।। सा विद्या या विमुक्तये ।।
स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड
"ज्ञानतीर्थ" परिसर, विष्णुपूरी, नांदेड - ४३१६०६ (महाराष्ट्र)
SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY NANDED
"Dnyanteerth", Vishnupuri, Nanded - 431606 Maharashtra State (INDIA)
Established on 17th September 1994 – Recognized by the UGC U/s 2(f) and 12(B), NAAC Re-accredited with 'A' Grade
ACADEMIC (1-BOARD OF STUDIES) SECTION
Phone: (02462) 229542
Fax : (02462) 229574
Website: www.srtmun.ac.in
E-mail: bos.srtmun@gmail.com

**प्रस्तुत विद्यापीठीय संकुलातील विज्ञान व तंत्रज्ञान विद्याशाखेतील पदव्युत्तर स्तरावरील द्वितीय वर्षाचे CBCS Pattern नुसारचे अभ्यासक्रम शैक्षणिक वर्ष २०२०—२१ पासून लागू करण्याबाबत.**

# प रि प त्र क

या परिपत्रकान्वये सर्व संबंधितांना कळविण्यात येते की, **दिनांक २० जून २०२० रोजी संपन्न झालेल्या ४७व्या मा. विद्या परिषद बैठकीतील विषय क्र.११/४७—२०२०** च्या ठरावानुसार **प्रस्तुत विद्यापीठीय संकुलातील विज्ञान व तंत्रज्ञान विद्याशाखेतील पदव्युत्तर स्तरावरील द्वितीय वर्षाचे** खालील विषयांचे **C.B.C.S. (Choice Based Credit System) Pattern** नुसारचे अभ्यासक्रम शैक्षणिक वर्ष २०२०—२१ पासून लागू करण्यात येत आहेत.

01. M.Sc.-II Year-Botany
02. M.Sc.-II Year-Analytical Chemistry
03. M.Sc.-II Year-Industrial Chemistry
04. M.Sc.-II Year-Medicinal Chemistry
05. M.Sc.-II Year-Organic Chemistry
06. M.Sc.-II Year-Physical Chemistry
07. M.Sc.-II Year-Polymer Chemistry
08. M.Sc.-II Year-Computer Application
09. M.Sc.-II Year-Computer Network
10. M.Sc.-II Year-Computer Science
11. M.C.A.-II Year (Master of Computer Applications)
12. M.Sc.-II Year-Environmental Science
13. M.A./M.Sc.-II Year-Geography
14. M.Sc.-II Year-Geophysics
15. M.Sc.-II Year-Geology
16. M.A./M.Sc.-II Year-Mathematics
17. M.Sc.-II Year-Microbiology
18. M.Sc.-II Year-Physics
19. M.Sc.-II Year-Zoology
20. M.Sc.-II Year-Biotechnology
21. M.A./M.Sc.-II Year-Statistics

सदरील परिपत्रक व अभ्यासक्रम प्रस्तुत विद्यापीठाच्या **www.srtmun.ac.in** या संकेतस्थळावर उपलब्ध आहेत. तरी सदरील बाब ही सर्व संबंधितांच्या निदर्शनास आणून द्यावी.

'ज्ञानतीर्थ' परिसर,
विष्णुपुरी, नांदेड – ४३१ ६०६.
**जा.क्र.:** शैक्षणिक—१/परिपत्रक/पदव्युत्तर(संकुल)—सीबीसीएस अभ्यासक्रम/२०२०—२१/**५१३**

स्वाक्षरित/—
**उपकुलसचिव**
शैक्षणिक (१—अभ्यासमंडळ) विभाग

**दिनांक :** ०८.०८.२०२०.

प्रत माहिती व पुढील कार्यवाहीस्तव :
१) मा. कुलसचिव यांचे कार्यालय, प्रस्तुत विद्यापीठ.
२) मा. संचालक, परीक्षा व मूल्यमापन मंडळ यांचे कार्यालय, प्रस्तुत विद्यापीठ.
३) मा. संचालक, सर्व संबंधित संकुले, प्रस्तुत विद्यापीठ.
४) साहाय्यक कुलसचिव, पदव्युत्तर विभाग, प्रस्तुत विद्यापीठ.
५) उपकुलसचिव, पात्रता विभाग, प्रस्तुत विद्यापीठ.
६) सिस्टम एक्सपर्ट, शैक्षणिक विभाग, प्रस्तुत विद्यापीठ.


# Swami Ramanand Teerth Marathwada University Nanded - 431606, Maharashtra, India

# M.A./M.Sc. Geography
# 2 Years (4 Semester Program)
# Syllabus
## *With effective from 2019 – 2020*

## DEPARTMENT OF GEOGRAPHY
## SCHOOL OF EARTH SCIENCES
## SRTM UNIVERSITY
## NANDED

# M.A. / M.Sc. Geography
# Syllabus Pattern

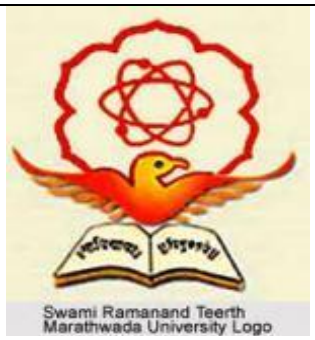
Syllabus of M.A./ M.Sc. Geography program offered by the School of Earth Sciences has been prepared considering the syllabi for the different competitive examination on state level and national level like UPSC, MPSC, CSIR-NET, UGC-NET and SET examination and the requirements of the industry. The M.A. / M.Sc. Geography program is imparted to the students for two academic years consisting of four semesters. Candidates will be examined and evaluated on grade basis at the end of each semester in the different theory and practical papers as per the credits offered by each course.

The M.A. / M.Sc. Geography program consists of (i) Core Subjects (C) (ii) Subject Electives (E) and (iii) Open Elective (OE) Courses. The Core Subjects shall be **75%** of the program, which are mandatory for all the students. Students can choose one Subject Elective per semester from the list of Subject Electives provided. A student has to take 8 credits of Open Elective papers within the 2 year term of the program. The Open Electives can be selected from the Open Elective courses offered by the School of Earth Sciences *OR* offered by other Schools from the University Campus. Students are also encouraged to select Open Elective courses from National Educational Platforms such as MOOCS/NPTL/SWAYAM. If a student wishes, he/she can take a few extra courses, which will be considered as add-on credits.

In addition to class-room teaching and laboratory, the M.A. / M.Sc. Geography program offers geographical field training to the students. After completion of field training, students have to submit a filed report to the School. Intensive training/internships in the nationally reputed institutes shall also be provided to the students. The semester breaks can also be utilized for the geographical field training and internships.

Students will be assessed through Mid-Term and End-Term examinations. Mode of assessment in the Mid-Term examinations consists of Tutorials, Home Assignments, Seminars, Field studies, Quizzes and Oral presentations. The End-Term examinations will be based on paper-pen pattern and laboratory experiments/calculations.

