

University of Mumbai



No. AAMS_UGS/ICC/2023-24/30

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculties of Humanities & Science & Technology is invited to this office Circular No. UG/16 of 2018-19 dated 14th June, 2018 relating to the revised syllabus as per the (CBCS) for the T.Y.B. A. / T. Y. B. Sc. in Geography (Sem V & VI).

They are hereby informed that the recommendations made by the Board of Deans at its meeting held on 27th June, 2023 vide item No. 8.1 (R) have been accepted by the Academic Council at its meeting held on 27th June, 2023 vide item No. 8.1 (R) and that in accordance therewith, the **revised syllabus of T.Y.B. A. / T. Y. B. Sc. (Geography) (Sem. - V & VI)** has been brought into force with effect from the academic year 2023-24.

(The said circular is available on the University's website www.mu.ac.in).

MUMBAI - 400 032
13th July, 2023


(Prof. Sunil Bhirud)
I/c. REGISTRAR

To

The Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculty of Science & Technology.

A.C/8.1 (R) /27/06/2023

Copy forwarded with Compliments for information to:-

- 1) The Dean, Faculties of Humanities & Science & Technology,
- 2) The Chairman, Board of Studies **Geography**,
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Director, Board of Students Development,
- 5) The Director, Department of Information & Communication Technology,
- 6) The Co-ordinator, MKCL.

Copy for information and necessary action :-

1. The Deputy Registrar, College Affiliations & Development Department (CAD),
2. College Teachers Approval Unit (CTA),
3. The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Department (AEM),
4. The Deputy Registrar, Academic Appointments & Quality Assurance (AAQA)
5. The Deputy Registrar, Research Administration & Promotion Cell (RAPC),
6. The Deputy Registrar, Executive Authorities Section (EA)
He is requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to the above circular.
7. The Deputy Registrar, PRO, Fort, (Publication Section),
8. The Deputy Registrar, Special Cell,
9. The Deputy Registrar, Fort Administration Department (FAD) Record Section,
10. The Deputy Registrar, Vidyanagari Administration Department (VAD),

Copy for information :-

1. The Director, Dept. of Information and Communication Technology (DICT), Vidyanagari,
He is requested to upload the Circular University Website
2. The Director of Department of Student Development (DSD),
3. The Director, Institute of Distance and Open Learning (IDOL Admin), Vidyanagari,
4. All Deputy Registrar, Examination House,
5. The Deputy Registrars, Finance & Accounts Section,
6. The Assistant Registrar, Administrative sub-Campus Thane,
7. The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan,
8. The Assistant Registrar, Ratnagiri sub-centre, Ratnagiri,
9. P.A to Hon'ble Vice-Chancellor,
10. P.A to Pro-Vice-Chancellor,
11. P.A to Registrar,
12. P.A to All Deans of all Faculties,
13. P.A to Finance & Account Officers, (F & A.O),
14. P.A to Director, Board of Examinations and Evaluation,
15. P.A to Director, Innovation, Incubation and Linkages,
16. P.A to Director, Department of Lifelong Learning and Extension (DLLE),
17. The Receptionist,
18. The Telephone Operator,

Copy with compliments for information to :-

19. The Secretary, MUASA
20. The Secretary, BUCTU.

University of Mumbai



**Revised Syllabus for
T.Y.B.A./T.Y.B.Sc. (Geography)
Semester – (Sem V & VI)
(Choice Based Credit System)**

(With effect from the academic year 2023-24)

University of Mumbai



Syllabus for Approval

Title of Course	T.Y.B.A./T.Y.B.Sc. (Geography)
Eligibility	Passed Second Year B.A./B.Sc.
Passing Marks	40 % Passing Marks
No. of Semesters:	Sem V & VI
Level:	P.G. / U.G. / Diploma / Certificate (Strike out which is not applicable)
Pattern:	Yearly / Semester (Strike out which is not applicable)
Status:	Revised / New (Strike out which is not applicable)
To be implemented from Academic Year :	From Academic Year: 2023-2024

Signature:

Dr. A. K. Singh

Dean, Faculty of Interdisciplinary Studies

University of Mumbai
Revised Syllabus w.e.f. Academic Year, 2023-24 (CBCS)
T.Y.B.A. /T.Y.B.Sc. (Geography) Semester – V
Paper – IV: Introduction to Geomorphology
COURSE CODE: UAGEO-501 (2023-24), Credit: 04

Course Learning Outcomes:

After the completion of this course, student should be able to:

1. To define the field of Geomorphology and to explain the essential principles of Geomorphology.
2. To know the mechanism of dynamic nature of earth's surface and its interior.
3. To illustrate and explain the forces affecting the crust of the earth and its effect.
4. To understand the conceptual and dynamic aspects of landform development.

Course Objectives:

This course aims to:

1. To define the concepts in Geomorphology and Physical Geography.
2. To introduce various concept to understand cycles of the solid Earth surface.
3. To understand the mechanism of dynamic nature of earth's surface
4. To study the impact of human on geomorphic system.

UNIT – I: Introduction to Geomorphology		TOTAL LECTURES
1.1	Introduction to Geomorphology - Definition, Nature and Scope	12
1.2	Earth: Interior Structure and composition	
1.3	Wegner's Continental Drift Theory	
1.4	Plate Tectonic Theory	
UNIT – II: - Earth movements		12
2.1	Endogenic forces - types of folds and faults .	
2.2	Earthquake: causes, effects, and distribution.	
2.3	Earthquakes in India	
2.4	volcanoes: causes, effects, and distribution	
UNIT – III: Weathering and Mass Movement		12
3.1	Weathering - Meaning and concept, controlling factors of weathering	
3.2	Types of Weathering- physical , chemical and biological	
3.3	Mass Movement - meaning , factors of Mass Movement	
3.4	Classification of Mass Movement	
UNIT – IV: Rocks and Minerals		12
4.1	Definition of rocks and minerals, Difference between rocks and minerals	
4.2	Rock types – igneous rocks, characteristics and classification	
4.3	Sedimentary rocks - characteristics and classification	
4.4	Metamorphic rocks - characteristics and classification	
UNIT – V: Evolution of Landforms (Erosional and Depositional):		12
5.1	Fluvial,- Erosional and depositional features of River	
5.2	Aeolian - Erosional and depositional features of wind	
5.3	Glacial - Erosional and depositional features of glacier	
5.4	Coastal - Erosional and depositional features of sea waves	

REFERENCES:

1. Ahmed E. (1985) Geomorphology, Kalyani Publishers, New Delhi.
2. A.N. Strahler (1968) The Earth Sciences, Harper & Row Intl. Edn, New York
3. Dayal P. (1995) A Text Book of Geomorphology 2nd Edition. Sukla Book/Dept. Patna
4. Lal D.S. (2009) Physical Geography , Sharda Pustak Bhavan, Allahabad .
5. Hussain Majid (2001) Fundamentals of Physical Geography, Rawat Publications, Jaipur.
6. Negi B.S.(1993) Physical Geography, S.J. Publication, Meerut.
7. Qazi S.A. (2009) Principles of Physical Geography, A.P.H. Publication, New Delhi.
8. Savindra Singh (2015) Physical Geography, Pravalika Publication, , Allahabad.
- 9 . Thornberry W.D. (1969) Principles of Geomorphology 2nd Edition, Wiley International Edn. & Wiley Eastern Reprints 1984
10. Vishwas S. Kale, Avijit Gupta (2018), Introduction to Geomorphology, Universities Press.
11. William D. Thornbury(2004). Principles of Gomorphicology, 2nd Edition, CBS Publisher and Distributor Pvt. Ltd, New Delhi
12. श्री आणि सौ .दाते – प्राकृतिक भूविज्ञान,
- 13 – भागवत आणि कार्लेकर – प्राकृतिक भूविज्ञान

QUESTION PAPER PATTERN

Marks -100		Total Time: 3 Hours
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1.	One Long-answer Question on Unit – I of 20 Marks	
	OR	20
	One Long-answer Question on Unit – I of 20 Marks / Two Short-answer Questions on Unit – I of 10 Marks each	
Q. 2.	One Long-answer Question on Unit – II of 20 Marks	
	OR	20
	One Long-answer Question on Unit – II of 20 Marks / Two Short-answer Questions on Unit – II of 10 Marks each	
Q. 3.	One Long-answer Question on Unit – III of 20 Marks	
	OR	20
	One Long-answer Question on Unit – III of 20 Marks / Two Short-answer Questions on Unit – III of 10 Marks each	
Q. 4.	One Long-answer Question on Unit – IV of 20 Marks	
	OR	20
	One Long-answer Question on Unit – IV of 20 Marks / Two Short-answer Questions on Unit – IV of 10 Marks each	
Q. 5.	One Long-answer Question on Unit – V of 20 Marks	20
	OR	
	One Long-answer Question on Unit – V of 20 Marks / Two Short-answer Questions on Unit – V of 10 Marks each	

UNIVERSITY OF MUMBAI
Syllabus for T.Y.B.A. (Geography),
Paper No. V Geography of Rural Settlement
(effect from Academic Year 2023-24)
SEMESTER- V, Paper No. V (A)
COURSE CODE: UAGEO-502A (2023-24), Credit: 04

Course Outcome:

1. Learners will be able to recognize definitions, nature, scope, characteristics and importance of settlement geography. (Knowledge)
2. Learners will be able to describe origin, growth, characteristics, distribution, structure and rural urban fringe of rural settlements. (Comprehension)
3. Learners will be able to discover concepts like origin, growth, classification and Hierarchy of rural settlements. (Application)
4. Learners will be able to analyses distribution of settlements in India

Objectives:

- 1 To recognize definitions, nature, scope, characteristics and importance of rural settlement geography.
2. To describe origin, growth, characteristics, distribution, structure and rural urban fringe of rural settlements.
3. To discover concepts like origin, growth, classification and hierarchy of rural settlements.
4. To analyses rural density and distribution of settlements in India

	Unit I - Origin of Rural Settlements	(12 lectures)
1.1	Origin and growth of settlements - evolution of rural settlements – Definition – Nature – Scope – Importance	
1.2	Structure of house and building materials in India	
1.3	House types and distribution in India	
1.4	Regional variations in rural settlement patterns in India	
	Unit II - Factors and Types of Rural Settlement	(12 lectures)
2.1	Factors affecting on Rural Settlements – Physical, Economical, Socio-cultural Political	
2.2	Types of Rural settlement on the basis of location, pattern, function, & spacing	
2.3	Location – Wet point, Dry point, Pattern – Liner, Circular, Square, Fan, Net/Reticulum, Star/Radial, Arrow, Terrace pattern	
2.4	Function – Agriculture, Fishing, Lumbering, Mining Spacing- Compact, Scattered	

	Unit III - Hierarchy of Rural settlement	(12 lectures)
3.1	Hierarchy of Rural settlement- Farm village, Hamlets, Village, Weekly market centre- Town	
3.2	Settlement pattern in Old & New World – Importance	
3.3	Old world (Farm village, Forest village - Examples)	
3.4	New world – (Mining village, Transport village, Tourist village - Examples)	
	Unit IV - Changing Pattern of Rural Settlement	(12 lectures)
4.1	Changing pattern of Rural Land use – (Special Reference of local villages)	
4.2	Rural Urban Fringe – Definition, significance and Concept, Impact of Rural Urban Fringe - Examples in Maharashtra	
4.3	Distribution and density of rural settlements in India	
4.4	Sustainable development of rural settlements with Special Reference to India	
	Unit V- IRDP and Rural Settlement	(12 lectures)
5.1	Rural problems and need of planning	
5.2	Integrated Rural Development Programme (IRDP) Definition, Nature, Scope & Importance	
5.3	IRDP – Self Employment Programmes	
5.4	Integrated Rural Development Programme - Problems of implementation	

References:

- Dr. Shivram Thakur and Dr. Rajaram Patil (2016). Settlement Geography, Konkan Geographers Association of India.
- Sahu, B.K. (2003). Rural Development in India; Anmol Publishers, Delhi.
- Mandal, R. B. (2001) Introduction to Settlement Geography, Concept Publications, New Delhi.
- Singh, R. Y. (2005) The Geography of Settlement, Rawat Publication, Jaipur.
- Singh R. L.- Readings in Settlement Geography- The National Geographical Society of India.
- Settlement Geography, Hudson
- Hudson, Settlement Geography.
- Chattopadhyay, B.C. Rural Development in India, 1985,
- Government of India, 2007, Planning Commission, First Five Year Plan, Community Development and Rural Extension. New Delhi, Academic Foundation.
- Mukherji, B. 1967, Community Development in India,
- Kartar Singh., 1986, Rural Development: Principles, Policies and Management
- Government of India, Planning Commission Report.
- Geography Of India, By Majid Husain

