and Geomorphology, Oxford University Press Inc., New York.
- Brady Nyle C., Weil Raymond C. (2012), The Nature And Properties of Soils, 14th Edition, Pearson Publishing.
- Thomas J.B. and Brunsden D (1977), Geomorphology And Time, Methuen and Company Ltd.
- Bunting B.T. (1969), Geography of Soil, Hutchinson University Library, London.
- Cruickshank J.G (1972), Soil Geography, David and Charles (publishers) Limited, Newton Abbot.
- Foth H.D and Turk L.M (1973), Fundamentals of Soil Science, Wiley Eastern Private Limited, New Delhi.
- Charman P.E.V and Murphy B.W. (2000), Soils : Their Properties and Management, Oxford University Press, Melbourne, Australia

Methods of Teaching:

- Classroom teaching, Lecture method, ICT enabled teaching

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Dept. of Geography
M.J. College, Jalgaon (Autonomous)

T.Y.B.Sc. (Geography): Semester-V
Discipline Specific Core (DSC) Course
GG-355: Global positioning system

Total Hours: 45 **Credits: 3**

Course Objectives:

- To study the importance, basic principles and uses of GPS in surveying.
- To identify sources and types of errors occurs during surveys.
- To introduce students about Navigation system using GPS

Course outcomes:

Student will be able to:

- Understand the functions of GPS.
- Know the different segments of GPS.
- Get the accurate location of a place.
- Understand the advance techniques of GPS.

Unit-I: Introduction to GPS **(12 h)**

- Basic concepts of GPS and differential GPS (DGPS)
- Historical perspective and development
- Fundamental concept
- Basic geodesy, Geoid /datum/ Ellipsoid- definition and basic concepts, overview.
- Pseudo range and carrier phase measurements; signal structure;
- GPS coordinate systems: WGS-84, GPS time; GPS errors and biases; GPS orbital geometry and navigational solution.

Unit-II: Technical Description and GPS Observables **(12 h)**

- System segmentation
  a) Space segment
  b) control segment
  c) user segment
- Types of receivers
- GPS satellite signals, GPS data, position and time from GPS, code phase tracking, pseudorange navigation, receiver position, time and velocity, carrier phase tracking, GPS positioning types – absolute positioning, differential positioning; navigation

Unit-III: Navigation, Accuracy and error **(12 h)**

- Navigation signals -GPS frequencies; calculating positions using C/A code using P(Y) code, code phase v/s carrier phase, augmented GPS, local augmentation;
- Accuracy and error sources – atmospheric effects, multipath effects, ephemeris and clock errors; selective availability, relativity, sagnac distortion. factors that affect GPS - number of satellites, multipath, ionosphere, troposphere, satellite geometry, satellite health, signal strength, distance from the reference receiver, RF interference, loss of radio transmission;
- Satellite based navigational systems: GLONASS, GALILEO.IRNSS

Unit-IV: DGPS, Instrumentation and mobile GPS Apps **(09 h)**

- DGPS –
  a) History And need for DGPS
  b) concepts and principles
  c) differential corrections
  d) accuracy in DGPS
  e) local area DGPS
  f) wide area DGPS
  g) carrier phase DGPS
  h) pseudolites
- Instrumentation and mobile GPS Apps

References:

- Longley, P. A., Goodchild, M. F., Maguire, D. J., Rhind, D. W. (2002), Geographical Information Systems and Science. Chichester: John Wiley & Sons.. Lo, C. P.,
- Chang, K. T. (2008), Introduction to Geographic Information Systems. Avenue of the Americas, New York: McGraw-Hill.
- Korte, G. B. (2001), The GIS Book, Bangalore: Onward Press. 5. Demers, M. N. (2000), Fundamentals of Geographic Information Systems. New Delhi: John Wiley and Sons.
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- Heywood, I., Cornelisus, S., Carver, S. (2011), An Introduction to Geographical Information Systems, New Delhi: Pearson Education.
- Ahmed, E. L. Rabbany (2002), Introduction to Global Positioning Systems. Boston: Artech House

Methods of Teaching:

- Classroom teaching, Lecture method, ICT enabled teaching

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T.Y.B.Sc. (Geography): Semester-V
Discipline Specific Core (DSC) Course
GG-356: Water resource management

Total Hours: 45 **Credits: 3**

Course objectives:

- To study the concept of water resource management.
- To know the need of conservation of water.
- To know the availability and utilization of water resources
- To aware the student about ways of water conservation.