Every student has to mandatorily submit dissertation thesis. The dissertation work is based on either new data generated for the proposed scientific problem *OR* based on available large global data sets using innovative ideas. The thesis should be based on sound methodology and well defined objectives. Through dissertation work the student should be well-versed with the literature on the chosen topic, independently define a scientific problem, carry out focused study on a research topic, analyze and interpret large data sets, independently write thesis / project proposal and present and defend the dissertation work. The Dissertation must be submitted by the end of fourth Semester with a Seminar presentation in the presence of faculty members, students and external examiners for the purpose of evaluation. The School of Earth Sciences strongly encourages the M.A. / M.Sc. Geography students to publish their dissertation work in SCI journals.




## School of Earth Sciences

# SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED

## Semester I

# Syllabus

# M.A./M.Sc. in Geography

# 2019-20

| Type | | Code | Semester 1 | Credits |
|---|---|---|---|---|
| **Core Theory 1** | | Gg-C101 | Geomorphology | 4 |
| **Core Theory 2** | | Gg-C102 | Geographical Thoughts | 4 |
| **Core Theory 3** | | Gg-C103 | Population Geography | 4 |
| | | | | |
| **Subject Elective Theory** | | Gg-E101 | Environmental Geography | 3 |
| | | Gg-E102 | Physical Geography of Maharashtra | 3 |
| | | Gg-E103 | Physical Geography of India | 3 |
| | | | | |
| **Open Elective Theory 1** | | Gg-OE101 | Physical Geography of Marathwada | 2 |
| **Open Elective Theory 2** | | Gg-OE102 | Cartography | 2 |
| **Open Elective Theory 3** | | Gg-OE103 | Remote Sensing | 2 |
| **Open Elective Theory 4** | | Gg-OE104 | Water Conservation | 2 |
| **Open Elective Theory 5** | | Gg-OE105 | Climatology-I | 2 |
| | | | | |
| **Practical 1** | | Gg-C104 | Morphometric Analysis | 2 |
| **Practical 2** | | Gg-C105 | Representation of Demographic Data | 2 |
| **Practical 3** | | Gg-C106 | Representation of Landforms and Slope | 2 |
| **Practical 4** | | Gg-C107 | Interpretation of Topographical Maps | 1 |
| **Practical 5** | | Gg-C108 | Seminar / Field Report | 1 |
| | | | | |
| | | **Total Credits** | | **25** |

**NOTE:**

1) Core theory papers are compulsory papers. (C)
2) Select any one theory paper from subject electives papers (E)
3) All practical papers are compulsory papers. (C)
4) Additional credits can be obtained from MOOCS/NPTL/SWAYAM
5) Open elective papers are for other subjects (other than Geography) in the university. (OE)
6) At least one open elective should be provided in each semester and 8 credit need to be completed in two year program

# Gg-C101: Geomorphology

**Credits 4: Theory Paper**

**Pre-requisite**

The candidate should know the basic concepts from physical set-up, topographical & Morphometric changes and background of natural movements. The candidate should know the basics about the SOI maps.

**Course Objectives**

The objectives of this paper are, to understand the basic concepts of physical Geography, to study the principles of geomorphology and fundamental theories about the geomorphological movements. Its prime aim is to understand and be capable to observe and note the endogenic and exogenic forces their processes in the field studies.

**Course Outcomes**

After completion of the paper / course, the students will get capabilities and skills to correlate the natural cycles and manmade activities at primary level. In short, the candidate will assess the cause-n-effect relationships, which will be helpful for answering reasoning types of questions asked in competitive examinations.

**Mode of Assessment**

1. Tutorial examinations
2. Home assignments
3. Seminars / Oral Presentation
4. Online / Offline Quizzes
5. Field studies and its presentation
6. Mid-term Theory Examination
7. End-term Theory Examination
8. PPT presentation on selected topic(s)

# Gg-C101: Geomorphology (Credits 4: Theory Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **A) Nature and Scope of Geomorphology:**<br>- Definition of Geomorphology<br>- Fundamental Concepts in Geomorphology<br>- Nature and Scope of Geomorphology<br>**B) Basic Theories in Geomorphology:**<br>- Wegener's Continental Drift,<br>- Plate Tectonics,<br>- W. M. Davis's Concept of Geomorphic Cycle |
| II | **A) Endogenic Forces and Processes:**<br>- Slow Movements (Compression/ Fold , Tension/ Faults)<br>- Sudden Movements (Volcanism and Earthquakes)<br>**B) Exogenic Forces and Processes:**<br>- Weathering<br>- Mass Movement<br>- Erosion<br>- Deposition |
| III | **Land Forms:**<br>Associated with Fluvial, Glacial, Arid and Coastal processes |
| IV | **A) Slope Morphology:**<br>- Types of Slopes<br>**B) Application in Geomorphology:**<br>- Applications of Geomorphology and Human activities |

## Reference Books:


**In English**

1) Thornbury, W. D. (I960): Principles of Geomorphology, John Wiley and Sons, New York.
2) Chorley, R. J., Schumm, S. A. and Sugden, D. E. (1984): Geomorphology, Methuen, London.
3) Savindra Singh (2002): Geomorphology, PrayagPustakBhawan, Allahabad
4) Spark B. W. (1972): Geomorphology, Longman, NewYork
5) Ollier, C. D. (1981) Tectonics and Landforms, Longman, London
6) Strahler A. H and Strahler, A. N. (1992): Modern Physical Geography, John Wiley, New York
7) Fairbridge, R. W. (1968): Encyclopedia of Geomorphology, Reinholdts, New York.

**In Marathi**

8) DhobleShital and others (2017): Geomorphology (in Marathi), NiraliPrakashan, Pune
9) ChaudhariDr SR and Gavit (2015): Geomorphology (in Marathi), Prashant Publications, Jalgaon
10) KarlekarShrikant (2015): Physical Geography and Geomorphology, (in Marathi), Daimand, Pune.
11) Pathare and Gajhans (2015): Physical Geography (in Marathi), Vidya Books, Aurangabad.

# Gg-C102: Geographical Thought

**Credits- 4 Theory Paper**

**Pre-requisite:** Basic knowledge about development of geographical thought, and knowledge of $10^{th}$ standard geography.

**Course Objectives**: The objectives of this course are to understand contributions of Greek, Roman, Arab, Chinese and Indian scholars in development of geography and also to know the development of modern geography.

**Course Outcomes:** After completion of the course, the students get capabilities on understanding the development of geography from ancient to modern age and also come to know the contribution of geographer to development of society.