	QUESTION PAPER PATTERN	
Marks -100		Total Time: 3 Hours
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1.	One Long-answer Question on Unit – I of 20 Marks	
	OR	20
	One Long-answer Question on Unit – I of 20 Marks / Two Short-answer Questions on Unit – I of 10 Marks each	
Q. 2.	One Long-answer Question on Unit – II of 20 Marks	
	OR	20
	One Long-answer Question on Unit – II of 20 Marks / Two Short-answer Questions on Unit – II of 10 Marks each	
Q. 3.	One Long-answer Question on Unit – III of 20 Marks	
	OR	20
	One Long-answer Question on Unit – III of 20 Marks / Two Short-answer Questions on Unit – III of 10 Marks each	
Q. 4.	One Long-answer Question on Unit – IV of 20 Marks	
	OR	20
	One Long-answer Question on Unit – IV of 20 Marks / Two Short-answer Questions on Unit – IV of 10 Marks each	
Q. 5.	One Long-answer Question on Unit – V of 20 Marks	20
	OR	
	One Long-answer Question on Unit – V of 20 Marks / Two Short-answer Questions on Unit – V of 10 Marks each	

University of Mumbai
Revised Syllabus w.e.f. Academic Year, 2023-2024 (CBSCS)
T.Y.B.A. / T.Y.B.Sc. (Geography), Semester – V
Paper – V-B: Regional Planning and Development
COURSE CODE: UAGEO- 502B (2023-24), Credit: 04

Learning Outcomes:

After the completion of this course, students will be able to -

1. Explain the concepts and fundamental aspects of region, regionalisation, and planning
2. Understand the concept of regional planning with reference to surveys, planning regions, and growth poles
3. Understand the concepts, fundamentals, and theoretical aspects of regional development
4. Explain the nature of regional planning in India with reference to development disparities, multi-level planning, backward area development programmes, and planning process
5. Explain the nature of rural and urban development planning in India with the help of case studies

Objectives –

1. To make students aware of concept of regional planning
2. To realize students how regional planning are prepared and executed.
3. To know how regional balance and sustainable development can be

achieved in

the region

UNIT – I: Introduction to Region and Regional Planning		TOTAL LECTURES
1.1	Region: Concept, Types, and Hierarchy	12
1.2	Regionalization: Concept and Methods - Delineation of Agricultural Regions and Industrial Regions in India as Examples	
1.3	Meaning of Planning –Need, Concept, Nature, and Types of Regional Planning	
1.4	Regional Planning: Principles and Approaches	
UNIT – II: Understanding Regional Planning		12
2.1	Geography, Environment, and Regional Planning: Relationship and Issues	
2.2	Role of Surveys in Regional Planning	
2.3	Planning Regions: Characteristics and Need - Planning Regions of India as an Example	
2.4	Growth Pole Theory and Regional Planning	
UNIT – III: Understanding Regional Development		

3.1	Concepts of Growth, Development, Underdevelopment – Indicators of Development	12
3.2	Regional Imbalance: Concept, Causes, and Consequences	
3.3	Rostow's Model of Stages of Economic Growth and Friedman's Core and Periphery Model	
3.4	Strategies for Regional Development	
UNIT – IV: Regional Planning in India – I		12
4.1	Regional Disparities and Levels of Development in India	
4.2	Multi-Level Planning in India	
4.3	Backward Area Development Programmes: Hill Areas and Tribal Areas	
4.4	Role of Five-Year Plans and NITI Aayog in the Planning Process of India	
UNIT – V: Regional Planning in India – II		12
5.1	Rural Planning in India: Integrated Area Development Planning (IADP)	
5.2	Rural Development Planning: Case Study of Any Two Villages in Maharashtra	
5.3	Urban Planning in India: Smart Cities Mission, and Atal Mission for Rejuvenation and Urban Transformation (AMRUT)	
5.4	Urban Development Planning: Case Study of Mumbai Metropolitan Region	

References

- Bishnoi Reet. (2022). Regional Planning and Development. AkiNik Publications, New Delhi.
- Chand Mahesh and Puri V.K. (2000). Regional Planning in India. Allied Publishers Ltd., Mumbai.
- Chandana R. C. (2016). Regional Planning and Development. Kalyani Publishers, New Delhi.
- Datt G., Mahajan A. (2016). Datt and Sundaram's Indian Economy. S. Chand Publishing, New Delhi
- Hall P. (2016). Urban and Regional Planning. Routledge, London
- Jiwan Janki. (2023). Regional Development and Planning. Rawat Publications, Jaipur.
- Khullar D. R. (2023). India A Comprehensive Geography. Kalyani Publishers. Ludhiana.
- Knowles, R and Wareing, J. (1996). Economic and Social Geography. Made Simple Series, Rupa & Co., Calcutta
- Misra R. P. (2002). Regional Planning. Concept Publishing Co., New Delhi
- Sundaram K. V. (1985). Geography and Planning: Essays in Honour of Prof. V. L. S. Prakasa Rao. Concept Publishing Co., New Delhi
- Sundaram K. V. (1989). Regional Planning and Development: Essays on Space, Society, and Development in Honour of Professor R. P. Misra. Heritage Publishers, New Delhi
- Tiwari R. C. (2016). Geography of India. Pravalika Publications, Allahabad.
- Tiwari R. C. (2020). Settlement Geography Rural and Urban Settlements. Pravalika Publications, Prayagraj.

<http://amrut.gov.in/content/>

<https://www.egyankosh.ac.in/bitstream/123456789/37981/1/Unit-13.pdf>

<https://mmrda.maharashtra.gov.in>

<https://ncrpb.nic.in>

<https://niti.gov.in>

<https://pangeography.com/core-periphery-model-by-friedman/#:~:text=The%20core%20is%20a%20large,natural%20resources%20and%20labor%20force.>

e.

<https://planningcommission.gov.in>
<https://rural.nic.in/en/scheme-websites>
<https://smartcities.gov.in/>
<https://transformingindia.mygov.in/category/rural-development/>
<https://udri.org/wp-content/uploads/Mumbai%20Reader/MR%209/01%20Swapna%20Banerjee%20Guha%20-%20India%E2%80%99s%20New%20Urban%20Policy%20&%20Contemporary%20Urban%20Planning.pdf>
https://unnatbharatabhiyan.gov.in/public/uploads/documents/1678962142Guidelines_and_Case_Studies_for_Integrated_Village_Development_Planning.pdf
https://www.researchgate.net/publication/277006190_Regional_disparities_in_the_post_reform_India
<https://www.smartvillage.biz/>
<https://yojana.gov.in>
<https://www.youtube.com/watch?v=btGd0G67ls0&list=PLOPRSIT7epTYgu03HIMMKSGJQTDGrZv2T>

QUESTION PAPER PATTERN		
Marks -100		Total Time: 3 Hours
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1.	One Long-answer Question on Unit – I of 20 Marks	
	OR	20
	One Long-answer Question on Unit – I of 20 Marks / Two Short-answer Questions on Unit – I of 10 Marks each	
Q. 2.	One Long-answer Question on Unit – II of 20 Marks	
	OR	20
	One Long-answer Question on Unit – II of 20 Marks / Two Short-answer Questions on Unit – II of 10 Marks each	
Q. 3.	One Long-answer Question on Unit – III of 20 Marks	
	OR	20
	One Long-answer Question on Unit – III of 20 Marks / Two Short-answer Questions on Unit – III of 10 Marks each	
Q. 4.	One Long-answer Question on Unit – IV of 20 Marks	
	OR	20
	One Long-answer Question on Unit – IV of 20 Marks / Two Short-answer Questions on Unit – IV of 10 Marks each	
Q. 5.	One Long-answer Question on Unit – V of 20 Marks	20
	OR	
	One Long-answer Question on Unit – V of 20 Marks / Two Short-answer Questions on Unit – V of 10 Marks each	

University of Mumbai
Revised Syllabus w.e.f. Academic Year, 2023-24 (CBSGS)
T.Y.B.A. / T.Y.B.Sc. (Geography), Semester –V, Paper: V-C
Subject Title: GEOGRAPHY OF HEALTH
COURSE CODE: UAGEO- 502C (2023-24), Credit: 04

Outcomes

- 01 Health geography is important for public health policy
- 02 Health Geography have Spatial scale, globalization and urbanization
- 03 Social and spatial inequalities in health
- 04 Approaches to geographic research
- 05 Health and place: a caution and recognition

Objectives –

- 1. To understand various geographical perspectives related to human health.
- 2. To create awareness of human health and environmental trends.
- 3. The students are familiar with geographical background of diseases and their regional pattern.
- 4. To make students familiar with the process of health care planning in India
- 5. To aware students about impact of climate change on human health

Unit I - Introduction to Geography of Health		TOTAL LECTURES
1.1	Nature, scope and evolution of Geography of Health	12
1.2	Conceptual background and components of Geography of Health	
1.3	Significance and approaches of Geography of Health	
1.4	Relation of Geography of health with other branches of social science	
Unit- II -The Pollution Syndrome		12
2.1	Air Pollution: Causes, Effects and remedial measures	
2.2	Water Pollution: Causes, Effects and remedial measures	
2.3	Radioactive Pollution: Causes, Effects and remedial measures	
2.4	Solid waste : Causes, Effects and remedial measures	
Unit III - Geography of Diseases		12
3.1	Types of diseases and their regional pattern	
3.2	a) Case studies of communicable diseases – HIV – Aids b) Case studies of non-communicable diseases – Cancer	
3.3	a) Case study of epidemic disease – Malaria b) Case study of pandemic disease - COVID-19	
3.4	Climate change and Global health	

Unit IV -Health and Environment		12
4.1	Linkages of health, development & environment	
4.2	Sustainable development Goals and Health	
4.3	Population dynamics, urbanization, poverty and inequality	
4.4	Migration and related health issues	
Unit V - Health Care Facilities		12
5.1	Health care facilities in India	
5.2	Spatial Distribution of health care facilities in Maharashtra	
5.3	Health care policies in India	
5.4	Health Organizations: WHO, UNISEF, Red Cross Society and NGOs	

References

Alice E. Marczewski and Michael Kamrin: Toxicology for the Citizen.
B. Brockband, J.Cohrsson, and V.T. Covello: The Risk Assessment Manual: A Guide to Understanding and Using Health and Environmental Assessments
Marilyn O. Ruiz: Geography of Disease
Michael Emch, Elisabeth Dowling Root, and Margaret Carrel: Health and Medical Geography Fourth Edition
Rhonda Humbird: AP Environmental Science - Part 1: The Living World
WHO report (<https://www.who.int/data/gho/data/themes/world-health-statistics>)
Misra R.P.: Geography of Health- A treatise on Geography of Life & Death in India, Concept Publishing Company Pvt. Ltd.
Kanaro Pavlos and others (Ed.) : Spatial Analysis in Health Geography, Routledge.

	QUESTION PAPER PATTERN	
Marks -100		Total Time: 3 Hours
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1.	One Long-answer Question on Unit – I of 20 Marks	
	OR	20
	One Long-answer Question on Unit – I of 20 Marks / Two Short-answer Questions on Unit – I of 10 Marks each	
Q. 2.	One Long-answer Question on Unit – II of 20 Marks	
	OR	20
	One Long-answer Question on Unit – II of 20 Marks / Two Short-answer Questions on Unit – II of 10 Marks each	
Q. 3.	One Long-answer Question on Unit – III of 20 Marks	
	OR	20
	One Long-answer Question on Unit – III of 20 Marks / Two Short-answer Questions on Unit – III of 10 Marks each	
Q. 4.	One Long-answer Question on Unit – IV of 20 Marks	
	OR	20
	One Long-answer Question on Unit – IV of 20 Marks / Two Short-answer Questions on Unit – IV of 10 Marks each	
Q. 5.	One Long-answer Question on Unit – V of 20 Marks	20
	OR	
	One Long-answer Question on Unit – V of 20 Marks / Two Short-answer Questions on Unit – V of 10 Marks each	

University of Mumbai

Revised Syllabus w.e.f. Academic Year, 2023-2024 (CBSGS)

T.Y.B.A. / T.Y.B.Sc. (Geography), Semester — V. Paper No: VI

Subject Title: TOOLS AND TECHNIQUES IN GEOGRAPHY

FOR SPATIAL ANALYSIS-I (Practical)

COURSE CODE: UAGEO- 503 (2023-24), Credit: 03

Course Outcomes

- Understand and prepare different kinds of maps.
- Recognize basic themes of map making.
- Development of observation skills.