Course outcomes:

Student will be able to:

- Understand the concept hydrological cycle.
- Understand problems of water resources.
- Know the importance of water conservation
- Understand the use of remote sensing techniques in water resource management and planning.

Unit-I: Introduction to Water Resources **(12 h)**

- Earth and hydrosphere
- The basic hydrologic cycle;
- Precipitation, potential evapotranspiration and interception losses; run off.
- Classification of water resources.
  a) Surface water
  b) Ground water

Unit-II: Water Resources Problems **(12 h)**

- Problems of water resources.
  a) Floods
  b) Droughts
  c) Drinking water scarcity in India
- Multipurpose river projects:
  Environmental and social impacts: case studies of - Narmada and Tehri dam
- National River Linking Plan: ecological and economic impacts.

Unit-III: Water conservation **(12 h)**

- Methods of water conservations.

a) Physical
b) Biological.
c) Significance of Shirpur pattern.

- Conservation practices and planning for the development of water resources.
  Roof water harvesting, check dams, K.T. weirs, vanrai bandhara, small medium and large projects

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Unit-IV: Water Resource Management & Planning **(09 h)**

- Modern techniques of irrigation
  a) Drip irrigation
  b) Sprinkler irrigation
  c) Micro irrigation
- Application of remote sensing in water resource management

References:

- John J. A. (1997), Global Hydrology: Processes, Resources and Environment Management, Longman Publishers.
- Law B. C. (1968), Mountains and Rivers of India, IGU National Committee for Geography, Calcutta.
- Matter, J. R. (1984), Water Resources Distribution, Use and Management, John Wiley, Maryland.
- Newson M. (1992), Land, Water and Development, River Basin Systems and their Sustainable Management, Row fledge, London.
- Rao K. L. (1979), India's Water Wealth, Orient Longman, New Delhi.
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- Publication, Varanasi.
- Bansil P. C. (2004), Water Management in India, Concept Publishing Company, India.
- Brebbia C. A. (2013) Water Resources Management, VII, WIT Press.
- CEA. (2011), Water Resources and Power Maps of India, Central Board of Irrigation & Power.
- Grumbine R. E., Pandit, M. K. (2013), Threats from India's Himalaya dams, Science 339: 36-37.
- Loucks D. P., Stedinger, J. R., Haith D. A. (1981), Water Resource Systems Planning and Analysis, Englewood Cliffs, NJ, Prentice Hall.

Methods of Teaching:

- Classroom teaching, Lecture method, ICT enabled teaching

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T.Y.B.Sc. (Geography): Semester-V
Skill Enhancement Course (SEC)
GG-350: Fundamentals of Tourism

Total Hours: 30 **Credits: 02**

Course Objectives:

- To study the basic of tourism geography.
- To learn the types of tourism.
- To study the impact of tourism.

Course outcomes:

Student will be able to:

- Understand role of geography in tourism.
- Understand bases of classification of tourism.
- Know the status of tourism in India.
- Understand concept of sustainable tourism.

Unit-I: Introduction to Tourism **(06 h)**

- Meaning and definition of the tourism & tourist
- Importance of geography in tourism
- Nature
- Scope
- Importance of tourism
- Role of geography in tourism
- Recent trends in tourism geography

Unit-II: Classification and Recent Concepts of Tourism **(08 h)**

- Types of tourism
- Classification on the basis of –
  Nationality, time of travel, number of tourist, purpose, mode of transportation & season
- Recent Concepts of Tourism
  a. Agro-tourism
  b. Eco-tourism
  c. Adventure tourism

Unit-III: Tourism in India **(08 h)**

- Basic tourism infrastructure
- Case study of Himalaya – (general introduction of the Himalayas & other ranges, hill station & their tourism significance)
- Desert– Jaiselmer
- Coastal – Goa
- Religious Tourism: concept, definition and significance
  a) Four Dhams (Badrinath, Rameshwaram, Puri and Dwarka), Varanasi, Mathura Vrindavan, Haridwar, Vaishno Devi, Shirdi, Tirupati, Bodh Gaya and Ssanchi.