**Mode of Assessment**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

# Gg-C102: Geographical Thought (Credits- 4 Theory Paper)

**Course Contents**

| Unit | Teaching / Learning Points |
|---|---|
| **I** | **Contributions** of Greek, Roman, Arab, Chinese and Indian Scholars in development of geography. Impact of Darwinian Theory on Geographical Thought |
| **II** | **Founders of Modern Geography** – i) Alexander Von Humboldt, ii) Carl Ritter, iii) Friedrich Ratzel iv) Vidal de la Blache, v) Ellen Churchill Sample, vi) Richard Hartshorne. vii) Scheafer |
| **III** | **Dualisms in Geographic Studies** - physical vs. human, regional vs. systematic, qualitative vs. quantitative, ideographic vs. nomothetic, Concept of Determinism and Possibilism, Areal Differentiation, Spatial Organization, Patterns and Processes, Explanation in Geography, Paradigm Shift, Quantitative Revolution. |
| **IV** | **Perspectives in Geography** -Positivism, Behaviouralism, Humanism, Structuralism, Feminism and Postmodernism. |

**Reference Books:**


1. Dixit, R.D. (1999): The Arts and Science of Geography, Integrated Readings; Prentice Hall of India Private Ltd, New Delhi.
2. Dickinson, R.E. (1969): The Makers of Modern Geography, Hall Book Depo, Bhopal Prenrtice-Hall of India,New Delhi. (English and Hindi)
3. Harvey, D. (1969): Explanation in Geography, London, Edward Arnold
4. Adams, Paul, Steven Holescher and Karel Till (eds.) (2001): Texture of Place. Exploring Humanistic Geographies. University of Minnesota Press, Minneapolis.
5. ArildHolf-Hensen (1999): Geography History and Concepts, Sage Publications, London.
6. Suja Edward (1989): Post-modern Geographies verso, London Reprinted 1997: Rawat Publication, Jaipur and New Delhi.
7. KapurAnu (ed.)(2001): Indian Geography – Voice of Concern Concept Publishing Company, New Delhi
8. Peet, Richard (1998): Modern Geographical Thought, Blackwell, Oxford
9. Braithwaite, E.B (1960): Scientific Explaination, Harper Toreh Books, New York.
10. Bunge, W. (1979): Fred K. Shaeffer and the Science of Geography, Annals, Association of American Geographers, 69:128-32.

# Gg-C103: Population Geography

**Credits- 4 Theory Paper**

**Pre-requisite:** Basic knowledge about elements of population and physical, culture and social geographical factors.

**Course Objectives**: The objectives of this course is to understand population growth, birth rate, death rate, crude birth rate, crude death rate, infant mortality rate, fertility, mortality, migration, age, sex ratio, age and sex pyramid, population density.

**Course Outcomes:** After completion of the course, the students get capabilities and skills on population geographical techniques, concepts, model and theories related to population geography. Also understand the various factor are affected of the population growth and population problems.

**Mode of Assessment**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

## Gg-C103: Population Geography (Credits- 4 Theory Paper)

## Course Contents

| Unit | Teaching / Learning Points |
|---|---|
| **I** | **A. Population Geography:** Nature Scope, subject matter and recent trends<br>**B. Basic Concepts:** Population Growth, Birth rate, Death rate, Crude Birth rate, Crude Death rate, Infant mortality rate, Fertility, Mortality, Migration, Age, Sex ratio, Age and sex pyramid, Density |
| **II** | **Population Growth and Distribution:**<br>**A) Influencing Factors:** 1) Physical 2) Economic 3) Social 4) Political<br>**B) World and India** |
| **III** | **Theory and Model:** Basic concept, Scope, Applications and relevance<br>1) Malthus theory of population growth<br>2) Demographic transition model |
| **IV** | **A. Population as a Resource:**<br>1) **Concepts**: Over, Optimum and Under population<br>2) **Various aspects**: Size, Growth, Age, Education and Health<br>3) Population resource regions<br>**B. Population problems and policies in India** |

## References Books:


1. Barrett H.R. (1992): Population Geography, Oliver and Boyd Longman House,Harlow.
2. Bhende Asha &KanitkarTara(1975): principles of population Studies,HimalayaPublishing House, Bombay.
3. Chandna,R.C. &Manjit s. Sidhu(1980): Introduction to Population Geography,Kalyani Publishers, New Delhi.
4. Chandana, R.C. (1984): Geography of Population, Kalyani publisher, Ludhiana.
5. Garnier, J.B. (1976): Geography of Population, Longman Group Ltd., London.
6. Hausier, Philip M & Duncan (Eds.)(1959): The Study of Population, University Press, hicago.
7. Hussein, Majid (1999): Human Geography (2Ed.), Rawat Publications, Jaipur.8. Ravenstein,E(1889):The Laws of Migration,journal,Royal StatisticalSociety,49,pp241-305.
9. Sinha V.C(1979):Dynamics of India's Population Growth,NationalPublishingHouse,New Delhi.
10. Smith, T.L (1960): Fundamental of Population Studies, Lipineott, London.
11. Zelinsky, W (1966): A Prologue of Population Geography, Prentice Hall Inc, M.J
12. Sawant&Athawale A. S: Population Geography, Mehta Kolhapur.

# Gg-C104: Morphometric Analysis

**Credits 2: Practical Paper**

**Pre-requisite**

The candidate should know the basic concepts from physical set-up, topographical & Morphometric changes and background of natural movements. The candidate should know the basics about the SOI maps. The candidate should have some conceptual understanding about the Physical Geography, Geomorphological Processes and mainly Morphometric changes.

**Course Objectives**

The objective of this paper is to understand and be capable to observe and note the endogenic and exogenic forces their processes in the field studies. In addition, the objectives of this practical paper are to understand the spatio-temporal changes in the morphological situation of the region and their effects on various aspects of the concerned topography. It is also aims to see the influencing factors of the same.

**Course Outcomes**

After completion of the paper / course, thestudents will get capabilities and skills to correlate the natural cycles and manmade activities at primary level. After completion of this practical paper, the student will assess the changes of any morphological aspects with proper scientific and statistic methods. He / she will draw a multi-applicable and suitable plan for the future changes.

**Mode of Assessment**

1. Test examinations
2. Seminars / Oral Presentation
3. Preparation of Practical Notebook
4. Field studies and its presentation
5. Mid-term Practical Examination
6. End-term Practical Examination

# Gg-C104: Morphometric Analysis (Credits 2: Practical Paper)

## Course Contents

| Unit | Teaching and Learning points |
|---|---|
| I | **A) Drainage Patterns**<br>1. To understand the basics of Drainage and its Pattern<br>2. To understand and draw Dendritic drainage pattern<br>3. To understand and draw Parallel drainage pattern<br>4. To understand and draw Trellis drainage pattern<br>5. To understand and draw Rectangular drainage pattern<br>6. To understand and draw Radial drainage pattern<br>7. To understand and draw Centripetal drainage pattern<br>8. To understand and draw Annular drainage pattern<br>9. To understand and draw Barbed drainage pattern<br>**B) Stream Ordering**<br>1. To understand Basics of Stream Ordering<br>2. To apply Horton's Method of Stream Ordering<br>3. To apply Strahler's Method of Stream Ordering<br>4. To apply Streve's Method of Stream Ordering |
| II | **Morphometric Analysis**<br>1. To measure basin length and width<br>2. To measure Stream Length and Stream Length Ratio<br>3. To calculate Drainage Density<br>4. To calculate Bifurcation Ratio<br>5. To measure basin area<br>6. To calculate stream frequency<br>7. To calculate total slope of the basin<br>8. To calculate total slope of the given stream |

## Reference Books:


**In English**

1) King, C. A.M (1966): Techniques in Geomorphology, Edward Arnold, London
2) Monkhouse, F. J. and Wilkinson, H. R., (1976). Maps and Diagrams, Methuen & Co.
3) Savindra Singh (2002): Geomorphology, PrayagPustakBhawan, Allahabad
4) Miller, Austin (1953): The skin of the Earth, Methuen & Co. Ltd. London
5) Thornbury, W. D. (I960): Principles of Geomorphology, John Wiley and Sons, New York.
6) Chorley, R. J., Schumm, S. A. and Sugden, D. E. (1984): Geomorphology, Methuen, London.
7) Savindra Singh (2002): Geomorphology, PrayagPustakBhawan, Allahabad
8) Spark B. W. (1972): Geomorphology, Longman, NewYork
9) Ollier, C. D. (1981) Tectonics and Landforms, Longman, London
10) Strahler A. H and Strahler, A. N. (1992): Modern Physical Geography, John Wiley, New York
11) Fairbridge, R. W. (1968): Encyclopedia of Geomorphology, Reinholdts, New York.