Course Objectives: This course aims to:

To understand the concept and techniques of the map projections.

To study the physiography, drainage and vegetation of a place with the help of Topographical maps and Weather map

To know the skill of preparing of Thematic maps

Unit - I	Map Projections	Lectures
	1.1. Basic Concepts Definition, scale, direction, azimuth, graticule, great circle, true meridian, types of projections, choice of projections	09
	1.2. Zenithal Polar Projections Equal Area, Equidistant	
	1.3. Cylindrical Projections - Equal Area, Equidistant	
	1.4. Conical Projections - One standard parallel, two standards parallel	
Unit- II	Interpretation of Topographical maps - S.O.I. Topographical Maps,	
	2.1. Basic elements of map and calculation or identification of relief, direction, bearing and distance, Area Calculation and demarcation of watershed	09
	2.2. Study of physiography, drainage and vegetation (one full toposheet of hilly and plateau region each)	
	2.3. Study of settlements size, pattern, utilities (one full toposheet of plains and urban region each)	
	2.4. Study of transport network (one full toposheet of plains and urban area each)	
Unit- III	Preparation of Thematic maps (Manually)	
	3.1. Preparation of a district thematic maps with actual data- Dot and Pictogram	09
	3.2. Preparation of a district thematic maps with actual data- Choropleth and Isopleth	
	3.3. Preparation of a district thematic maps with actual data- Located bar, located circle and pie chart	
Unit- IV	Weather map - reading and interpretation	
	4.1 Weather Instrument information – Thermometer- Barometer- Hygrometer- Anemometer - Rain gauge	

	4.2 Weather Symbol reading	09
	4.3 Weather Map – interpretation	
Unit-V	Computer Section for practical - Google Earth	
	5.1. Download Google earth Pro (Free)	09
	5.2. Identify your college location and its latitude and longitude with the help of Google earth pro	
	5.3. Practically use of Google earth tool -Add Placement, Add polygon, Add path, Add Image over layer, Historical image comparison, Show rules , Google Map, Evaluation profile	

References -

- KarlekarShrikant- Bhoogol shastratil Sanshodhan Paddhati, डायमंड पब्लिकेशन्स
- Monkhouse F.J. - Maps & Diagrams, Methuen and Co., London, 1971 (3rd Edition, Revised).
- NCERT - Textbook for Class-12, Practical Work in Geography Part II
- Peter A. Rogerson - Statistical Methods for Geography, Sege Publishers - 2001 Robinson A.H. - Elements of Cartography, Wiley
- Sarkar Ashish - Practical Geography, Orient Black Swan 2015 Sarkar Ashish Quantitative Geography, Orient Black Swan 2013
- Singh R.L. & Singh P. B. - Elements of Practical Geography, Kalyani Publishers 2005 Stoddard Robert Field techniques and research methods in geography, Geography faculty publication
<http://digitalcommons.unl.edu/geographyfacpub/26>
- Thakur S. A. - प्रात्यक्षिक भूगोल, Konkan Geographer s publication (2016)

	QUESTION PAPER PATTERN	
Marks -100		Total Time: 3 Hours
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1.	One Long-answer Question on Unit – I of 20 Marks	
	OR	20
	One Long-answer Question on Unit – I of 20 Marks / Two Short-answer Questions on Unit – I of 10 Marks each	
Q. 2.	One Long-answer Question on Unit – II of 20 Marks	
	OR	20
	One Long-answer Question on Unit – II of 20 Marks / Two Short-answer Questions on Unit – II of 10 Marks each	
Q. 3.	One Long-answer Question on Unit – III of 20 Marks	
	OR	20
	One Long-answer Question on Unit – III of 20 Marks / Two Short-answer Questions on Unit – III of 10 Marks each	
Q. 4.	One Long-answer Question on Unit – IV of 20 Marks	
	OR	20
	One Long-answer Question on Unit – IV of 20 Marks / Two Short-answer Questions on Unit – IV of 10 Marks each	
Q. 5.	One Long-answer Question on Unit – V of 20 Marks	20
	OR	
	One Long-answer Question on Unit – V of 20 Marks / Two Short-answer Questions on Unit – V of 10 Marks each	

University of Mumbai
Revised Syllabus w.e.f. Academic Year, 2023-24 (CBSGS)
T.Y.B.A. / T.Y.B.Sc. (Geography), Semester – V, Paper: VII
Subject Title: POPULATION GEOGRAPHY
COURSE CODE: UAGEO- 504 (2023-24), Credit: 04

COURSE OUTCOMES:

1. Understand the nature, scope, importance approaches and relation with other social sciences of Population Geography
2. Understand the structure, growth, density and distribution of population in India and World.
4. Get knowledge about population theories.
5. Understand the causes, consequences and recent trends of migration in India
6. Understand the contemporary issues of population in India.
7. The components of frameworks; population dynamics; world population and development with special reference to India.
8. The Acquiring, handling and analyzing population data both at the grassroots level and secondary sources

OBJECTIVE

- 1) To Population geographers seek to understand the society around them.
- 2) To The structure of a population, and how populations change through population movements and processes.
- 3) To Population geography reflects the diversity of geography, while also being closely related to demography and spatial demography.
- 4) To be able to explain territorial diversity and complexity, and the interrelations of natural environmental phenomena with economic, social and cultural phenomena.
- 5) To develop an understanding of the close interaction of population growth and the developmental process with particular reference to development program for raising the standard of living of people.

UNIT- I Introduction to Population Geography		TOTAL LECTURES
1.1	Concept, definition, nature, scope, importance	12
1.2	Approaches to the study of Population Geography	
1.3	Basic sources of population data	
1.4	Population Geography and other social sciences	

UNIT- II Population Dynamics		12
2.1	Population growth in the world	
2.2	Causes and effects of population growth in India	
2.3	World: Population density and its determinants	
2.4	Structure of population (Age ,Sex and occupational)	
UNIT- III Theories of Population Growth		12
3.1	Demographic Transition Model	
3.2	Malthus's Population Theory	
3.3	Karl Marx's Population Theory	
3.4	Concept of under population, over population & optimum population	
UNIT- IV Migration		12
4.1	Definition and Classification of Migration	
4.2	Factors affecting on migration - Pull and push factors	
4.3	Consequences of Migration	
4.4	Recent trend of migration in India	
UNIT- V Contemporary Issues in India		12
5.1	Ageing population and Increasing number of old age home	
5.2	Gender issues, Sexual assault, Domestic violence	
5.3	Poverty and unemployment in India	
5.4	Rapid urbanization and problem caused by urbanization in India	

Reference:

- Bhende A. and Kanitkar T.,(2000):*Principles of Population Studies*, Himalaya Publishing House
- Chandna R.C. and Sidhu M.S., 1980: *An Introduction to Population Geography*, Kalyani Publishers
- Chandna, R C (2006), *Jansankhya Bhugol*, Kalyani Publishers, Delhi
- Chandna, R C (2014).: *Geography of Population: Concepts, Determinants and Patterns*, Kalyani Publishers, Delhi
- Tiwari Ram Kumar (2015) *Jansankhya Bhugol Pravalika* Publication, Allahabad
- Thakur, Patil, Datta, Pednekar, Roy, and Kamble (2016): *Population Geography*, Konkan Geographers Association in India
- Roy. D. (2015) *Population Geography*, Books & Allied Publication, Kolkata
- Datt, G. And Mahajan, A. (2016): "Datt and Sundaram's Indian Economy", S. Chand Publishing, New Delhi
- Dreze J and Sen A.: "Indian Economic Development and Social Opportunity", Oxford University Press, London

Gautam, A. (2010): "Advanced Economic Geography", Sharda PustakBhawan, Allahabad
Hartshorne T. & Alexander J.W.: "Economic Geography", Prentice New Delhi
Hodder, B. and Lee, R. (2008): "Economic Geography", Rawat Publishers, Jaipur
Khanna K.K., Gupta V. K., (1987): "Economic and Commercial Geography", Sultan Chand and Com.
Memoria, C. B. : "Economic and Commercial Geography of India"
Saxena, H. (2016): "Economic Geography", Rawat Publishers, Jaipur
Singh, J. and Dhillon, S.: "Agricultural Geography", Tata McGraw hill Publication Company Ltd., New Delhi.
10. Vaidya B.C. (1998): "Readings in Transportation Geography", Devika Publications, New Delhi.
एस. ए. ठाकूर, आर. बी. पाटील, पेडणेकर, धुरी)२०१२(लोकसंख्या भूगोल, कोकण जोग्राफर असोसियेशन)
विठ्ठल धारपुरे(२०१३): लोकसंख्या भूगोल, पपपळापुरेअंड पब्लिशर्स, नागपूर.
सवदी, कोळेकर (२०१०): अब्धनव भूगोल : , बनराली प्रकाशन, पुण

QUESTION PAPER PATTERN		
Marks -100		Total Time: 3 Hours
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1.	One Long-answer Question on Unit – I of 20 Marks	
	OR	20
	One Long-answer Question on Unit – I of 20 Marks / Two Short-answer Questions on Unit – I of 10 Marks each	
Q. 2.	One Long-answer Question on Unit – II of 20 Marks	
	OR	20
	One Long-answer Question on Unit – II of 20 Marks / Two Short-answer Questions on Unit – II of 10 Marks each	
Q. 3.	One Long-answer Question on Unit – III of 20 Marks	
	OR	20
	One Long-answer Question on Unit – III of 20 Marks / Two Short-answer Questions on Unit – III of 10 Marks each	
Q. 4.	One Long-answer Question on Unit – IV of 20 Marks	
	OR	20
	One Long-answer Question on Unit – IV of 20 Marks / Two Short-answer Questions on Unit – IV of 10 Marks each	
Q. 5.	One Long-answer Question on Unit – V of 20 Marks	20
	OR	
	One Long-answer Question on Unit – V of 20 Marks / Two Short-answer Questions on Unit – V of 10 Marks each	

University of Mumbai
Revised Syllabus w.e.f. Academic Year, 2023-24
(CBSGS) T.Y.B.A./T.Y.B.Sc. (Geography),
Semester – V, Paper – VIII - A
Subject Title: GEOGRAPHY OF RESOURCES
COURSE CODE: UAGEO- 505A (2023-24), Credit: 04

Course Outcomes- At the end of the course the students will:

1. Understand concepts of different natural resources, its use, overuse, with its solution by natural resource management methods.
2. Appreciate the need for managing land and water resources for sustainable growth and development, managerial skills such as land evaluation and landclassification.
3. Also, able to understand the causes and consequences of water stress and draw water conservation and management plans

Objectives –

- 1 To explain the types of natural resources that exist.
2. To Study the role of government and different agencies in the natural resource management
- 3.To Study the threat to the natural resources and the policies to solve it.
4. Analyze the problems of resource depletion with special reference to forests, water and fossil fuels
5. Understand the concept of Sustainable Resource development

UNIT – I: Introduction - Geography of Resources		TOTAL LECTURES
1.1	Definition Nature and Scope of Geography of Resources	12
1.2	Significance of Geography of Resources	
1.3	Classification of Instrumental Wealth	
1.4	Factors Affecting on Instrumental Wealth	
UNIT – II: Natural resources		12
2.1	Overuse and degradation of natural resources	
2.2	Modern and traditional methods of resource utilization	
2.3	Resource conservation and methods	
2.4	Sustainable use of natural resources	
UNIT – III: Water and Natural Vegetation		12
3.1	Distribution of Earth's Water Resources	
3.2	Water Pollution and Water Conservation	
3.3	Classification of Natural Vegetation in the world	
3.4	Deforestation – Causes and Forest Conservation	
UNIT – IV: Soil and Energy Resources		12
4.1	Factors affecting on soil structure and soil formation	
4.2	Soil types and conservation of soil	
4.3	Distribution of energy resources in world	
4.4	Problems and Management of Energy Resources: Conventional and Non-Conventional	