- E-Tourism: introduction, definition, significance, DMS, functions & components of e-tourism

Unit-IV: Impact of Tourism on- **(08 h)**

a) Economy
b) Socio-cultural aspects
c) Environment

- Sustainable development of tourism

References:-

- Bhatia, A.K. (1991), International Tourism Fundamentals and Practices, Sterling Publishers Pvt. Ltd., New Delhi-110016
- Bhatia, A.K. (2012), Tourism Development, Sterling Publishers Pvt. Ltd., New Delhi
- Burkart and Medlik (1981), Tourism, Past, Present and Future Heinemann, ELBS.
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- Geetanjali (2010), Tourism Policy and Planning, ABD Publishers, Jaipur
- Kaul, R. N. (1985), Dynamics of Tourism, Sterling Publishers Pvt. Ltd., New Delhi
- Mill and Morrison (1992), The Tourism system an Introductory Text , Prentice Hall
- .S. Gill (1998), Dynamics of Tourism (4 Vols) Anmol Publication. New Delhi.
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Methods of Teaching:

- Classroom teaching, Lecture method, ICT enabled teaching

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T.Y.B.Sc. (Geography): Semester-V
Discipline Specific Core (DSC) Course
GG-357: Practicals in soil analysis

Total Hours: 60 **Credits: 02**

Course Objective:

- To learn the method of collection of soil sampling
- To find out of physical parameter of soil
- To calculate chemical parameter of soil

Course outcomes:

Student will be able to:

- To understand textural properties of soil.
- To understand the importance of physical and chemical properties of soil
- To suggest the suitable crop to maintain fertility of soil.

Unit-I: Concept of soil sampling **(15 h)**

- Methods of soil sampling
- Collection of at least one soil sample by using soil augur

Unit-II: Mechanical analysis of soil sample **(25 h)**

- Soil texture
  a) Grain size analysis by using sieves
  b) Graphical representation (Soil triangle)

Unit-III: Chemical analysis of soil sample **(20 h)**

- Estimation of following parameters organic matter by using pipet method **(any four)**
  a) Calcium
  b) Total dissolved salts
  c) PH
  d) Electric conductivity
  e) Potassium
  f) Magnesium
  g) Nitrogen

References:

- Bunting, B.T. (1973), The Geography of Soils, Hutchinson, London.
- Clarke G.R. (1957), Study of the Soil in the Field, Oxford University Press, Oxford,.
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Methods of Teaching:

- Laboratory method, Lecture cum demonstration methods

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T.Y.B.Sc. (Geography): Semester-V
Discipline Specific Core (DSC) Course
GG-358: Practicals in aerial photographs and satellite imageries

Total Hours: 60 **Credits: 02**

Course objectives:

- To learn the basics of aerial photography.
- To know the terminology of aerial photographs.
- To study the element of image interpretation.
- To know use of aerial photo and satellite imageries.

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Course outcomes:

Student will be able to:

- Understand the uses of Arial photography
- Understand skill of aerial photograph interpretation.
- Understand geometrical calculations from aerial photograph.
- Know the identification of features from satellite image.

Unit-I: Introduction to aerial photography **(15 h)**

- Definition, history, significance of aerial photographs
  Importance of aerial photograph
- Aerial photography in India
- Types of aerial photographs
- Stereoscopic coverage
  a) Pocket stereoscope
  b) Mirror stereoscope
- Overlapping
  a) Side information of aerial photographs.

Unit-II: Interpretation of aerial photograph **(15 h)**

- Elements of aerial photo interpretation
- Transformation of points
- Calculation of scale.
- Identification of features
- Interpretation of photographs(at least two pairs of aerial photographs)

Unit-III: Geometric calculations of aerial photographs **(15 h)**

- Photo scale
- Focal length
- Flying height
- Height of object

Unit-IV: Satellite image **(15 h)**

- Introduction.
- Annotation strip.
- Scale and area calculation.

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- Identification of features.
- Preparation of sketch.
- Interpretation.

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Methods of Teaching:

- Laboratory method, Lecture cum demonstration methods

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T.Y.B.Sc. (Geography): Semester-V
Discipline Specific Core (DSC) Course
GG-359: Practicals on statistical methods in geography

Total Hours: 60 **Credits: 02**

Course Objectives:

- To understand the types of statistical data.
- To know the methods of preparation of frequency table.
- To understand the importance of statistic in research work.
- To familiarize the students with statistical analysis and its applications in geography.

Course outcomes:

Student will be able to:

- Understand methods of representation of data.
- Understand calculation of mean, mode and median.
- Understand the correlation between variable in research work.
- Understand methods of testing of hypothesis.