**In Marathi**

12) DhobleShital and others (2017): Geomorphology (in Marathi), NiraliPrakashan, Pune
13) ChaudhariDr SR and Gavit (2015): Geomorphology (in Marathi), Prashant Publications, Jalgaon
14) KarlekarShrikant (2015): Physical Geography and Geomorphology, (in Marathi), Daimand, Pune.
15) Pathare and Gajhans (2015): Physical Geography (in Marathi), Vidya Books, Aurangabad.

## Gg-C105: Representation of Demographic Data

**Credits- 2 Practical Paper**

**Pre-requisite:** Basic knowledge of population distribution, density and population growth. The knowledge about graph and map preparation is required for this paper.

**Course Objectives**: The objective of this course is to understand, calculation and construction of graphs and maps about population elements.

**Course Outcomes:** After completion of the course the student, get capabilities and skills on population geographical techniques, calculations in population geography, construction of population graphs and diagrams and preparation of maps regarding population geography.

**Mode of Assessment**

1. Tutorial examination
2. Home assignments
3. Field studies
4. Mid-term practical examination
5. End-term practical examination
6. Preparation of Practical Notebook

## Gg-C105: Representation of Demographic Data (Credits- 2 Practical Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Formulae and Calculations in Population Geography:**<br>1) Density of Population<br>2) Sex Ratio<br>3) Crude Birth and Death Rate<br>4) Literacy Rate<br>5) Life Expectance Rate<br>6) Dependency Ratio<br>7) Population growth rate<br>8) Population projection |
| II | **Population Graphs and Diagrams:**<br>1) Bar Graphs<br>2) Line Graphs<br>3) Population (Age-Sex) Pyramid -<br>i) Compound pyramid<br>ii) Superimposed Pyramid |
| III | **Preparation of Maps regarding**<br>1) Decadal Change of Population<br>2) Population Density<br>3) Population Growth<br>4) Population Distribution<br>5) Sex Ratio<br>6) Population Literacy<br>7) Dependency Ratio |

**Reference Books:**


1. Lawrence, G.R.P. (1973): Cartographic methods, Methuen & Co. London.
2. Mishra, R.P. (1982): Fundamentals of cartography, Prasaranga, University of Mysore.
3. Monkhouse,F.J.R& Wilkinson, H.R: Maps & diagrams, Methuen & company, London.
4. Raisz, Erwin: Principles of cartography, McGraw – hill Book Co., New York.
5. Robinson A.H.& Sale R.D. Element of Cartography, John House & Sons Ltd., London.
6. Singh R. L.: Elements of Practical Geography.
7. Barrett H.R.(1992): Population Geography, Oliver and Boyd Longman House,Harlow.
8. Bhende Asha &Kanitkar Tara(1975): principles of population Studies,HimalayaPublishing House, Bombay
9. Chandna,R.C. &Manjit s. Sidhu(1980): Introduction to Population Geography,Kalyani Publishers, New Delhi.
10. Chandana, R.C. (1984): Geography of Population, Kalyani publisher, Ludhiana.

# Gg-C106: Representation of Landforms and Slope

**Credits 2: Theory Paper**

**Pre-requisite**

The candidate should know the basic concepts from physical set-up, topographical and changes in landforms and slope with background of natural movements. The candidate should know the basics about the SOI maps. The candidate should have some conceptual understanding about the Physical Geography, Geomorphological Processes and mainly landforms and slope.

**Course Objectives**

The objective of this paper is to understand and be capable to observe and note the endogenic and exogenic forces their processes in the field studies. In addition, the objectives of this practical paper are to understand the spatio-temporal changes in the landforms and slope and their effects on various aspects of the concerned topography. It is also aims to see the influencing factors of the same.

**Course Outcomes**

After completion of the paper / course, thestudents will get capabilities and skills to correlate the natural cycles and manmade activities at primary level. After completion of this practical paper, the student will assess the changes of any aspect of landforms and slope with proper scientific and statistic methods. He / she will draw a multi-applicable and suitable plan for the future changes.

**Mode of Assessment**

1. Test examinations
2. Seminars / Oral Presentation
3. Preparation of Practical Notebook
4. Field studies and its presentation
5. Mid-term Practical Examination
6. End-term Practical Examination

## Gg-C106: Representation of Landforms and Slope (Credits 2: Practical Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Method of Relief Representation in SOIToposheets Maps:**<br>• To understand and Identify Spot height, Bench Mark & Triangulation Station marks on SOI Toposheet<br>• To understand and Indentify different forms of Contour lines<br>• To draw contours on given map<br>**Relief Representation with Contour lines:**<br>• To use counters for relief representation of Hill<br>• To use counters for relief representation of Ridge<br>• To use counters for relief representation of Saddle<br>• To use counters for relief representation of Col<br>• To use counters for relief representation of Pass<br>• To use counters for relief representation of Spur<br>• To use counters for relief representation of Plateau<br>• To use counters for relief representation of Escarpment<br>• To use counters for relief representation of Cliff<br>• To use counters for relief representation of V-Shaped Valley<br>• To use counters for relief representation of River Terraces |
| II | **Slope and Profile:**<br>• To understand and draw a type of slope: Steep and Gentle<br>• To understand and draw a type of slope: Concave and Convex<br>• To understand and draw a type of slope: Uniform and Uneven<br>• To understand and draw a type of slope: Terraced<br>• To draw a cross profile<br>• To draw a longitudinal profile |

**Reference Books:**

**In English**


1) King, C. A.M (1966): Techniques in Geomorphology, Edward Arnold, London
2) Monkhouse, F. J. and Wilkinson, H. R., (1976). Maps and Diagrams, Methuen & Co.
3) Savindra Singh (2002): Geomorphology, PrayagPustakBhawan, Allahabad
4) Miller, Austin (1953): The skin of the Earth, Methuen & Co. Ltd. London
5) Thornbury, W. D. (I960): Principles of Geomorphology, John Wiley and Sons, New York.
6) Chorley, R. J., Schumm, S. A. and Sugden, D. E. (1984): Geomorphology, Methuen, London.
7) Savindra Singh (2002): Geomorphology, PrayagPustakBhawan, Allahabad
8) Spark B. W. (1972): Geomorphology, Longman, NewYork
9) Ollier, C. D. (1981) Tectonics and Landforms, Longman, London
10) Strahler A. H and Strahler, A. N. (1992): Modern Physical Geography, John Wiley, New York
11) Fairbridge, R. W. (1968): Encyclopedia of Geomorphology, Reinholdts, New York.