UNIT – V: Human Resources		12
5.1	Concept of human resource and Human Development Index (HDI) and its components	
5.2	Factors affecting on the human resource development,.	
5.3	Population: Growth and distribution	
5.4	Role of human resource in socio-economic development	

Reference Books:

- 1.Chandna R.C. (2014): Geography of Population, Kalyani Publishers, Ludhiana, India
 - 2.Gautam Alka (2010) Environmental Geography: Sharda Pustak Bhavan, Allahabad
 - 3.Gautam Alka: 2013: Advanced Economic Geography, Sharda Pustak Bhawan, Allahabad,India, Third Edition
 - 4.Gautam Alka: Resource Geography, Sharda Pustak Bhawan, Allahabad, India,
 - 5.Husain Majid, 2003: Resources Geography, Anmol Publications Pvt. Ltd. (2003) ISBN: 9788170418764
 - 6.Khullar D. R. (2014) India: A Comprehensive Geography, Kalyani Publishers, ISBN-13: 978-9327246759
 - 7.Mondal P and Dalai (2017) Sustainable Utilization of Natural Resources: CRC Press (2017)ISBN 9781498761833
 - 8.Singh Savinder (2015): Environmental Geography: Prayag Pustak Company, Allahabad
 - 9.Singh Vipul (2012) The Human Footprint on Environment: Issues in India Macmillan Publishers India Pvt. Ltd, ISBN: 935-059-098-0
 - 10.Verma C.L. (2014): Economic and Resource Geography, Forward Books; 1ST edition (2014) ISBN-10: 9381763534
 - 11.Website: https://www.researchgate.net/publication/280298490_Resource_Geography
 - 12.William A.: Nonfuel Minerals and the World Economy", Vogely, World Resources v Institute Book Yale University Press
-) साधन व जलसंपदा भूगोल- प्रा. संभाजी बा. पाटील - प्रशांत पब्लिकेशन
- २) साधन संपत्ती भूगोल- डॉ.विठ्ठल घारपुरे - पिंपळापुरे अँड कंपनी पब्लिशर्स नागपूर
- ३) जैविक भूगोलशास्त्र-डॉ. विठ्ठल घारपुरे - पिंपळापुरे अँड कंपनी पब्लिशर्स नागपूर
- ४) पर्यावरण भूगोल - प्रा. रमेश भ. देवरे प्रा. डॉ. राजेंद्र परमार, प्रा.डॉ.समीर बुटाला
- ५) पर्यावरण भूगोल प्राचार्य . डॉ. एस.ए. ठाकूर, प्रा.डॉ.आर. बी. पाटील,. दिहल्ली

QUESTION PAPER PATTERN		
Marks -100		Total Time: 3 Hours
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1.	One Long-answer Question on Unit – I of 20 Marks	
	OR	20
	One Long-answer Question on Unit – I of 20 Marks / Two Short-answer Questions on Unit – I of 10 Marks each	
Q. 2.	One Long-answer Question on Unit – II of 20 Marks	
	OR	20
	One Long-answer Question on Unit – II of 20 Marks / Two Short-answer Questions on Unit – II of 10 Marks each	
Q. 3.	One Long-answer Question on Unit – III of 20 Marks	
	OR	20
	One Long-answer Question on Unit – III of 20 Marks / Two Short-answer Questions on Unit – III of 10 Marks each	
Q. 4.	One Long-answer Question on Unit – IV of 20 Marks	
	OR	20
	One Long-answer Question on Unit – IV of 20 Marks / Two Short-answer Questions on Unit – IV of 10 Marks each	
Q. 5.	One Long-answer Question on Unit – V of 20 Marks	20
	OR	
	One Long-answer Question on Unit – V of 20 Marks / Two Short-answer Questions on Unit – V of 10 Marks each	

UNIVERSITY OF MUMBAI
Syllabus for T.Y.B.A. (Geography)
SEM. V Paper No. VIII-B
Political Geography
COURSE CODE: UAGEO- 505B (2023-24), Credit: 04

Program outcome •

- To further the understanding of the students of uneven outcomes of political processes and the ways in which political processes are themselves affected by spatial structures.
- To understand the development of group identities such as nations and examine the linkages between these identities and the political organization of territory.
- To develop an appreciation for the effects of boundaries on economic, political, and social processes.
- To study in relevant details theoretical concepts and challenges underpinning the study of geography and politics.

Objectives:

- 1) To enable students to acquire knowledge of Political Geography.
- 2) To understand basic concepts of Political Geography.
- 3) To study various theories of Political Geography.
- 4) To understand the frontiers and Boundaries

Units	Name of the Unit/ Subunit	No. of Lectures
Unit – I : Introduction of Political Geography		12
1.1.	Political Geography: Definition, Nature and Scope	
1.2	Development of Political Geography	
1.3	Recent trends in Political Geography	
1.4	Significance of Political Geography and approaches in Political Geography	
Units – 2 : Evaluation of State and Nation-I		12
2.1	Concept of State	
2.2	Factors affecting the State	
2.3	Centrifugal Forces in the States and its effects	
2.4	Centripetal Forces in the States and its effects	
Units – 3 : Evaluation of State and Nation –II		12
3.1	Concept of Nation, Nationalism	
3.2	Deference of State-Nation	
3.3	Concept and Types of Boundary	
3.4	Concept and Types of Frontiers	

Units- 4 : Frontiers and Boundaries		12
4.1	Differences Between Frontiers and Boundaries	
4.2	Classification of International Boundaries	
4.3	Boundaries of India	
4.4	Characteristics and Problems of Boundaries	
Units – 5 : Theories in Political Geography and world Geopolitics		12
5.1	Disputes of Indian borders with neighbouring countries	
5.2	Geo-politics of Indian Ocean	
5.3	Hartland Theory – H.J. Mackinder	
5.4	Rimland Theory – N. J. Spykeman	

Reference Books:

- Adhikari S., 1997: Political Geography, Rawat Pub. Jaipur.
- Cohen S.B., 1973: Geography and Politics in divided world. Oxford, New York.
- Dixit R.D., 1982: Political Geography. Tata McGraw Hill, New Delhi.
- Dwivedi R.L., 1996: Political Geography. Chaitanya Prakashan , Allahabad.
- Moor R., 1981: Modern Political Geography. McMillan, London.
- Pounds N.G., 1972: Political Geography. McGraw Hill, London.
- Taylor P., 1998: Political Geography, Prentice Hall.
- Adhikari, S. (2015): “Political Geography”, Rawat Publications, Jaipur
- Adhikari, S. (2011): “Political Geography of India: A Contemporary Perspective”, Sharda Pustak Bhawan, Allahabad
- Dikshit R. (1985): “Political Geography: A Contemporary Perspective” McGraw, Hill, New Delhi
- Dikshit, S. (1993): “Electoral Geography of India”, Vishwavidyalaya Prakashan, Varanasi
- Dwivedi, R. (1996): “Political Geography” Chaitanya Prakashan, Allahabad
- Jones, M. (2004): “An Introduction to Political Geography: Space, Place and Politics”, Routledge
- Muir, R. (1995): “Modern Political Geography”, McMillan, London
- Painter, J. and Jeffrey, A. (2009): “Political Geography”, Sage Publications
- Sinha, M. (2007): “Electoral Geography of India”, Adhyayan Publications and Distributers, New Delhi
- घारपुरे व. ल. (2013) राजकीय भूगोल, पिंपळापुरे अँड कंपनी, नागपूर
- लाटकर , आपटे (1998) राजकीय भूगोल, विद्या प्रकाशन , नागपूर
- पाटील वलास (2015) राजकीय भूगोल , प्रशांत पब्लिकेशन , जळगाव

	QUESTION PAPER PATTERN	
Marks -100		Total Time: 3 Hours
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1.	One Long-answer Question on Unit – I of 20 Marks	
	OR	20
	One Long-answer Question on Unit – I of 20 Marks / Two Short-answer Questions on Unit – I of 10 Marks each	
Q. 2.	One Long-answer Question on Unit – II of 20 Marks	
	OR	20
	One Long-answer Question on Unit – II of 20 Marks / Two Short-answer Questions on Unit – II of 10 Marks each	
Q. 3.	One Long-answer Question on Unit – III of 20 Marks	
	OR	20
	One Long-answer Question on Unit – III of 20 Marks / Two Short-answer Questions on Unit – III of 10 Marks each	
Q. 4.	One Long-answer Question on Unit – IV of 20 Marks	
	OR	20
	One Long-answer Question on Unit – IV of 20 Marks / Two Short-answer Questions on Unit – IV of 10 Marks each	
Q. 5.	One Long-answer Question on Unit – V of 20 Marks	20
	OR	
	One Long-answer Question on Unit – V of 20 Marks / Two Short-answer Questions on Unit – V of 10 Marks each	

University of Mumbai
Revised Syllabus w.e.f. Academic Year, 2022-2023 (CBSGS)
T.Y.B.A. / T.Y.B.Sc. (Geography), Semester V, –
Paper\ IX Subject Title: GEOSPATIAL TECHNOLOGY
COURSE CODE: UAGEO- 506 (2023-24), Credit: 03

Course Outcomes

Have knowledge of the principles of remote sensing, sensor resolutions and image referencing schemes.

- Interpret satellite imagery and understand the preparation of false color composites from them.
- Training in the use Geographic Information System (GIS) software for contemporary mapping skills.
- Analysing and interpreting remotely sensed satellite images and aerial photographs in order to understand topographical and cultural variations on the Earth's surface.

Conducting field excursions and preparation of field report on research on problem in different areas of India Apply GIS to the preparation of thematic maps.

Objectives -

1. To understand the basic concepts and fundamentals of physical principles of remote sensing
2. To create a firm basis for successful integration of remote sensing in any field of application.
3. To study basics of digital image processing and image interpretation techniques.
4. To study the applications of the remote sensing to solve the real-world Problems.
5. To understand the concept and techniques of the Geographic Information Systems.

UNIT - I	Remote Sensing - I	9
1.1	Geospatial Technology: Concept, Components and Importance	
1.2	Remote Sensing: Concept, Process and Geographical Applications	
1.3	Electromagnetic Energy, EMR and EMS - Spectral Reflectance and Spectral Signature or Curve - Platforms, Sensors and Resolution	
1.4	Elements of Visual Image Interpretation - Mapping of Thematic Layers and Visual Image Interpretation of Physical and Manmade Features	
	—	
UNIT - II	Remote Sensing - II	9
2.1	Digital image analysis: land use and landform classification, 3D view of DEM	
2.2	Aerial Photographs: Concept, Process and Types	
2.3	Interpretation of Aerial Photographs	

2.4	Advanced Remote Sensing Technology - Use of Bhuvan website	
UNIT - III	Global Positioning System	
3.1	GPS : Concept, Segments, Applications	
3.2	Types of GPS GPS Data Accuracy and Errors	
3.3	Factors Affecting GPS Data - Global Navigation System	
3.4	Ground Survey and Demarcation of Point, Line and Polygon Features with GPS Device Transfer GPS Data to Computer with Software's like -Easy GPS	
UNIT - IV	Geographic Information System I	9
4.1	GIS: Concept, Components and Applications - Map Projection and Coordinate System	
4.2	GIS Data Acquisition and Types	
4.3	Importing Image into GIS Software and Geo-referencing	
4.4	Creating Layers by Digitization of Point, Line and Polygon Features	
UNIT V	Geographic Information System II	9
5.1	Functions of Database Creation Input, Editing and Linking	
5.2	Spatial Database Analysis: Overlay, Merge, Query	
5.3	Using Map-Composer for Map Layout and Design	
5.4	Preparation of Thematic Maps	

	Paper IX : GEOSPATIAL TECHNOLOGY Question Paper Pattern	
Q. 1	Unit –I	16
Q. 2	Unit –II	16
Q. 3	Unit –III	16
Q. 4	Unit –IV	16
Q. 5	Unit –V	16
Q. 6	Preparation Thematic Maps by using Geospatial Technology Tools	10
Q. 7	Journal and Viva	10

References:

1. कार्लेकर, श्रीकांत (२००६): भौगोलिक माहिती प्रणाली, डायमंड प्रकाशन, पुणे.
2. कार्लेकर, श्रीकांत (२०१२): दूर संवेदन, डायमंड प्रकाशन, पुणे.
3. Afzal Sharieff and et. al. (Ed.) (2010): An Introduction to Remote Sensing, SARUP Book Publishers Pvt. Limited, New Delhi.
4. Anson, R. W. and Ormeling, F. J., (Ed.) (1993): Basic Cartography for Students and Technicians, Vol.I, International Cartographic Association and Elsevier Applied Science Publishers, London.
5. American Society of Photogrammetry (1983): Manual of Remote Sensing, ASP PalisChurch,V.A.
6. Agrawal, N.K.(2006), Essentials of GPS (Second Edition), Book Selection Centre, Hyderabad
7. Bhatia (2016): Remote Sensing and GIS, Oxford University Press, New Delhi.
8. Bhatia, S. C. (2008): Fundamentals of Remote Sensing, Atlantic Publishers and Distributors (P) Limited, New Delhi.
9. Bhatta Basudeb 2016: Remote Sensing and GIS, Oxford University Press, New Delhi
10. Barrett, E.G. and Curtis, L.F. (1992): Fundamentals of Remote Sensing in Air Photo-interpretation, McMillan, New York. 7.
11. Bernhardsen, Tor (2002): Geographical Information Systems: An Introduction, Third Edition, John Wiley & Sons, Inc., New York.
12. Burrough, Peter A and McDonnell, R.A. (1998): Principles of Geographical Information Systems, Oxford University Press, Mumbai.
13. Campbell. J. (1989): Introduction to Remote Sensing, Guilford, New York.
14. Clarke, Keith C. (1998): Getting Started with Geographic Information Systems, Prentice-Hall Series in Geogl. Info. Science, Prentice-Hall, Inc. N.J.
15. Central Board of Secondary Education (New Delhi): Geospatial Technology – Textbook, Class XI and XII

16. Chaisman, N. 1992: Exploring Geographical Information Systems, John Wiley and Sons Inc., New York. Lillesand, T.M. and Kiefer, R. W. 1994: Remote Sensing and Image Interpretation, 3rd edition, John Wiley and Sons, New York.
17. Dickinson, G. C. (1977) Statistical Mapping and the Presentation of Statistics, Edward Arnold Ltd., London.
18. George B and Kolte P. E. (2010): The GIS Book, Cengage Learning India Private Limited, New Delhi.
19. George Joseph (2013): Fundamentals of Remote Sensing, Second Edition, Universities Press (India) Private Limited, Himayatnagar, Hyderabad.
20. Heywood, I. et al (2002): An Introduction to Geological Systems, Pearson Education Limited,
21. New Delhi.
22. Iliffe, J.C (2006), Datums and Map Projections for Remote Sensing, GIS and Surveying, Whittles Publishing, New York.
23. Jonson. R. J. (2003): Remote Sensing of the Environment-An Earth Resources Perspective
24. Kang-Tsang Chang (2010): Introduction to Geographic Information Systems, Tata McGraw Hill Edition, New Delhi.
25. Lillesand and Keifer (2010) Remote Sensing and Image Interpretation, Fourth Edition, Wiley.
26. Pearson Education Series in Geographical Information Science, Keith C. Clarke (Series editor) Pearson Educators Private Limited. (Singapore), New Delhi.
27. Monkhouse, F. J. and H. R. Wilkinson, (1971): Maps and Diagrams, Methuen & Co. Ltd., London.
28. Robinson, A. H. and Others (1995): Elements of Cartography, VI Edition, John Wiley & Sons, New York.
29. Sudhakar S (1993) : Forest Type and Density Mapping in Meghalaya through Digital Image Processing of Indian Remote Sensing Satellite Data, Collaborative project report by Meghalaya State Forest Dept. and RRSSC, Kharagpur.
30. Thomson O and Frank S (2000): Time Integrative Geographic Information System, Springer, New York.
31. Training Module of Capacity Building Training Programme in Geospatial Technology sponsored by Department of Science and Technology, Government of India in collaboration of Himachal Pradesh University.
32. Tutorials from the - <http://dst-iget.in/tutorials>
33. bhuvan.nrsc.gov.in/
34. <https://www.isro.gov.in>
35. <https://www.iirs.gov.in/>

University of Mumbai



**Revised Syllabus for
T.Y.B.A. /T.Y.B.Sc (Geography)
Semester – (for Sem VI)
(Choice Based Credit System)**

(With effect from the academic year 2023-24)

University of Mumbai
Revised Syllabus w.e.f. Academic Year, 2023-24 (CBCS)
T.Y.B.A. /T.Y.B.Sc. (Geography), Semester – VI
Paper – IV: Introduction to Climatology and Oceanography
COURSE CODE: UAGEO-601 (2023-24), Credit: 04

Course Objectives:

To provide students with basic understandings of climatology and oceanography
 To enable to understand the basic concepts of weather and climate
 To gain essential background for further studies in weather and climate
 To introduce the fundamentals of atmospheric phenomena, global climate and climate change.
 To gain essential background of origin and development of oceanography
 To enable to understand the basic concepts of ocean floor, temperature and salinity of ocean water
 To introduce the fundamentals of various movements of ocean water, marine ecosystem, pollution and the influence of ocean

Course Outcome:

To understand the importance of atmosphere and ocean
 To know measurements of atmosphere pressure and formation of pressure belts
 To understand weather phenomena like winds, humidity, condensation and precipitation
 To get knowledge about the concepts of cyclone, anti-cyclone, global warming and climate change.
 To know about the major oceans and their characteristics
 To understand the bottom relief of the oceans
 To get knowledge about the concepts of waves, tides and currents

UNIT – I: Introduction to Climatology		TOTAL LECTURES
1.1	Introduction of Climatology - Concept and elements of weather and climate	12
1.2	Evolution of atmosphere its composition and structure	
1.3	Insolation and heat budget of the earth	
1.4	Vertical and horizontal distribution of temperature	
UNIT – II: - Air Pressure, Atmospheric Circulation, Precipitation		12
2.1	Measurement of air pressure and distribution of pressure belts	
2.2	Winds: global, regional and local	
2.3	Upper air circulation - Jet stream	
2.4	Process of condensation and precipitation	

UNIT – III: Special Weather Phenomena		12
3.1	Cyclone – types and origin, structure, global distribution and associate weather	
3.2	Tornados: Origin, structure, distribution and associate weather	
3.3	Anti-cyclones: Origin, structure, global distribution and associate weather	
3.4	Global warming and its impact on weather	
UNIT – IV: Introduction to Oceanography		12
4.1	Origin and Development of Oceanography, Branches of oceanography	
4.2	Ocean floor relief and its characteristics	
4.3	Composition of ocean water, distribution of salinity and affecting factors	
4.4	Ocean waves formation and types	
UNIT – V: Concept of tides, Ocean currents and marine pollution		12
5.1	Concept and types of Tides	
5.2	Ocean Currents – types and their effects	
5.3	Coral reefs and their importance	
5.4	Marine pollution and its impact on marine ecosystem	

References: Climatology

Ahrens, C.D. (2012): Essentials of Meteorology: An Invitation to the Atmosphere; Cengage Learning, Boston

Ahrens, C.D., Jackson, P.L., Jackson, C.E.J. and Jackson, C.E.O. (2012): Meteorology Today: An Introduction to Weather, Climate and the Environment; Cengage Learning; Boston

Barry, R.G. and Chorley, R.J. (2003): Atmosphere, Weather and Climate; Psychology Press, Hove; East Sussex.

Chawan S.V. (ed) (2015): Physical Geography, Paper I, Published by Director (I/C), Institute of Distance and Open Learning, University of Mumbai.

Critchfield, H.J., (1975): general Climatology, Prentice Hall, New Jersey. Lal D.S. (1997): Climatology; Sharda Pustak Bhavan; Allahabad

Lydolph, P.E.(1985): The Climate of the Earth, Rowman Nad Allanheld, Totowa, New Jersey.

Mather, J.R.(1974): Climatology: Fundamentals and Applications; Mc Craw Hill Book Co., U.S.A.

Matthews, W. H., Kellogg, W., Robinson, G.D. (1971): Man's Impact on Climate; M.I.T. Press Design Dept. U.S.A.

Oliver, J.E. (1993): Climatology: An Atmospheric Science, Pearson Education India, New Delhi

Rosenberg, N.J., Blad, B.L., Verma, S.B.(1983): Micro-climate Biological Environment; John Wiley & Sons, U.S.A.

Rumney, G.R. (1968): Climatology and the World Climates, Macmillan, London.

Shinde P.; Pednekar H. et.al. (2010): Introduction to Geography, Sheth Publishers Pvt.Ltd., Mumbai.

Subrahmanyam, V.P. (ed) (1983): Contributions to Indian Geography a) Vol III- General Climatology, b) Volume IV- Applied Climatology. Heritage Publishers, New Delhi.

Trewartha, G.T. (1980): An Introduction to Climate; McGraw Hill, New York, 5th edition, (International Student Edition)

<http://www.yourarticlelibrary.com/agrometeorology/condensation-meaning-process-and-types/88791>

<http://gescli.blogspot.in/2011/09/concept-of-climatology.html>

References: Oceanography

Bhatt, J.J. 1978): Exploring the Planet Ocean, D.Von Nostrand Co.New York.

Birla Economic Research Foundation, economic Research Division 1992): The Oceans, Allied Publishers Ltd. New Delhi.

Chandra, S. and Others (eds).(1993): The Indian Ocean and its islands: Strategic Scientific and Historical perspectives, sage Publications, New Delhi. Chawan S.V. (ed)

(2015): Physical Geography, Paper I, Published by Director (I/C), Institute of Distance and Open Learning, University of Mumbai. Fairbridge, R.W.ed) Encyclopaedia of

Oceanography, Reinholt, New York. Sharma, R.C. (ed)(1985): The Oceans: realities and Prospects, Rajesh Publications, New Delhi.

Sengupta,R. and Desa E,(eds) (2001): The Indian Ocean: A Perspective Vol.,I and II Oxford and IBH Publishing Company Private Limited, New Delhi.

Paul, P.R.(1998): Invitation to Oceanography, Jones and Bartlett Publishing, Sudbury, Massachusetts.

Rajgopalan, R (ed) (1996): Voices for Oceans, A Report to the Independent World Commission on the Oceans, International Ocean Institute, Operational centre, Madras, India.

Qasim, S.Z(1998): Glimpses of Indian Ocean, Universities Press(India) Limited, Hyderabad.

	QUESTION PAPER PATTERN	
Marks -100		Total Time: 3 Hours
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1.	One Long-answer Question on Unit – I of 20 Marks	
	OR	20
	One Long-answer Question on Unit – I of 20 Marks / Two Short-answer Questions on Unit – I of 10 Marks each	
Q. 2.	One Long-answer Question on Unit – II of 20 Marks	
	OR	20
	One Long-answer Question on Unit – II of 20 Marks / Two Short-answer Questions on Unit – II of 10 Marks each	
Q. 3.	One Long-answer Question on Unit – III of 20 Marks	
	OR	20
	One Long-answer Question on Unit – III of 20 Marks / Two Short-answer Questions on Unit – III of 10 Marks each	
Q. 4.	One Long-answer Question on Unit – IV of 20 Marks	
	OR	20
	One Long-answer Question on Unit – IV of 20 Marks / Two Short-answer Questions on Unit – IV of 10 Marks each	
Q. 5.	One Long-answer Question on Unit – V of 20 Marks	20
	OR	
	One Long-answer Question on Unit – V of 20 Marks / Two Short-answer Questions on Unit – V of 10 Marks each	

UNIVERSITY OF MUMBAI
T.Y.B.A./B.Sc (Geography)
Sem.VI - Paper no V
Geography of Urban Settlement
COURSE CODE: UAGEO-602A (2023-24), Credit: 04

COURSE OUTCOMES:

- 1) The students were known the importance of urban settlements through urban geography.
- 2) The students understood the types of Urban Settlements, Site and Situations.
- 3) The students were familiar with an idea of relationship between human activities and urban development.
- 4) Detail understanding of students regarding present urban problems and students are capable to handling of present problematic situations in urban areas.
- 5) The students are developed as a good urban planner and environmental conservator.

OBJECTIVES

- 1) To Study the basics of Urban Geography.
- 2) To Study the types of Urban Settlements, Site and Situations.
- 3) To get an idea of relationship between human activities and urban development.
- 4) To make students capable for handling present problematic Situation in Urban areas.
- 5) To make students as a good urban planner and environmental Conservator.