Unit-I: Geographical data and statistical data **(15 h)**

- Nature of scales & measurement
  a) Spatial and temporal
  b) Discrete and continuous data
  c) Grouped and ungrouped data
  d) Nominal, ordinal, interval and ratio of scales
- Frequency distribution
  a) Tally marks and frequency table
  b) Frequency histogram, frequency polygon
  c) Cumulative frequency curve or ogive curve

Unit-II: Measures of central tendency **(15 h)**

- Measures of central tendency
  a) Meaning and description of central tendency.- mean, median and mode
  b) Calculation of mean, median and mode for ungrouped and grouped data (2 examples each)

Unit-III: Measures of dispersion **(15 h)**

- Measures of dispersion
  a) Mean deviation
  b) Standard deviation

Unit-IV: Bivariate analysis **(15 h)**

- Application of following tests:
  1. Chi squared test (one way only)
  2. Student's t test (comparison of sample means)

  a) Meaning of coefficient of correlation.
  1. Calculation of Karl Pearson's product moment coefficient of correlation

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2. Spearman's rank order coefficient of correlation

b) Simple regression equation

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Methods of Teaching:

- Laboratory method, Lecture cum demonstration methods

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T.Y.B.Sc. (Geography): Semester-VI
Discipline Specific Core (DSC) Course
GG-361: Urban settlement geography

Total Hours: 45 **Credits: 3**

Course objectives:

- To study the environment of factors influencing on human settlement.
- To study the morphology of settlements in various climatic regions.
- To study the dynamic structures of urban settlements.

Course outcomes:

Student will be able to:

- Understand the cultural integrity of man in settlement.
- Understand the functions of settlement.
- Understand the systematic growth of settlement.
- Understand the hierarchy of urban settlement.

. Unit-I: Introduction to urban settlement **(09 h)**

- Definition
- Nature and scope of urban settlement
- Classification of urban settlement

. Unit-II: Urbanization **(12 h)**

- Definition
- Factors affecting on urbanization
- Problems of urbanization
- Urbanization in India
- Types of urban settlement- (urban hamlet , urban village , town , city , metropolis , megalopolis)

. Unit-III: Patterns and functions of urban settlement **(12 h)**

- Patterns - (linear , square , redial , circular , checker-board , fragmented , bee-hive)
- Functions - (industrial , administrative , political, cultural and religious)

. Unit-IV: Morphology of urban settlement **(12 h)**

- Theories of urban settlement
  a) Concentric one theory
  b) The sector theory
  c) The multiple Nuclei theory
- Morphological characters of Indian cities
  a) Mumbai
  b) Chandigarh
  c) Jalgaon

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Methods of Teaching:

- Classroom teaching, Lecture method, ICT enabled teaching

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T.Y.B.Sc. (Geography): Semester-VI
Discipline Specific Core (DSC) Course
GG-362: Geography of resources

Total Hours: 45 **Credits: 3**

Course Objectives:

- To know the uneven distribution of resources.
- To study the need of conservation of resources.
- To make aware about the judicious use of resources.
- To study the theories regarding resource utilizations.

Course outcomes:

Student will be able to:

- Understand the need of optimum use of varies resources
- To understand availability and scarcity of resources.
- Understand the concept of conservations and management of resources.
- Understand national policy on natural resources.

. Unit-I: Geography of resources **(09 h)**

- Definition, nature and scope
- Concept and classification of resources
- Resources and development – culture, economic and technological
- Concept of resource adequacy and scarcity.

. Unit-II: Distribution and Characteristics of Resources **(12 h)**

- Distribution and characteristics of major natural resources of the world (soils, forest, water, power and minerals – iron ore, bauxite, copper, tin)
- Delimitation and characteristics of major resource regions of the world
- Distribution and characteristics of world human resource.

. Unit -III: Resource Utilization **(12 h)**

- Problem of resource utilization
- Population pressure on resources
- Concept of limits to growth
- Agricultural and industrial regions of the world
- Models in resource utilization – Von Thunen, Jonathan, Israd and M. Smith.

. Unit-IV: Conservation and Management **(12 h)**

- Conservation and management of resource
  Concept, method and approaches
- Use and conservation and management of resources
  (global, national and regional level – forest, soils and water)
- National policy of India on natural resources
  (forest and water; population policy and programmes in India)

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Methods of Teaching:

- Classroom teaching, Lecture method, ICT enabled teaching

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T.Y.B.Sc. (Geography): Semester-VI
Discipline Specific Core (DSC) Course
GG-363: Population geography

Total Hours: 45 **Credits: 3**

Course Objectives:

- To gain knowledge about different aspects of population geography.
- To study the methods of collection of population data.
- To learn the factors affecting on population distribution.
- To study the importance of population in development of a nation.