**In Marathi**


12) DhobleShital and others (2017): Geomorphology (in Marathi), NiraliPrakashan, Pune
13) ChaudhariDr SR and Gavit (2015): Geomorphology (in Marathi), Prashant Publications, Jalgaon
14) KarlekarShrikant (2015): Physical Geography and Geomorphology, (in Marathi), Daimand, Pune.
15) Pathare and Gajhans (2015): Physical Geography (in Marathi), Vidya Books, Aurangabad.

# Gg-C107: Interpretations of Topographical Maps

**Credits- 1 Practical Paper**

**Pre-requisite:** Basic knowledge about elements of maps and construction of maps. The knowledge about physicals and cultural features is required for this paper.

**Course Objectives**: The objectives of this course are to understand, calculation, construction and interpretation of topographical maps.

**Course Outcomes:** After completion of the course the student, get capabilities and skills on construction and interpretation of topographical maps and identified the physical and cultural features of on the map.

**Mode of Assessment**

1. Test examinations
2. Seminars / Oral Presentation
3. Preparation of Practical Notebook
4. Field studies and its presentation
5. Mid-term Practical Examination
6. End-term Practical Examination

## Gg-C107: Interpretations of Topographical Maps (Credits- 1 Practical Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| **I** | **Study of S.O.I. Topographical Maps (1: 50,000 Series):**<br>1. Indexing and conventional signs and symbols (OS)<br>2. Grid references.<br>3. Locational and Relief aspects of the area<br>**a**. Latitudinal & Longitudinal extension **b.** Contour interval<br>**c.** Maximum and Minimum heights |
| **II** | **Interpretation of S.O.I Toposheets:**<br>**1.Marginal Information,**<br>**2.Patterns of Relief**<br>**a**. Distribution of Spot heights, benchmarks, Trigonometrically Points etc.<br>**b**. Types of Slopes (convex, concave, uniform etc.) **c**. Major landforms from contour patterns<br>3. **Patterns of Drainage network**<br>**a.** Types-trellis, dendritic, radial, etc. **b**. Streams with water, without water. **c.** Influence of relief on drainage<br>4**. Patterns of Vegetation.**<br>**a**. Types of vegetation **b**. Association of relief and drainage **c**. Reserved Forest and Protected Forest<br>5. **Patterns of Settlements.**<br>**a**. Types, amenities, facilities and communication, etc.<br>**b**. Distribution, relative size, relative distance (dispersed, nucleated etc.)<br>6. **Patterns in Land Use**<br>**a.** Occupation, Agriculture, mining etc. areal distribution**b.** Transportation and Communication **c.** Irrigation**d**. impact of physical landscape. |

**Reference Books:**


1. Monkhouse F.X.J. and Wilkinson H. R. (1971), Maps and Diagrams, London
2. Ramamurthy, K. (1982): Map interpretation, Madras
3. Petrie N. (1992), Analysis and Interpretation of Topographical Maps. Orient Longman Limited Calcutta
4. Singh R. L. (1997), Elements of Practical Geography, Kalyan Publishing, New Delhi
5. Meux A. H. (1960), Reading Topographical Maps.University of London Press Limited
6. Jones P. A. (1968), Fieldwork in Geography. Longmans, Green and Company Limited
7. Archer J. E and Dalton T. H. (1968), Fieldwork in Geography B.T. Batsford Limited London
8. Wheeler K.S. Ed (1970), Geography in the field. Blond Educational, London.
9. Gupta, K. K. and Tyagi, V. C. (1992): Working with maps, Survey of India Publication, Dehradun.

# Gg-E101: Environmental Geography

**Credits 3: Theory Paper**

**Pre-requisite**

The candidate should know the basic concepts from Physical geography and Environmental Geography. The candidate should know the basics about natural cycles and changes in it.

**Course Objectives**

The objectives of this paper are, to understand the basic concepts of Environmental Geography, to study the principles of Ecosystem and fundamental theories about the natural cycles. Its prime aim is to understand and be capable to observe and note the changes in environment at global to local level.

**Course Outcomes**

After completion of the paper / course, the students will get capabilities and skills to correlate the natural cycles and manmade activities at primary level. In short, the candidate will assess the cause-n-effect relationships, which will be helpful for answering reasoning types of questions asked in competitive examinations.

**Mode of Assessment**

1. Tutorial examinations
2. Home assignments
3. Seminars / Oral Presentation
4. Online / Offline Quizzes
5. Field studies and its presentation
6. Mid-term Theory Examination
7. End-term Theory Examination
8. PPT presentation on selected topic(s)

# Gg-E101: Environmental Geography (Credits 3: Theory Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Basic Concepts:**<br>• Definition of Environmental Geography, Nature and Scope<br>• Major elements of Environment<br>• Functioning of Environmental Systems<br>• Role of Biotic and Abiotic elements<br>• Geography and Environmental Studies |
| II | **Ecosystem:**<br>• Concept, Structure, Functions and Types<br>• Tropical, Temperate and Polar Ecosystems<br>• Food Web and Food Chain<br>• Bio-Geo-Chemical Cycle (Nitrogen and Carbon)<br>• Energy flow in Ecosystem |
| III | **Environmental Problems:**<br>• Environmental Pollution (Water, Land and Air)<br>• Environmental Degradation: Causes and Need of Conservation<br>• Current Environmental Issues<br>• Ozone Depletion and Acid Rain<br>• Green House Effect and Global Warming |

**Reference Books:**

**In English**


1) Singh S., 1997: Environmental Geography, PrayagPustakBhawan. Allahabad.
2) Chandna R. C., 2002: Environmental Geography, Kalyani, Ludhiana.
3) Cunninghum W. P. and Cunninghum M. A., 2004: Principals of Environmental Science: Inquiry and Applications, Tata Macgraw Hill, New Delhi.
4) Goudie A., 2001: The Nature of the Environment, Blackwell, Oxford.
5) Miller G. T., 2004: Environmental Science: Working with the Earth, Thomson BrooksCole, Singapore.
6) Odum, E. P. et al, 2005: Fundamentals of Ecology, Ceneage Learning India.

# Gg-E102: Physical Geography of Maharashtra

**Credits 3: Theory Paper**

**Pre-requisite**

The candidate should know the basic concepts from Physical and Regional Geography. The candidate should familiar with the natural set up and their relationships to each other. He / She should know the importance of physical features in demarcation of a region and regional entities.

**Course Objectives**

The objectives of this paper are to understand the basic concepts of Physical Geography with Regional perspective and fundamental theories about the region and their characteristics. Its prime aim is to understand the physical features and their spatial characters in details.

**Course Outcomes**

This paper is providing basic information about the physical set up of the Region, i.e. Marathwada. The students will get knowledge and will acquire skills for comparative regional study and correlate the cause-n-effect relationships of all basic topography, morphometry and resources.