	Unit I - Introduction to Geography Of Urban Settlements
1.1	Urban Geography - Definition, Nature and Scope.
1.2	Approaches of Urban Geography.
1.3	Urban Settlement Geography relation with Other Disciplines subjects
1.4	Factors affecting on growth and Development of Urban settlement
	Unit II - Urban Settlements
2.1	Site and Situation of Urban Settlements
2.2	Patterns of Urban Settlements – Nuclear, Linear, Rectangular, Circular, Star related other patterns
2.3	Hierarchy of Urban Settlements
2.4	Functional Classification of Towns
	Unit III - Urbanization
3.1	Urbanization - Concept, origin and growth of urbanisation with special reference to India
3.2	Cities and Its Umland – Concept, Determinants of Umland of Indian

	Cities.
3.3	The Central Business District (C.B.D) – (Characteristics, Classification, Delimitation, Parameters)
3.4	Contemporary Urban Issue / Urban Problems
	Unit IV - Theories of Urban Morphology
4.1	Central Place Theory
4.2	Concentric Zone Theory
4.3	The Sector Theory
4.4	The Multiple Nuclei Theory
	Unit V- Urban Planning
5.1	Town Planning - Concepts, Aims, Need of Town Planning.
5.2	Case Studies of Planned Cities -New Mumbai, Chandigarh.
5.3	Case Studies of Metropolitan Areas – Delhi, Mumbai and Kolkata
5.4	Urban Policies and Problems of Town Planning in India

References

- सावंत प्रकाश (1998) नागरी भूगोल, फडके प्रकाशन कोल्हापूर.
- सवदी ए.बी. (2010) नागरी भूगोल निराली, प्रकाशन पुणे.
- डॉ.विठ्ठल घारपुरे (2013) नागरी भूगोल पिंपळापुरे पब्लिकेशन नागपूर.
- देशपांडे सी.डी. (1983) शहरे- कॉन्टीनेंटल प्रकाशन, पुणे.
- खतीब के.ए. (2007) वसाहत भूगोल अजब प्रकाशन कोल्हापूर.
- सवदी, कोळेकर, (2005) आधुनिक भूगोल निराली प्रकाशन, पुणे.
- S.D.Maurya (2022) URBAN GEOGRAPHY Sharda Pustak Bhawan Prayagraj U.P.
- Surender Singh and Jitender Saroha 2021 Urban Geography Pearson Education Publications .
- Alam, S.M. (1965): Hyderabad - Secundrabad: A Study in Urban Geography, Allied Publishers, Bombay,
- Bansal, S.C. (2013): Nagriya Bhugol, Minaxi, Prakashan, Meerut.
- L.N. Verma (2008) Urban Geography Rawat Publications-Jaipur.
- Kaplan (2014) Urban Geography John Wiley & Sons Publisher New Jersey, U.S.
- Andrew E. G. Jonas, Eugene McCann and Mary Thomas 2015 Urban Geography: Critical Introduction John Wiley & Sons Publisher New Jersey, U.S.
- Michael Pacione (2009) Urban Geography: A Global Perspective- Routledge Publisher U.K.
- Ghosh. S. (2015): “Introduction to Settlement Geography”, Orient Blackswan Private Limited, Hyderabad.
- Johnson J.H. (1967): Urban Geography, An Introductory Analysis. 4. Bose A: India's Urbanization 1974-2000, Tata Mc Graw Hill, New Delhi.
- Carter H (1972): The study of urban Geography, Edward Arnold, London.
- Kaplan D. H., Wheeler J. O. and Holloway S. R., (2008) Urban Geography, John Wiley John Wiley & Sons Publisher New Jersey, U.S.

- Knox P. L. and McCarthy L., (2005) Urbanization: An Introduction to Urban Geography, Pearson Prentice Hall New York.
- Knox P. L. and Pinch S., (2006) Urban Social Geography: An Introduction, Prentice-Hall.
- Ramachandran R (1989) Urbanisation and Urban Systems of India, Oxford University Press, New Delhi.
- Ramachandran, R., (1992) The Study of Urbanisation, Oxford University Press, Delhi.
- Singh, R.B. (2015) Urban development, challenges, risks and resilience in Asian megacities.

QUESTION PAPER PATTERN		
Marks -100		Total Time: 3 Hours
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1.	One Long-answer Question on Unit – I of 20 Marks	
	OR	20
	One Long-answer Question on Unit – I of 20 Marks / Two Short-answer Questions on Unit – I of 10 Marks each	
Q. 2.	One Long-answer Question on Unit – II of 20 Marks	
	OR	20
	One Long-answer Question on Unit – II of 20 Marks / Two Short-answer Questions on Unit – II of 10 Marks each	
Q. 3.	One Long-answer Question on Unit – III of 20 Marks	
	OR	20
	One Long-answer Question on Unit – III of 20 Marks / Two Short-answer Questions on Unit – III of 10 Marks each	
Q. 4.	One Long-answer Question on Unit – IV of 20 Marks	
	OR	20
	One Long-answer Question on Unit – IV of 20 Marks / Two Short-answer Questions on Unit – IV of 10 Marks each	
Q. 5.	One Long-answer Question on Unit – V of 20 Marks	20
	OR	
	One Long-answer Question on Unit – V of 20 Marks / Two Short-answer Questions on Unit – V of 10 Marks each	

University of Mumbai
Revised Syllabus w.e.f. Academic Year, 2023-24 (CBSGS) T.Y.B.A./T.Y.B.Sc.
(Geography), Semester –VI, Paper: V – B
Subject Title: Geography of Transport
COURSE CODE: UAGEO-602B (2023-24), Credit: 04

Course Outcome: -

- 1) Students will learn about the role of transport in entire economic and social processes.
- 2) This course aims to make students understand the locational advantage of different economic and social institutes based on transport principle.
- 3) They are made aware of the role of public transport in addressing the problems of congestion and air pollution.
- 4) This understanding may help them in formulating plan for regional development and economic regeneration by proper transport planning. The objectives are –
 - 1) To understand the nature of transport
 - 2) To know the current problems, issues and trends in transport at a variety of geographical scales and across several modes.
 - 3) To examine the major problems, issues and trends facing the transport sector in both the developed and developing worlds and to discuss appropriate possible responses.

Unit-I: Introduction to Transport Geography		TOTAL LECTURES
1.1	Definition Nature & Scope of Geography of Transport	12
1.2.	Importance of Geography of Transport	
1.3.	Definition of Distance and its types, Factors affecting on Transportation	
1.4.	Phases of growth and development of different modes of transport	
Unit-II: Transport Network System		12
2.1.	Transport network system – structure and properties	
2.2.	Application of graph theory measures	
2.3.	Location of routes and efficiency of network	
2.4.	Bases of spatial interaction, complementary intervening opportunity and Transferability	12
Unit -III: Evolution of Modes of Transport		
3.1.	Evolution of transport network and their environment	
3.2.	Transport cost, Principles of transport cost fixation,	
3.3.	Comparative cost advantage by different modes	12
3.4.	Factors influencing comparative cost structures and locational responses	
Unit -IV: Theoretical Framework and Impact of Transport		
4.1	Measures and Indices of connectivity and accessibility	
4.2	Transportation Models: Traffic congestion Model and Spatial Flow Models, Gravity Model	12

4.3	Impact of Transport on environment & Tourism Development	
4.4	Issues associated with road, rail, water and air transportation	
Unit –V: Urban Transport Policy and Planning		12
5.1.	Transport development in developing countries, urban, transportation: growth and problems of urban transportation	
5.2.	Challenges and issues of Urban Transport - Transport and environmental degradation; vehicular pollution and congestion,	
5.3.	Urban Land Use and Transportation,	
5.4.	National Highway Development and Transport Planning in India.	

REFERENCES:

1. Chorley R.J. & Haggett P. (1967): Models in Geography Methuen & Co. London.
2. Hagget, F and Chorley, R.J. Network Analysis', Edward Arnold, London, 1968.
3. Hay, A.: Transport Economy, MacMillan, London, 1973.
4. Hoyle, B.S. (ed.): Transport and Development, MacMillan, London, 1973.
5. Hurst, M.E.(ed.) (1974): Transportation Geography, McGraw-Hill.
6. Raza, M. and Agrawal Y.P.: Transport Geography of India, Concept. New Delhi, 1985.
7. Robinson H & Bamford C.G. : Geography of Transport Macdonald & Evans., London 1978.
8. Saxena, H. M. (2010): Transport Geography, Rawat Publications, Jaipur
9. Taffe, E.J. & Gauthier (Jr.) H.L.: Geography of Transportation, Prentice-Hall, Englewood Cliffs, N.J., 1973.
10. Ullman E.L.: American Commodity Flow University of Washington Press 1957.

QUESTION PAPER PATTERN		
Marks -100		Total Time: 3 Hours
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1.	One Long-answer Question on Unit – I of 20 Marks	
	OR	20
	One Long-answer Question on Unit – I of 20 Marks / Two Short-answer Questions on Unit – I of 10 Marks each	
Q. 2.	One Long-answer Question on Unit – II of 20 Marks	
	OR	20
	One Long-answer Question on Unit – II of 20 Marks / Two Short-answer Questions on Unit – II of 10 Marks each	
Q. 3.	One Long-answer Question on Unit – III of 20 Marks	
	OR	20
	One Long-answer Question on Unit – III of 20 Marks / Two Short-answer Questions on Unit – III of 10 Marks each	

Q. 4.	One Long-answer Question on Unit – IV of 20 Marks	
	OR	20
	One Long-answer Question on Unit – IV of 20 Marks / Two Short-answer Questions on Unit – IV of 10 Marks each	
Q. 5.	One Long-answer Question on Unit – V of 20 Marks	20
	OR	
	One Long-answer Question on Unit – V of 20 Marks / Two Short-answer Questions on Unit – V of 10 Marks each	

University of Mumbai
Revised syllabus w. e. f. academic year 2023-24 (CBSGS)
T.Y.B.A/T.Y.B. Sc. (Geography), Semester -VI, Paper: V-C
Subject Title : Geography Of Disaster Mitigation And Management
COURSE CODE: UAGEO-602C (2023-24), Credit: 04

Course Outcomes

Understand the nature of hazards and disasters

Assess risk, perception and vulnerability with respect to hazards. • Prepare hazard zonation maps.

Assessing the nature, impact and management of major natural and man-made hazards affecting the Indian subcontinent

Course Objectives:

- 1 . To provide a general concept of disasters caused by nature beyond the human control.
2. To aware about the classification of natural disasters
3. To demonstrate the devastating effect of natural disasters to society

UNIT-I		Meaning & Concept of Disaster & Hazard	No of Lectures
1.1	Concept of Disaster, Hazard, Vulnerability and Risks		12
1.2	Typology of hazards &Disasters-Natural Disasters &Man-made Disasters		
1.3	Impacts of Disaster-Socio-economic and Political		
1.4	Need of Disaster Management in India		
UNIT-II		Disaster Management :Method &Approaches	12
2.1	Disaster Management :Meaning & Concept		
2.2	Disaster Management :Historical Perspective		
2.3	Disaster Management :Methods &Approaches		
2.4	Pre & Post -Disaster Stage of Management		
UNIT-III		Disaster Management & Organizations	12
3.1	Role of National Organization for Disaster Management		
3.2	Role of International Organization for Disaster Management –UNISDR, INSARAG, Red Cross		
3.3	Role of NGOs, Community & social media in Disaster Management		
3.4	Need & Challenges faced by various organizations		
UNIT-IV		Natural Disaster and its Management in India	12
4.1	Earthquake Distribution, Causes ,Effects, Management		
4.2	Flood-Distribution, Causes, Effects, Management		
4.3	Cyclone- Distribution, Causes, Effects, Management		
4.4	Landslides- Causes, Effects, Management		

UNIT-V Anthropogenic Disaster and its Management in India		12
5.1	Industrial Hazard-Causes, Effect and management	
5.2	Terrorism – Causes, effect and management	
5.3	Deforestation - , Causes, Effect and management	
5.4	Accidents – Causes, Effect and management	

References:

1. Coppola,D.P(2011):Introduction to International Disaster Management.Elesvier, Butterworth-Heinemann
2. Dasgupta R. (2007) Disaster Management and Rehabilitation, Miital Publication. New Delhi
3. Govt.Of India: Disaster Management in India,Ministry of Home affair, New Delhi
4. Murthy,D.B.N (2008) : Disaster Management, Deep & Deep Publications Pvt. Ltd., New Delhi
5. Singh,Savindra and Singh, Jeetendra (2016):Disaster Management, Pravalika Publications, Allahabad
6. Management of Man Made Disaster - S. L. Goel - Deep & Deep Publication PVT. LTD.
7. गोडबोले, मराठे :आपत्ती व्यवस्थापन संकल्पना, डायमंड पब्लिकेशन्स,पुणे
8. पठारे संभाजी,अजय चाकाने :आपत्ती निराकरण, डायमंड पब्लिकेशन्स,पुणे
9. मोरे जोतिराम, अर्जुन मुसमाडे :आपत्ती व्यवस्थापन भूगोल ,डायमंड पब्लिकेशन्स,पुणे
10. आपत्ती व्यवस्थापनाचा भूगोल – प्रा. राजकुमार डी. कांबळे, प्रा. बारवकर भगवान प्रा. साळुंके वासुदेव , – सक्सेस पब्लिकेशन, पुणे

QUESTION PAPER PATTERN		
Marks -100		Total Time: 3 Hours
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1.	One Long-answer Question on Unit – I of 20 Marks	
	OR	20
	One Long-answer Question on Unit – I of 20 Marks / Two Short-answer Questions on Unit – I of 10 Marks each	
Q. 2.	One Long-answer Question on Unit – II of 20 Marks	
	OR	20
	One Long-answer Question on Unit – II of 20 Marks / Two Short-answer Questions on Unit – II of 10 Marks each	
Q. 3.	One Long-answer Question on Unit – III of 20 Marks	
	OR	20
	One Long-answer Question on Unit – III of 20 Marks / Two Short-answer Questions on Unit – III of 10 Marks each	
Q. 4.	One Long-answer Question on Unit – IV of 20 Marks	

	OR	20
	One Long-answer Question on Unit – IV of 20 Marks / Two Short-answer Questions on Unit – IV of 10 Marks each	
Q. 5.	One Long-answer Question on Unit – V of 20 Marks	20
	OR	
	One Long-answer Question on Unit – V of 20 Marks / Two Short-answer Questions on Unit – V of 10 Marks each	

University of Mumbai
Revised Syllabus w.e.f. Academic Year, 2023-2024 (CBSGS)
T.Y.B.A. / T.Y.B.Sc. (Geography), Semester VI, Paper No: VI
Subject Title: TOOLS AND TECHNIQUES IN GEOGRAPHY FOR
SPATIAL ANALYSIS-II (Practical)
COURSE CODE: UAGEO-603 (2023-24), Credit: 03

Course Outcomes

- Learn the significance of statistics in geography. Understand the importance of use of data in geography
- Recognize the importance and application of Statistics in Geography
- Interpret statistical data for a holistic understanding of geographical phenomena. Know about different types of sampling.
- Develop an idea about theoretical distribution.
- Learn to use tabulation of data.
- Gain knowledge about association and correlation.

Unit -I	Nature of data and central tendency	Lectures
	1.1. Meaning and types of data, variable, observation, observation value, simple, discrete data and continuous data	09
	1.2. Frequency Distribution, Histogram, Frequency Polygon and Ogive	
	1.3. Measures of Central Tendency- mean, median and mode	
Unit -II	Dispersion and Deviation	
	2.1. Mean Deviation and Quartile Deviation	09
	2.2. Standard Deviation	
	2.3. Moving Averages (3 years and 5 years)	
Unit -III	Correlation, Regression & Hypothesis Testing	
	3.1. Calculation of correlation coefficient - Pearson's and Spearman's methods	09
	3.2. Regression analysis	
	3.3 Systematic and random Sampling with Point, Line and Area types	
Unit-IV	Surveying	
	4.1 Plane Table Surveying	09
	4.2 Abney level Surveying	
	4.3 Prismatic compass surveying	
Unit-V	Field work in Geography	09
	Study tour and report writing or Village Survey and report writing	

References -

- Karlekar Shrikant- Bhoogol shastratil Sanshodhan Paddhati, डायमंड पब्लिकेशन्स
- Monkhouse F.J. - Maps & Diagrams, Methuen and Co., London, 1971 (3rd Edition, Revised).
- NCERT - Textbook for Class-12, Practical Work in Geography Part II
- Peter A. Rogerson - Statistical Methods for Geography, Sege Publishers -2001
- Robinson A.H. - Elements of Cartography, Wiley
- Sarkar Ashis - Practical Geography, Orient Black Swan 2015 Sarkar Ashis Quantitative Geography, Orient Black Swan 2013 –
- Singh R.L. & Singh P. B. - Elements of Practical Geography, Kalyani Publishers 2005 Stoddard Robert Field techniques and research methods in geography, Geography faculty publication <http://digitalcommons.unl.edu/geographyfacpub/26>

- 1 All questions are compulsory
- 2 Figures to the right indicate marks to a sub-question.
- 3 Use of map stencils and simple calculator is allowed.

Q. 1	Unit-I	16 Marks
	—	
Q. 2	Unit II	16 Marks
	—	
Q. 3	Unit III	16 Marks
	—	
Q. 4	Unit IV	16 Marks
Q. 5	Unit V	16 Marks
Q. 6	Journal and Viva	20 Marks

—

University of Mumbai
Revised Syllabus w.e.f. Academic Year, 2023-24 (CBCS)
T.Y.B.A. /T.Y.B.Sc. (Geography), Semester – VI
Paper – VII: Economic geography
COURSE CODE: UAGEO-604 (2023-24), Credit: 04

Economic Geography outcomes

- 1) Understand the concept of economic activity, factors
- 2) affecting location of economic activity. Gain knowledge
- 3) about different types of Economic activities
- 4) Assess the significance of Economic Geography, the
- 5) concept of economic man and theories of choice.
- 6) Analyze the factors of location of agriculture and industries.
- 7) Understand the evolution of varied types of economic activities.
- 8) Map and interpret data on production, economic indices, transport network and flows.

Economic Geography objective

- To emphasize the significance of economic world geography in understanding the modern economic system.
- To Offer a thorough overview of fundamental concepts and essential terms Economic geography's concepts have been applied.
- To Present economic geography of world as an active, complex, and contentious field a collection of knowledge
- To Allow you to apply that you have learned to important socio economic issues in the era of globalization of the economy
- To Motivate you to consider policy ideas for reducing inequity in the globalizing world, and there is also uneven progress.

<u>UNIT</u> Numbers		Introduction to Economic Geography	No. of Lectures
	1.1	Definition, nature, scope and importance of Economic Geography	12
	1.2	Approaches and chronological development	
	1.3	Branches and relationship with social sciences	
	1.4	Recent themes and concept: agglomeration economics	

<u>UNIT</u>	II	Major Economic Activities	12
	2.1	Meaning, classification of economics activities	
	2.2	Primary Economic Activities: Fishing, animal husbandry and agriculture: types, characteristics and influencing factors and major area.	
	2.3	Secondary activities: Meaning, types and Characteristics	
	2.4	Territory and quaternary activities: Meaning, Characteristics	
UNIT	III	Major Industries and Industrial Regions	12
	3.1	Locational factors and locational theory	
	3.2	Major Industries : Iron and Steel, Textile and Sugar Industries	
	3.3	Industrial Region : India and World	
	3.4	Industrial Development in India and World	
UNIT	IV	Transportation and Communication	
	4.1	Meaning, importance of transportation and communication	12
	4.2	Means and modes of transportation	
	4.3	Influencing factors of transportation development	
	4.4	Transport patterns, flow theory and gravity model	
UNIT	V	International Trade and Trading Organizations	
	5.1	Meaning, types and factors of trade development	12
	5.2	Theories of international trade	
	5.3	Major trading organizations and blocks	
	5.4	Trade policies of India and China.	

References

- Alka Guantam (2015): Advanced economic geography Sharda Pustak Bhavan
- R.knowled and J. Wareing (2010) Economic and Social geography “Rupa publication India pvt. ltd. New Delhi”
- Alexander J.W. (1963) Economic Geography “Englewood Cliff
- Bale J. (1984): The location of manufacturing industry oliver and boyd idinburgh
- Behrman J.N. (1967) industrial policies: international restructuring and transnational, Lexington
- Brilton J.N.H (1991) Regional Analysis and economic geography : A case study of manufacturing in the Bristol region London
- Chapmen K. and Devid W. (1991) Industrial Location, Oxford.
- Eliot H (1974) Transport Geography”Mcgraw Hill, New York”
- Griqq David (1995) An Introduction to Agricultural Geography Roitledge,New York

- Hayes K and Forthering an (1984) Gravity and Spatial Interaction Models
- Datt, G. And Mahajan, A. (2016): “Datt and Sundaram’s Indian Economy”, S. Chand Publishing, New Delhi
- Drezee J and Sen A.: “Indian Economic Development and Social Opportunity”, Oxford University Press, London
- Gautam, A. (2010): “Advanced Economic Geography”, ShardaPustakBhawan, Allahabad
- Hartshorne T. & Alexander J.W.: “Economic Geography”, Prentice New Delhi
- Hodder, B. and Lee, R. (2008): “Economic Geography”, Rawat Publishers, Jaipur
- Khanna K.K., Gupta V. K., (1987): “Economic and Commercial Geography”, Sultan Chand and Com.
- Memoria, C. B. : “Economic and Commercial Geography of India”
- Saxena, H. (2016): “Economic Geography”, Rawat Publishers, Jaipur
- Singh, J. and Dhillon, S.: “Agricultural Geography”, Tata McGraw hill Publication Company Ltd., New Delhi.
- Vaidya B.C. (1998): “Readings in Transportation Geography”, Devika Publications, New Delhi.
- Vaidya B.C. (2003): “Geography of Transport Development”, Concept Publication, New Delhi.
- Weber Alfred (1957): “Theory of Location of Industry” Chicago Press

QUESTION PAPER PATTERN		
Marks -100		Total Time: 3 Hours
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1.	One Long-answer Question on Unit – I of 20 Marks	
	OR	20
	One Long-answer Question on Unit – I of 20 Marks / Two Short-answer Questions on Unit – I of 10 Marks each	
Q. 2.	One Long-answer Question on Unit – II of 20 Marks	
	OR	20
	One Long-answer Question on Unit – II of 20 Marks / Two Short-answer Questions on Unit – II of 10 Marks each	
Q. 3.	One Long-answer Question on Unit – III of 20 Marks	
	OR	20
	One Long-answer Question on Unit – III of 20 Marks / Two Short-answer Questions on Unit – III of 10 Marks each	
Q. 4.	One Long-answer Question on Unit – IV of 20 Marks	
	OR	20

	One Long-answer Question on Unit – IV of 20 Marks / Two Short-answer Questions on Unit – IV of 10 Marks each	
Q. 5.	One Long-answer Question on Unit – V of 20 Marks	20
	OR	
	One Long-answer Question on Unit – V of 20 Marks / Two Short-answer Questions on Unit – V of 10 Marks each	

University of Mumbai
Revised Syllabus w.e.f. Academic Year, 2023-24 (CBSGS)
T.Y.B.A./T.Y.B.Sc. (Geography), Semester –VI, Paper: VIII – A
Subject Title: BIOGEOGRAPHY
COURSE CODE: UAGEO-605A (2023-24), Credit: 04

Course Outcomes

- Understand the varied ecosystems and classify them.
- Recognize the significance of biogeochemical cycles and biodiversity.
- Comprehend the devastating impact of deforestation.
- Identify soil types and derive their pH.