Course outcomes:

Student will be able to:

- Understand the sources of population.
- Understand the characteristics of population.
- Understand demographic structure of our country.

Unit-I: Introduction to population geography **(12 h)**

- Definition, nature and scope of population geography
- Evolution of population geography
- Significance of the study of population geography
- Approaches to the population geography

Unit-II: Population Data **(12 h)**

- Need and importance of population data
- Types of population data

a) Primary data
b) Secondary data
c) Sources of collection of population data
   i. primary sources:
   ii. secondary sources:
d) Problems related to collection and utilization of population data

Unit-III: Concepts Related to Population **(12 h)**

- Concepts, definition, types, characteristics and influencing factors:
  a) Density
  b) Over, optimum and under population
  c) Fertility
  d) Mortality
  e) Migration
  f) Population projections

Unit-IV: Theories & Factors Affecting on Distribution of Population **(09 h)**

- Demographic Transition model
- Thomas Robert Malthus's theory
- Distribution and factors affecting on distribution of population

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Methods of Teaching:

- Classroom teaching, Lecture method, ICT enabled teaching

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Dept. of Geography
M.J. College, Jalgaon (Autonomous)

T.Y.B.Sc. (Geography): Semester-VI
Discipline Specific Core (DSC) Course
GG-364: Agriculture geography

Total Hours: 45 **Credits: 3**

Course objectives:

- To find out the relationship between physical and nonphysical determinant of agricultural geography.
- To study the need of agricultural development.
- To study the geographical aspects in agricultural geography.
- To study the types of landuse.

Course outcomes:
Student will be able to:

- To understand the fundamentals of agricultural geography.
- To understand the physical and other determinants of agriculture.
- To understand the agriculture system of world.
- To understand agriculture landuse model of Von Thunen.

Unit-I: Introduction to agricultural geography **(12 h)**

- Definition, nature and scope of agricultural geography
- Significance of study of agricultural geography
- Approaches to the study of agricultural geography
  a) Commodity approach
  b) Regional approach
  c) Systematic approach
  d) Deterministic approach

Unit-II: Determinants of agricultural pattern **(09 h)**

- Physical determinants
  a) The terrain
  b) The climate
  c) The soil
  d) The water resources
- Non-physical determinants
  a) Technological factor
  b) Population characteristics
  c) Cultural factor
  d) Infrastructural services of relevance to agriculture

Unit-III: Agricultural systems of the world **(12 h)**

- Study of following major agricultural types:
  a) Intensive subsistence agriculture
  b) Extensive farming
  c) Plantation agriculture
  d) Commercial crop and livestock farming

Unit-IV: Land use and classification of crops **(12 h)**

- Land Use
  a) Definition
  b) Classification of land-use
  c) Von Thunen's theory of agricultural land-use
- Crops classification
  a) Food crops
  b) Nonfood crops/ cash crops
  c) Major food and nonfood crops in the Maharashtra.

References:

- Anderson, R.H. (1936), Grain Drills through 39 Centuries, Agricultural History
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Methods of Teaching:

- Classroom teaching, Lecture method, ICT enabled teaching

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T.Y.B.Sc. (Geography): Semester-VI
Discipline Specific Core (DSC) Course
GG-365: Disaster management

Total Hours: 45 **Credits: 3**

Course Objectives:

- To acquaint the students with basic knowledge of natural and manmade disasters.
- To know the fundamental concepts of disaster management.
- To acquire the knowledge of preparedness and mitigation.
- To know the role of individual in disaster management

Course outcomes:

Student will be able to:

- To create awareness among students about disasters.
- Understand impacts of disasters.
- Understand manifesting the mitigation.
- Understand role of government agencies.