**Mode of Assessment**

1. Tutorial examinations
2. Home assignments
3. Seminars / Oral Presentation
4. Online / Offline Quizzes
5. Field studies and its presentation
6. Mid-term Theory Examination
7. End-term Theory Examination
8. PPT presentation on selected topic(s)

# Gg-E102: Physical Geography of Maharashtra (Credits 3: Theory Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Physiography:**<br>• Location and administrative set-up<br>• Physiography: Hill Ranges, Plateau and Plain Regions<br>• Main Rivers: Godavari, Krishna, Tapi<br>• Soil: Types and Distribution<br>• Vegetation Cover: Types and Distribution |
| II | **Climate:**<br>• Major Climatic Types & Characteristics,<br>• Distribution of Temperature and Rainfall<br>• Climate Change |
| III | **Resources: Water, Mineral and Forest**<br>• Water Resources: Major and Minor Projects<br>• Mineral Resources: Resources and its Location<br>• Forest: Types, Distribution, Minor and Major Forest Produce |

**Reference Books:**


1) Gazetteer of Maharashtra, Govt of India.
2) B. Arunchalm, Regional Geography of Maharashtra
3) B.D. Nag Choudhary, "Introduction to Environment Management" Inter Print Mehata House, New Delhi.
4) Brucu Mitchell "Geography and resources analysis" John willey and sons, New York.
5) C.D. Deshpande, "Geography of Maharashtra" National book Trust of India, New Delhi.
6) Cutler L, Renwick H.L. Exploitation conservation and preservation: A Geographical perspective and natural resource use, Rowmon and Allanhed, Towata.
7) Govt. of Maharashtra "Economic development of Maharashtra", Maharashtra Economic Development Council.
8) Dixit K.R., "Maharashtra in Maps"
9) Deshpande, S.H. "Economy of Maharashtra"
10) Annual Socio-Economic Abstracts, (1951 to 2011, all concern districts), Govt of Maharashtra.
11) RBS, 2014, Visitors Guide India: Maharashtra, Publisher: Data And Expo India Pvt. Ltd.; Revised edition (2014), ISBN-10: 9380844093.
12) Road Atlas Maharashtra (English), Samarth UdyogPrakashan.
13) Prof. SangleShailaj, 2015, ParyatanBhugol, Tourism Geography, Diamond Publication Pune.
14) ManojHadwalane, 2010, KrishiParyatan: EkShetipurakVyavsay, Agri-Tourism, Diamond Publication Pune.
15) P.S Deshpande, 2010, Tourist Guide Maharashtra (Marathi), Publisher: Samarth Udyog.
16) PradodMaruti Mande, 2014, Fort Caste of Maharashtra Book, Wholesale Trader: India MART Member.

# Gg-E103: Physical Geography of India

**Credits- 3.Theory Paper**

**Pre-requisite:** Basic knowledge about physical factors and map of India, and knowledge of $10^{th}$ standard geography.

**Course Objectives**: The objectives of this course is to understand physiography, climate, vegetation and soils of India.

**Course Outcomes:** After completion of the course, the students get capabilities to understand the physiography, climate, vegetation and soils of India.

**Mode of Assessment**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

## Gg-E103: Physical Geography of India (Credits- 3 Theory Paper)

**Course Contents**

| Unit | Teaching / Learning Points |
|---|---|
| **I** | Physiography – Structure, relief, physiographic divisions and natural drainage system of India. |
| **II** | Climate – climatic types & regional variations, Climate and agriculture of India |
| **III** | Natural vegetation – Vegetation types & regions, forests and their utilization and conservation in India |
| **IV** | Soil types and conservation in India. |

**Reference Books:**


1. Sharma, T.C. &Coutinho: "Economic and Commercial Geography of India". Vikas Pub. HouseDelhi.
2. Negi, B.S: "Economic & Commercial Geography India."KedarNath Ram Nath, N.Delhi.
3. Mamoria, C.B. "Economic & Commercial Geography of India".
4. Singh, Gopal: "Geography of India".
5. Kuriyan. George: "India- A General Survey". National Bk. Trust.
6. Stamp, L.D: "Geography of Asia".
7. Spate, O.H.K.& Learmonth, A.T.A: "Geography of India & Pakistan".
8. Robinson: "India- resources & their Development.
9. Dobby, E.G.H:" Monsoon Asia.
10. TirthaRanjit (1996): Geography of India, Rawat Jaipur.
11. Tata McGraw Atlas: Socio Economic Atlas of India.
12. Singh R. L.: Regional Geography of India.

# Gg-OE101: Physical Geography of Marathwada

**Credits 2: Theory Paper**

**Pre-requisite**

The candidate should know the basic concepts from Physical and Regional Geography. The candidate should familiar with the natural set up and their relationships to each other. He / She should know the importance of physical features in demarcation of a region and regional entities.

**Course Objectives**

The objectives of this paper are to understand the basic concepts of Physical Geography with Regional perspective and fundamental theories about the region and their characteristics. Its prime aim is to understand the physical features and their spatial characters in details.

**Course Outcomes**

This paper is providing basic information about the physical set up of the Region, i.e. Marathwada. The students will get knowledge and will acquire skills for comparative regional study and correlate the cause-n-effect relationships of all basic topography, morphometry and resources.

**Mode of Assessment**

1. Tutorial examinations
2. Home assignments
3. Seminars / Oral Presentation
4. Online / Offline Quizzes
5. Field studies and its presentation
6. Mid-term Theory Examination
7. End-term Theory Examination
8. PPT presentation on selected topic(s)

## Gg-OE101: Physical Geography of Marathwada (Credits 2: Theory Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Physical Settings of Marathwada:**<br>• Location and administrative set-up<br>• Physiography: Hill Ranges, plateau and Plain Regions<br>• Climate: Characteristics and Distribution of Rainfall and Temperature<br>• Main Rivers: Godavari, Manjra, Purna, Painganga, Manyad, Terna, Sina and Bori<br>• Soil: Types and Distribution<br>• Vegetation Cover: Types and Distribution |
| II | **Resources: Water, Mineral and Forest**<br>• Water Resources: Major and Minor Projects<br>• Mineral Resources: Resources and its Location<br>• Forest: Types, Distribution, Minor and Major Forest Produce |

## Reference Books:

**In English**


1) Gazetteer of Maharashtra, Govt of India.
2) B. Arunchalm, Regional Geography of Maharashtra
3) B.D. Nag Choudhary, "Introduction to Environment Management" Inter Print Mehata House, New Delhi.
4) Brucu Mitchell "Geography and resources analysis" John willey and sons, New York.
5) C.D. Deshpande, "Geography of Maharashtra" National book Trust of India, New Delhi.
6) Cutler L, Renwick H.L. Exploitation conservation and preservation: A Geographical perspective and natural resource use, Rowmon and Allanhed, Towata.
7) Govt. of Maharashtra "Economic development of Maharashtra", Maharashtra Economic Development Council.
8) Dixit K.R., "Maharashtra in Maps"
9) Deshpande, S.H. "Economy of Maharashtra"
10) Annual Socio-Economic Abstracts, (1951 to 2011, all concern districts), Govt of Maharashtra.
11) RBS, 2014, Visitors Guide India: Maharashtra, Publisher: Data And Expo India Pvt. Ltd.; Revised edition (2014), ISBN-10: 9380844093.
12) Road Atlas Maharashtra (English), Samarth UdyogPrakashan.
13) Prof. SangleShailaj, 2015, ParyatanBhugol, Tourism Geography, Diamond Publication Pune.
14) ManojHadwalane, 2010, KrishiParyatan: EkShetipurakVyavsay, Agri-Tourism, Diamond Publication Pune.
15) P.S Deshpande, 2010, Tourist Guide Maharashtra (Marathi), Publisher: Samarth Udyog.
16) PradodMaruti Mande, 2014, Fort Caste of Maharashtra Book, Wholesale Trader: India MART Member.