Unit-I: Introduction to Biogeography		TOTAL LECTURES
1.1	Biogeography-Concept, definition, nature and scope	12
1.2.	Historical development and branches of Biogeography	
1.3.	Approaches in Biogeography	
1.4.	Importance of Biogeographic studies	
Unit-II: Ecosystem and Biosphere		12
2.1.	Ecosystem: Concept, meaning and types	
2.2.	Components of ecosystem and ecosystem productivity	
2.3.	Biosphere: Concept, meaning, components	
2.4.	Environment controls -	
Unit -III: Plant Community		12
3.1.	Concept of plant community and classification of plants	
3.2.	Biotic succession and climax vegetation	
3.3.	Major plant formation and biomes- Tropical	
3.4.	Major plant formation and biomes- Temperate	
Unit –IV: Animal & Marine Biogeography		12
4.1.	Geography of animal communities	
4.2.	Zoogeographical regions	
4.3.	Migration of Animals	
4.4.	Types of ocean habitats ; Island Biogeography, Estuarine Biogeography	
Unit-V: Biodiversity		12
5.1.	Biodiversity : meaning, importance and types	
5.2.	Causes of Biodiversity loss	

5.3.	Biodiversity conservation	
5.4	Biosphere reserves of India	

Reference book:

- Bharucha, E. (2004): “A Textbook for Environmental Studies”, University Grants Commission, New Delhi, Downloaded from <https://www.ugc.ac.in/oldpdf/modelcurriculum/env.pdf>
- Cunningham, W, and Cunningham, M. (2017): “Principles of Environmental Science: Inquiry and Applications”, McGraw Hill Education, Delhi
- Gautam, A. (2010): “Environmental Geography”, Sharda Pustak Bhavan, Allahabad
- Karlekar, S. and Borges, J. (2008): “Diamond Bhugol- Paryavaran Shatra Kosh”, (Marathi), Diamond Publications, Pune
- Rajagopalan, R. (2016): “Environmental Studies: From Crisis to Core”, Oxford University Press, New Delhi
- Sangle, S. (2017): “Paryavaran Bhugol”, (Marathi), Diamond Publications, Pune
- Saxena, H. (2017): “Environmental Geography”, Rawat Publishers, Jaipur.
- Singh, S. (2017): “Environmental Geography”, Prayag Pustak Bhawan, Allahabad
- Ahirrao, W.R. & Others: “Biogeography”, Nirali Prakashan, Pune
- Agrawal, L.C.: “ Biogeography” , Rawat Publications, Jaipur
- Parmar and other – “Paryavaran Bhugol” Himalaya Publishing House – Mumbai 2013
- Thakur and other - – “Paryavaran Bhugol” Konkan Geographer’s Publication

QUESTION PAPER PATTERN		
Marks -100		Total Time: 3 Hours
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1.	One Long-answer Question on Unit – I of 20 Marks	
	OR	20
	One Long-answer Question on Unit – I of 20 Marks / Two Short-answer Questions on Unit – I of 10 Marks each	
Q. 2.	One Long-answer Question on Unit – II of 20 Marks	
	OR	20
	One Long-answer Question on Unit – II of 20 Marks / Two Short-answer Questions on Unit – II of 10 Marks each	
Q. 3.	One Long-answer Question on Unit – III of 20 Marks	
	OR	20
	One Long-answer Question on Unit – III of 20 Marks / Two Short-answer Questions on Unit – III of 10 Marks each	
Q. 4.	One Long-answer Question on Unit – IV of 20 Marks	
	OR	20
	One Long-answer Question on Unit – IV of 20 Marks / Two Short-answer Questions on Unit – IV of 10 Marks each	
Q. 5.	One Long-answer Question on Unit – V of 20 Marks	20
	OR	
	One Long-answer Question on Unit – V of 20 Marks / Two Short-answer Questions on Unit – V of 10 Marks each	

University of Mumbai
Revised Syllabus w.e.f. Academic Year, 2023-24 (CBSGS)
T.Y.B.A. / T.Y.B.Sc. (Geography)
Semester VI, Paper No.– VIII -B
Subject Title : SOCIAL AND CULTURAL GEOGRAPHY
COURSE CODE: UAGEO-605B (2023-24), Credit: 04

Course Outcomes:

1. Understand the scope and content of socio-cultural geography
2. Understand the concept of cultural hearth and realm, cultural diffusion, diffusion of regions.
3. Develop an understanding of cultural segregation and cultural diversity, technology and development
4. Learn about the different races and racial groups of the world
5. Identify the socio-cultural space and regions of India
6. Understand the indicators of social welfare and wellbeing

Objectives:

1. Students will learn nature and scope of social and cultural geography.
2. The understand the approaches of the socio-cultural geography
3. To grasp the concept of social welfare and wellbeing both theoretical and technical aspects.
4. To understand the dynamics of the social and system.
5. The course explores the social and cultural regions of the world and seeks to provide understanding of today's increasing problems in the world.
6. Students will be familiarized with socio-cultural regions, movements and their impacts on economic, cultural and social activities.

UNIT - I Introduction to Social and Cultural Geography		TOTAL LECTURES
1.1	Social Geography: Concept, Nature and Scope	12
1.2.	Cultural Geography: Concept, Nature and Scope	
1.3.	Approaches: Possibilistic, Behavioural, Radical and Welfare, Modern and Postmodern	
1.4.	Social-cultural Space and Regions with Special Reference to India	
UNIT II – Social and Cultural Structures		12
2.1.	Races, Caste, Ethnicity: Types, Characteristics and Distribution	
2.2.	Religions : Traits and Distribution	
2.3.	Tribes: Types, Characteristics and Distribution	
2.4.	Languages: Distribution of Major languages families	

UNIT III – Socio-cultural Processes and Wellbeing		12
3.1.	Processes of Social Change: Modernization and Globalization – Positive and Negative Impact	
3.2.	Concept and Indicators of Social Welfare and Wellbeing – Happiness Index	
3.3.	Cultural Realms (Regions) and Diffusion: Cultural Convergences and Divergences	
3.4.	Cultural Ecology and Heritage - World Heritage Movements	
UNIT - IV Socio-cultural Development and Problems in India		12
4.1.	Socio-cultural Development: Indicators and Measurement	
4.2.	Social Stratification and Exclusion – Causes and Effects	
4.3.	Socio -cultural Challenges and Problems in Rural and Urban area	
4.4.	Problems Related to Health and Education - Programs or Policies	
Unit-V: Biodiversity		12
5.1.	Cultural Heritage Preservation: Efforts of Conservation	
5.2.	Social Movements: Environmental, Labour, Dalit, Tribal, Women and Farmers	
5.3.	Tribal Development: Programmes and Policies	
5.4.	Women Empowerment: Programmes and Policies	

References :

- Ahmad, A. (1999): “Social Geography”, Rawat Publications, Jaipur
- Bannerjee-Guha, S. (2004): “Space, Society and Geography”, Rawat Publications, Jaipur
- Carter and Jones (2000) Social Geography – An Introduction contemporary issues.
- CMS (2010): “India Corruption Study 2010: Is the Scenario Changing?”, CMS Research House, New Delhi, Downloaded from <http://unpan1.un.org/intradoc/groups/public/documents/apcity/unpan047870.pdf>
- Desai, M. (2007): “Women and the Built Environment”, Zuban Publications, Delhi.
- Dutt, A., Wadhwa, V. et al (2012): “Facets of Social Geography: International and Indian Perspectives”, Foundation Books, New Delhi
- Gharpure, V. (2013): “Samajik ani anskrutik Bhugol”, (Marathi) Pimpalpure and Company Publishers, Nagpur
- Jyptirmoy Sen (2007): A Text Book of Social and Cultural Geography,” Kalyani Publsiher, New Delhi.
- Karmarkar, D. (2012): “Fishy Spaces: Globalisation and Livelihood of Indigenous Fishermen – A Case of Mumbai”, LAP LAMBERT Academic Publishing, Germany
- Knowles, R and Wareing, J. (1996): “Economic and Social Geography”, the MadeSimple Series, Rupa& Co., Calcutta

QUESTION PAPER PATTERN		
Marks -100		Total Time: 3 Hours
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1.	One Long-answer Question on Unit – I of 20 Marks	
	OR	20
	One Long-answer Question on Unit – I of 20 Marks / Two Short-answer Questions on Unit – I of 10 Marks each	
Q. 2.	One Long-answer Question on Unit – II of 20 Marks	
	OR	20
	One Long-answer Question on Unit – II of 20 Marks / Two Short-answer Questions on Unit – II of 10 Marks each	
Q. 3.	One Long-answer Question on Unit – III of 20 Marks	
	OR	20
	One Long-answer Question on Unit – III of 20 Marks / Two Short-answer Questions on Unit – III of 10 Marks each	
Q. 4.	One Long-answer Question on Unit – IV of 20 Marks	
	OR	20
	One Long-answer Question on Unit – IV of 20 Marks / Two Short-answer Questions on Unit – IV of 10 Marks each	
Q. 5.	One Long-answer Question on Unit – V of 20 Marks	20
	OR	
	One Long-answer Question on Unit – V of 20 Marks / Two Short-answer Questions on Unit – V of 10 Marks each	

References:

- Krishnaraj, M. (2012): “The Women’s Movement in India: A Hundred Year History”, Sage Publications, New Delhi
- Leong, Goh-Cheng and Morgan, G. (1994): “Human and Economic Geography”, Oxford University Press, Oxford
- Majid Husain (1994) Social Geography, Anmol Publications Pvt. Ltd., New Delhi.
- NTA-UGC NET/JRF/SET Geography – Arihant Publication
- Puniyani, R. (2018): “Communalism: India’s Struggle for Democracy and Pluralism”,
- Raju, S. (2011): “Gendered Geographies: Space and Place in South Asia”, Oxford University Press, New Delhi.
- Rubenstein, J. (2015): “Contemporary Human Geography”, Pearson Education, Noida

- Singh, B. N.: “Human Geography”, PrayagPustakBhavan, Allahabad
- Singh, L. R. (2009): “Fundamentals of Human Geography”, ShardaPustakBhawan, Allahabad
- Smith D.M. – Human Geography – a Welfare Approach.
- Smith D.M. – Geography of Social Justice.
- Sukhtankar, S. and Vaishnav, M. (2015): “Corruption in India: Bridging Research Evidence and Policy Options”, An Independent Paper downloaded from https://www.dartmouth.edu/~sandip/Sukhtankar-Vaishnav-Corruption-IPF_Full.pdf
- Warburton, J. (2013): “Corruption as Social Process”, in P. Larmour and N. Wolanin (eds), *Corruption and Anti-Corruption*, ANU E Press, Downloaded from <http://press-files.anu.edu.au/downloads/press/p228301/pdf/ch13.pdf>
- www.nptel.ac.in/courses/109103022/40

University of Mumbai
Revised Syllabus w.e.f. Academic Year, 2022-2023 (CBSGS)
T.Y.B.A. / T.Y.B.Sc. (Geography), Semester VI, Paper IX:
Research Methodology in Geography (Practical)
COURSE CODE: UAGEO-606 (2023-24), Credit: 03

Course Outcomes

Have expertise in identification of area of study, methodology, quantitative and quantitative analysis, and conclusions to be drawn about the area – fundamental to geographical research.

Handle logistics and other emergencies on field.

Develop skills in photography, mapping and video recording.

Paper IX	RESEARCH METHODOLOGY IN GEOGRAPHY (Practical)	No. of Lectures
UNIT I	Research Methodology in Geography	9
1.1	Research in Geography: Concept, Types, Steps and Significance	
1.2	Research Methodology: Meaning and Types (Qualitative and Quantitative)	
1.3	Defining the Research Problem: Meaning, Need and Techniques	
1.4	Research Designs: Concept, Need and Features	
UNIT II	Data Collection and Processing	9
2.1	Sample Design, Measurement and Scaling	
2.2	Data Collection in Geography: Types (Primary and Secondary) and Methods (Observation, Questionnaire, Schedule, Interview, etc.)	
2.3	Role of Internet in Research: Online Research Referencing (Shodhganga, INFLIBNET, ResearchGate, Academia, Mendeley, etc.)	
2.4	Data Processing: Editing, Coding, Classification and Tabulation	
UNIT III	Data Analysis	9
3.1	Data Analysis: Meaning, Significance and Types	
3.2	Using MS-Excel and SPSS for Data Analysis: Graphical, Descriptive and Inferential Statistical Representation	
3.3	Hypothesis: Meaning, Types, Levels of Significance, Degrees of Freedom and Errors	
3.4	Statistical Techniques for Hypothesis Testing	
UNIT IV	Digital Data Analysis and Research Report Writing	9
4.1	Techniques of Spatial and Non-spatial data Analysis in GIS Softwares (Q-GIS)	
4.2	Techniques of Data Analysis in Satellite Image Processing Softwares (SAGA)	

4.3	Basics of Research Report Writing: Layout, Structure, Language, Bibliography, References and Footnotes	
4.4	Ethics in Research: Plagiarism	
UNIT V	Preparation of Research Report	9
5.1	Research Report on any One Theme in Physical Geography or Human Geography	