. Unit-I: Introduction to disaster **(08 h)**

- Concept and definitions of disaster, hazards, risk and vulnerability
- Classification of disaster
- Importance of the study of disaster - management
- Difference between disaster and hazards

. Unit-II: Physical and atmospheric disaster **(15 h)**

- Causes, impact, management, distribution and mapping of following disaster in India
  a) Physical
     i. Earthquake
     ii. Landslide
     iii. Tsunami
  b) Atmospheric
     i. Flood
     ii. Droughts
     iii. Cyclone

. Unit-III: Manmade disaster **(10 h)**

Causes, impact, management, distribution and mapping of following disaster in India

a) Terrorism
b) Fire
c) Accidents
d) Chemical disaster

. Unit-IV: Disaster risk reduction **(12 h)**

- Mitigation and preparedness: Survival Kit, medicinal kit, warning and alarm system
- Community based disaster management: Do's and don'ts during and post disaster
- Role and responsibilities of GO's and NGO's

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References:

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Methods of Teaching:

- Classroom teaching, Lecture method, ICT enabled teaching

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T.Y.B.Sc. (Geography): Semester-VI
Discipline Specific Core (DSC) Course
GG-366: Geography of environmental issues

Total Hours: 45 **Credits: 3**

Course Objectives:

- To study dynamic nature of environment.
- To study causes and effects of environmental problems.
- To understand the laws of environmental protection.
- To study the planning and management of environmental problems.

Course outcomes:

Student will be able to:

- Understand the concept of environment.
- Understand the causes and effects of some global and regional issues.
- Understand the various conservational movements in India.
- Understand the status of various management programs in India.

Unit-I: Introduction to environmental geography **(10 h)**

- Introduction to environmental geography
  a) Meaning and definition
  b) Nature, scope and significance
  c) Types of environment.

Unit-II: Environmental Problems **(10 h)**

- Major global environmental issues:
  a) Causes and effects of climate change
     i. Stratospheric ozone depletion
     ii. Biodiversity depletion
- Major environmental issues in India: causes and effects
  a) Loss of biodiversity
  b) Water pollution
  c) Air pollution
  d) Noise pollution

Unit-III: Specific Environmental issues in India **(10 h)**

- Energy crisis: Impact and remedial measures
- Major environmental movements in India:
  a) Western Ghat Conservation
  b) Chipako Movement
  c) Appiko movement
  d) Satpuda BachaoAndolan

Unit-IV: Environmental Programme and Policies **(15 h)**

- The United nations environment programme (UNEP) and initiative:
  a) Stockholm conference-1972

b) Earth Summit, Rio de Janeiro-1992
c) Kyoto protocol-1997
d) World summit on sustainable development, Johannesburg-2002
e) Sustainable development summit, New York-2015

- Major programme for environmental protection and conservation in India:
  a) Wildlife (protection) act -1972
  b) Forest (conservation) act.1980
  c) Environmental protection act- 1986

References:

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Methods of Teaching:

- Classroom teaching, Lecture method, ICT enabled teaching

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T.Y.B.Sc. (Geography): Semester-VI
Skill Enhancement Course (SEC)
GG-360: Thematic maps

Total Hours: 30 **Credits: 2**

Course objectives

- To understand the concept of map.
- To know the need of mapping analysis.
- To aware the student about new technique of thematic mapping.

Course outcome:

Student will be able to:

- Learn about the types of maps.
- Develop the mapping skill of students.
- Know the modern technique of analyzed of maps.

Unit-I: Introduction Thematic maps **(06 h)**

- Introduction, history, purpose and elements of thematic mapping
- General and thematic maps

Unit-II: Types of thematic maps **(08 h)**

- Qualitative thematic maps
- Quantitative thematic maps
  a) Dot-distribution maps
  b) Isoline maps
  c) Choropleth maps
  d) Cartograms
  e) Flow-line maps
  f) Maps employing proportional symbols, graphs, and statistical summaries

Unit-III: Classification of thematic Maps **(08 h)**

- Data analysis
- Map categories
  a) Demographic maps
  b) Economic maps
  c) Environmental maps
  d) Ethnographic maps
  e) Religion maps

Unit-IV: GIS Data and thematic mapping **(08 h)**

- Modern practical mapping technologies in thematic mapping
  a) GIS
  b) GPS
  c) The digital revolution: New functions for maps
- Map design processes
- Application of thematic cartography

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Methods of Teaching:

- Classroom teaching, Lecture method, ICT enabled teaching

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T.Y.B.Sc. (Geography): Semester-VI
Discipline Specific Core (DSC) Course
GG-367: Practicals on morphometric analysis

Total Hours: 60 **Credits: 02**

Course Objectives:

- To study the nature of river basin.
- To study three dimensional feature of the basin.
- To study the relationship between basin parameter and basin morphometry.