# Gg-OE102: Cartography

**Credits- 2 :Theory Paper**

**Pre-requisite:** Basic knowledge about elements of Cartography construction of Map. The knowledge about physicals and cultural features is required for this paper, and knowledge of $10^{th}$ standard geography.

**Course Objectives**: The objectives of this course are to understand, construction and interpretation of maps.

**Course Outcomes:** After completion of the course the student, get capabilities and skills on construction and interpretation of maps and identified the physical and cultural features of on the map.

**Mode of Assessment**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

# Gg-OE102: Cartography (Credits- 2 Theory Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Introduction to Cartography**<br>A) Definition and Nature of Cartography<br>D) Importance of Cartography<br>C) Elements of map<br>D) Classification map |
| II | **Advances in Cartography**<br>A) Scale of map and types of scale<br>B) Map projection and necessity of map projection<br>C) Introduction of Topographical map, weather map and Google map<br>D) Introduction to Digital Cartography Remote Sensing, GIS, and GPS<br>E) Use of maps |

**Reference Books:**


1. Monkhouse F.X.J. and Wilkinson H. R. (1971), Maps and Diagrams, London
2. Ramamurthy, K. (1982): Map interpretation, Madras
3. Petrie N. (1992), Analysis and Interpretation of Topographical Maps. Orient LongmanLimited Calcutta
4. Singh R. L. (1997), Elements of Practical Geography, Kalyan Publishing, New Delhi
5. Meux A. H. (1960), Reading Topographical Maps.University of London Press Limited
6. Jones P. A. (1968), Fieldwork in Geography. Longmans, Green and Company Limited
7. Archer J. E and Dalton T. H. (1968), Fieldwork in Geography B.T. Batsford Limited London
8. Wheeler K.S. Ed (1970), Geography in the field. Blond Educational, London.
9. Gupta, K. K. and Tyagi, V. C. (1992): Working with maps, Survey of India Publication, Dehradun.
10. R.P. Mishra - Fundamentals of Cartography.

# Gg-OE103: Remote Sensing

**Credits- 2 Theory Paper**

**Pre-requisite:** Basic knowledge about 10 level physics and having the knowledge of geographical factors.

**Course Objectives**: The objectives of this course is to develop the skill of the remote sensing and use of remote sensing in the geography

**Course Outcomes:** After completion of the course, the students get capabilities and knowledge about remote sensing technology and application of the remote sensing in geography and map making.

**Mode of Assessment**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

# Gg-OE103: Remote Sensing (Credit-2 Theory Paper)

**Course Contents**

| Unit | Teaching / Learning Points |
|---|---|
| I | **Introduction to Remote Sensing:** Definition and scope of remote sensing; History and development of remote sensing technology; Electromagnetic radiation (EMR) and electromagnetic spectrum; EMR interaction with atmosphere and earth surface; Resolutions in remote sensing; Types of remote sensing; Principles and applications of remote sensing. |
| II | **Introduction to Aerial Photography**: History of Aerial Photographs, Types of Aerial Photographs- Vertical and Oblique Photographs, Aerial Cameras, Photo Interpretation Elements. |
| III | **Satellite Remote Sensing:** Indian Remote Sensing Programme, Types of Satellites- Sun-synchronous and Geostationary Satellites, |
| IV | **Applications of Remote Sensing:** Applications in Water Resources, Land use/Land Cover Mapping, Agriculture, Forest, Oceanography, Snow and Glaciers, Coastal, Landform analysis, Resource evaluation, Natural hazards assessment, and Urban & regional planning. |

**Reference Books:**


1. Jensen, J.R. (2004): Remote sensing of the environment: An Earth Resource Perspective, Prentice Hall, Englewood Cliffs, N.J.
2. Jones, C.B. (1997): Geographical Information Systems and Computer Cartography, Addison Wesley Longman Ltd. England.
3. Kraak, M.J. and A. Brown (1996): Web Cartography: Developments and Prospects, Addison Wesley Longman Ltd, England.
4. Monmonier, M.S. (1982): Computer Assisted Cartography: Principles and Prospects, Prentice Hall, Inc. London.
5. Jenson, J.R.: Introduction to Digital image processing, Prentice Hall, Englewood cliffs, N.J.
6. Peuquet, D.J. & Marble, D.F. : Introductory Readings in Geographic information Systems Taylor & Francis, Washington, 1990
7. P. A. Burrough and R. A. McDonnell, Principles of Geographical Information System, 2000, Oxford University Press.
8. C.P.Lo and AlbertK. W. Yeung, Concepts and Techniques of Geographic Information System, 2002Prentice –Hall, India.
9. George Joseph, Fundamentals of Remote Sensing, 2004, Universities Press Pvt. Ltd., Hyderabad.
10. Lillesand T.M. and Kiefer R.W., 2002, Remote Sensing and Image Interpretation, John Wiley and Sons, New Delhi.

# Gg-OE104: Water Conservation

**Credits 2: Theory Paper**

**Pre-requisite**

The candidate should know the basic concepts about water as the prime resources. He / She should aware about the water pollution and depletion of water resources.

**Course Objectives**

The objectives of this paper are, to understand the basic needs of water resources with geographical perspective, to study the principles and fundamental methods of saving water and watersheds. Its prime aim is to understand and be capable to observe and note theday to day changes in water scarcity and related crisis in the world.

**Course Outcomes**

After completion of the paper / course, the students will get capabilities and skills to correlate the natural cycles and manmade activities regarding water resource at primary level. In short, the candidate will assess the cause-n-effect relationships, which will be helpful for answering reasoning types of questions asked in competitive examinations.

**Mode of Assessment**

1. Tutorial examinations
2. Home assignments
3. Seminars / Oral Presentation
4. Online / Offline Quizzes
5. Field studies and its presentation
6. Mid-term Theory Examination
7. End-term Theory Examination
8. PPT presentation on selected topic(s)

# Gg-OE104: Water Conservation (Credits 2: Theory Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Water Resources:**<br>• Water on Earth: Saline and Fresh Water (Oceans, Ice, Rivers, Lakes, etc.)<br>• Hydrological Cycle<br>• Assessment of Surface and Ground Water Resources<br>• Uses of Water: Drinking, Agriculture, Industrial, Ecological, etc.<br>• Economics of Water<br>• Need for Suitable Water Resource Management |
| II | **Water Quality and Conservation:**<br>• Water Quality: Physical, Chemical and Biological Characteristics<br>• Water Pollution: Causes (Surface, Ground and Ocean)<br>• Watershed Management: Natural and Artificial Methods<br>• Water and Forests: Vegetation cover, Biodiversity, Soil and Climate<br>• Water Harvesting: Rain, Rooftop and Artificial Recharge<br>• Wastage of Water: Ways to Save and Prevent Water<br>• Need for Sustainable Water Conservation |