Course outcomes:

Student will be able to:

- Understand description and comparison of different forms of drainage basin.
- Understand geometry of basin.
- Understand the importance of relief aspect.
- Understand the idea of the basin relief.

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Unit-I: Introduction to basin morphometry **(15 h)**

- Introduction to basin morphometry
- Liner aspects of basin

a) A stream ordering by basin
b) Length ratio and low of stream length
c) Sinuosity index

Unit-II: Areal aspects of basin **(15 h)**

- Geometry of basin slope
- Horton`s farm factor
- Law of basin area
- Stream frequency
- Drainage density

Unit-III: Relief Aspects of Basin **(15 h)**

- Hypsometric curve
- Relative relief
- Dissection index

Unit-IV: Profiles **(15 h)**

- Cross profile
- Longitudinal profile

References:

- Gregary K.G. and Walling D. (1973), Drainage Basin Forms and Processes, Edward Arnold
- Khan Za (1998), Text Book of Practical Geography
- D. R. Khullar (2015), Essentials of Practical Geography, Chaukhamba Auriyantaliya.

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- P. Saha and P. Basu (2006), Advanced Practical Geography, Books and Allied Publication, Kolkata, India.
- Richards K. (1982), River; form and processes in alluvial channels Matheu London
- Robinson Rep. (2010), Elements of Cartography 6/e
- Savindra Singh (2005), Geomorphology, Prayag Pustak Bhawan, Allahabad, India.
- Schumm S.A. (1977), Fluvial system John Wiley & Co.
- Singh Gopal (2021), Map Work and Practical Geography, Vikas Publication House Pvt Ltd; Fourth edition
- Singh L R (2018), Fundamentals of Practical Geography, Sharda Pustak Bhawan.
- Rana P. B, Singh, R. L Singh (2005), Elements of Practical Geography, Kalyani Publisher

Methods of Teaching:

- Laboratory method, Lecture cum demonstration methods

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T.Y.B.Sc. (Geography): Semester-VI
Discipline Specific Core (DSC) Course
GG-368: Practicals on interpretation of SOI topographical map and IMD weather maps

Total Hours: 60 **Credits: 2**

Course Objectives

- To know hierarchy of toposheet.
- To develop the interpretative skill of student.
- To know the functioning of weather instrument.
- To understand the element of maps.

Course outcomes:
Student will be able to:

- Understand the basis of topographical maps.
- Understand the methods of interpretation of topographical maps.
- Understand the Indian daily weather maps and its uses.
- Understand the functions of weather instruments.

Unit-I: Introduction to SOI topographical maps **(12 h)**

- Types of topographical maps
- Index numbers (international world map series)
- Grid reference
- Four figure & six figure grid
- Convectional signs and symbols
- Contour patterns
- Slope

Unit-II: Interpretation of topographical maps **(13 h)**

- Plain region.
- Plateau region
- Mountainous region

Unit-III: Introduction to I.M.D. weather maps **(10 h)**

- Signs and symbols
- Isobaric patterns

Unit-IV: Interpretation of weather maps **(12 h)**

- The rainy season
- The winter season
- The summer season

Unit-V: Weather instruments **(13 h)**

Study of following weather instruments with mechanism function and uses.

a. Maximum and minimum thermometer
b. Thermograph
c. Barograph

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d. Rain gauge
e. Cup anemometer

References:

- Arjun,K. (2000), Pratyakshik Bhugol, Sumeru Prakashan, Dombivali.
- Ahirrao, D. Y. & Karanjkhele, E. K. (2002), Pratyakshik Bhugol, Sudhershan Prakashan, Nashik.
- Singh, G. (2008), Map work and practical geography.Vikas Publishing House pvt.ltd, New Delhi. Mishra,
- R. P. and Ramesh, A. (1986), Fundamental of Geography. Concept publication, New Delhi.
- Singh, R. L. and Kanauja,.(1970), Map work and practical geography.Central book depot, Alahabad.

Methods of Teaching:

- Laboratory method, Lecture cum demonstration methods

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T.Y.B.Sc. (Geography): Semester-VI
Discipline Specific Core (DSC) Course
GG-369: Village Survey and Project Report

Total Hours: 60 **Credits: 2**

Course Objectives:

- To study the types of data
- To study the collection of data
- To know the type of questionnaire
- To use the various statistical technique to represent data.

Course outcomes:

Student will be able to:

- Students understand the nature, importance of data.
- Understand the importance of village survey.
- Students understand analysis of data.
- Understand the process of report writing

. Unit-I: Sources of data **(10 h)**

- Introduction to field survey
- Importance of field survey
- Types of data
- Primary data sources
- Secondary data sources

Unit-II: Kind of data **(15 h)**

- Age, sex, caste, religion wise population data
- Number of birth and deaths
- Occupation wise data
- Number of households in the village
- Cropping pattern- Area under different crops

Unit-III: Analysis of the data **(15 h)**

- For the analysis of data apply at least 15 indices for the information collected from various sources
- Prepare suitable Charts, Graphs, Maps, with the help of computer and GIS software
- For the presentation of report prepare at least 15 slides in power point

Unit-IV: Report Writing and Presentation **(20 h)**

- Methods of data analysis and representation.
- Report writing
- Presentation of report

➢ **Note:**

- The selection of the village must be based on the availability of SOI Toposheet and/or cadastral map.

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- As far as possible the village should be selected from the nearby area, so that the students can undertake at least two field visits.
- Collection of data / information should be undertaken by the student by visiting the various Government offices
- The village survey repost should include all geographical and socio-economic aspects
- Appropriate maps, diagrams, graphs, sketches etc. should be included
- And a group of maximum 5 students is permissible

References:

- Creswell J., (1994), Research Design: Qualitative and Quantitative Approaches Sage Publications.
- Dikshit, R. D., (2003), The Art and Science of Geography: Integrated Readings. Prentice-Hall of India, New Delhi.
- Evans M., (1988), Participant Observation: The Researcher as Research Tool, in Qualitative Methods in Human Geography, eds. J. Eyles and D. Smith, Polity.
- Mukherjee, Neela, (1993), Participatory Rural Appraisal: Methodology and Application. Concept Publs. Co., New Delhi.
- Mukherjee, Neela, (2002), Participatory Learning and Action: with 100 Field Methods. Concept Publs. Co., New Delhi
- Robinson A., (1998), Thinking Straight and Writing That Way, in Writing Empirical Research Reports: A Basic Guide for Students of the Social and Behavioural Sciences, eds. by F. Pryczak and R. Bruce Pryczak, Publishing: Los Angeles.
- Special Issue on "Doing Fieldwork" The Geographical Review 91:1-2 (2001),
- Stoddard R. H., (1982), Field Techniques and Research Methods in Geography, Kendall/Hunt.
- Wolcott, H. (1995), The Art of Fieldwork, Alta Mira Press, Walnut Creek, CA.

Methods of Teaching:

- Classroom teaching, Laboratorial Work, On field demonstration

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Skills acquired and Job prospects for the Geography students:

Degree program in Geography teaches students the study of the world we live in, its environments, landscapes and natural disasters, and the relationship between people and environments. A significant attraction of the course is the ability to combine in-depth geographical knowledge with practical laboratory skills, field techniques and the career opportunities in specific sectors.

After successful completion of three years degree course in Geography, student will be well versed with laboratory skills and transferable skills, field techniques.

Laboratory Skills: asst.

- Careful handling of toposheet, weather maps and imageries.
- Accurate surveying and measurements use of weather instruments and survey instruments.
- Use of advance techniques like Remote sensing and GIS software.
- Take readings from GPS, dumpy level and theodolite.
- Collection, organization and presentation of data
- Analysis, Logical thinking, Surveying techniques and, interpretation of results

Transferable Skills:

During the course student will develop skills other than laboratory skills that are transferable across the number of career areas which include;

- Analytical skill, Observational skill
- Planning and Time management
- Statistical and IT skills
- Creative thinking, Problem solving
- Report writing skill, Presentation skill

Job Opportunities:

After successful completion of B.A. in Geography, student may continue further studies like M.A. in Geography and then Ph.D. in Geography and make career in research field. Students have opportunities in private as well as public (Government) sectors.

Private Sector:

Navigation, tourist agencies, surveying companies as cartographer and in NGO also.

Public Sectors:

Surveying institutes, population studies, forest department, town planning, tourism agencies, military GIS base companies and in NGO.

Job profiles:

Teaching, Surveyor, Cartographer, GIS specialist, Geographer, Laboratory Technician, Meteorologist, Research Associates, Research Officers, Research Scientist etc.

Opportunities in higher studies

After successful completion of B.Sc. in Geography, student may continue further studies like M.Sc. in Geography/Geoinformatics/Environment and pursue higher studies. Even students can pursue other courses where graduation is essential.

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