**Reference Books:**

**In English**


1) Amy Vickers, 1992, Handbook for Water Use and Conservation: Homes, Landscapes, Businesses, Industries, Farms, Amy Vickers & Associates, Inc., in Amherst, Mass., USA.
2) Francis J. Pierce, 1998, Advances in Soil and Water Conservation 1st Edition, Publisher: CRC Press; 1 edition (February 1, 1998), ISBN-10: 1575040832, ISBN-13: 978-1575040837
3) Frederick R. Troeh, J. Arthur Hobbs and Roy L. Donahue, 2003, Soil and Water Conservation for Productivity and Environmental Protection (4th Edition) 4th Edition, Publisher: Prentice Hall; 4 edition (May 17, 2003), ISBN-10: 0130968072, ISBN-13: 978-0130968074.
4) Bimal Chandra Mal, 2011, Introduction to Soil and Water Conservation, Publisher: Kalyani Publishers (2011), ISBN-10: 8127267449, ISBN-13: 978-8127267445
5) Paul W. Unger, 2006, Soil and Water Conservation Handbook 1st Edition, Publisher: Routledge; 1 edition (October 19, 2006), ISBN-10: 1560223308, ISBN-13: 978-1560223306.
6) Water Conservation, Reuse, and Recycling, Proceedings of an Iranian-American Workshop (2005), Washington, DC: The National Academies Press, ISBNs: Paperback: 978-0-309-09293-7, Ebook: 978-0-309-18119-8, DOI: https://doi.org/10.17226/11241
7) Sonia FerdousHoque, 2014, Water Conservation in Urban Households, Roles of Prices, Policies and Technologies, IWA Publications,ISBN13:9781780405476
8) S K Gupta, 2020, Fundamentals of Soil and Water Conservation, ISBN-10: 9388982983, ISBN-13: 978-9388982986.
9) Frederick R. Troeh, 1991, Soil and Water Conservation 2nd Edition, Publisher: Prentice Hall College Div; 2nd edition (March 1991), ISBN-10: 013830324X, ISBN-13: 978-0138303242.

# Gg-OE105: Climatology-I

**Credits- 2 Theory Paper**

**Pre-requisite:** Basic knowledge about weather and climate elements, geographical factors and their relationship with climatic activities

**Course Objectives:** After completion of the course the student gets knowledge about the climatic activities are their relation to geographical factors. On successful completion of the module, students should be capable of explaining the climate change and their effect on human activities.

**Course Outcome-** This course is useful in understanding about basics of weather and climate. This will be useful for application in their daily activities related to climate. Knowledge of this course will used for climate change and classification of world climate understanding.

**Mode of Assessment**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

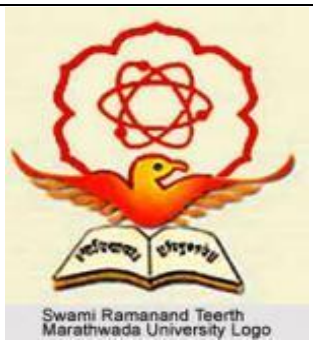
# Gg-OE105: Climatology-I (Credits- 2 Theory Paper)

## Course Contents

| Unit | Teaching / Learning Points |
|---|---|
| I | **A) Basic Concepts:**<br>Weather and Climate,<br>Nature and Scope of Climatology,<br>Development of Modern Climatology<br>**B) Earth's Atmosphere:**<br>Composition and Vertical Structure,<br>Heat Balance and Budget of Earth |
| II | **A) Temperature and Air Pressure:**<br>Distribution of Temperature: Vertical and Horizontal<br>Distribution of Pressure,<br>Atmospheric pressure & general circulation of winds<br>Mechanism of Monsoon<br>**B) Humidity:**<br>Evaporation, Humidity, Condensation<br>Formation of Clouds and their types<br>Precipitation – types and characteristics. |

**Reference Books**:


1. Frederick K. Lutgen, Edward Tar buck: "The Atmosphere An Introduction to Meteorology" Prentice Hall, Englewood Cliffs, New Jersey 0762 ,1998
2. Pettersons : "Introduction to Meteorology " ---------,,---------- 1969
3. RichlH : "Introduction to Atmosphere"---------,,---------- 1972
4. Sellers W.D: "Physical Climatology"University of Chicago Press. 1965
5. Trewartha G.T: An Introduction to climate "McGraw Hill BK Co. New York, 1968.
6. Das P. K.: The Mansoon, PrayagpustakBhavan, Allahabad.
7. Shastri Rama: Weather and Weather Forecasting, Ministry & Information NBT Delhi.
8. Lal D. S.: Climatology. PrayagpustakBhavan, Allahabad.
9. Ramashatri: Weather & Weather forecasting, Ministry of Information & Broadcasting.
10. Savindra Singh (2000): Climatology, PrayagPustakBhavan, Allahabad.
11. Mather JR (1975): Climatology: Fundamentals & Applications. Mc Gray Hills Book, New York.
12. Hobbs J.E. (1980): Applied Climatology, Butterworth, London
13. Crist Field : Principles of Climatology; Prentice Hall, London.
14. Oliver J. E. (1973): Climate & Mans Environment, John Wiley & Sons; New York.
15. Byers R.H.: "General Meteorology "McGraw Hill BKCo New York 1974




## School of Earth Sciences

# SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED

## Semester II

# Syllabus

# M.A./M.Sc. in Geography

# 2019-20

| Type | Code | Semester 1I | Credits |
|---|---|---|---|
| Core Theory 1 | Gg-C201 | Agriculture Geography | **4** |
| Core Theory 2 | Gg-C202 | Economic Geography | **4** |
| Core Theory 3 | Gg-C203 | Fundaments of Remote Sensing | **4** |
| | | | |
| Subject Elective Theory | Gg-E201 | Industrial Geography | **3** |
| | Gg-E202 | Human Geography of Maharashtra | **3** |
| | Gg-E203 | Human Geography of India | **3** |
| | | | |
| Open Elective Theory 1 | Gg-OE201 | Human Geography of Marathwada | **2** |
| Open Elective Theory 2 | Gg-OE202 | Map Reading | **2** |
| Open Elective Theory 3 | Gg-OE203 | Geographical Information System | **2** |
| Open Elective Theory 4 | Gg-OE204 | Islands of India | **2** |
| Open Elective Theory 5 | Gg-OE205 | Climatology-II | **2** |
| | | | |
| Practical 1 | Gg-C204 | Practical in Agriculture Geography | **2** |
| Practical 2 | Gg-C205 | Practical in Economic Geography | **2** |
| Practical 3 | Gg-C206 | Practical in Remote Sensing | **2** |
| Practical 4 | Gg-C207 | Interpretation of Climatic Data | **1** |
| Practical 5 | Gg-C208 | Seminar / Field Report | **1** |
| | | | |
| | **Total Credits** | | **25** |

**NOTE:**

1) Core theory papers are compulsory papers. (C)
2) Select any one theory paper from subject electives papers (E)
3) All practical papers are compulsory papers. (C)
4) Additional credits can be obtained from MOOCS/NPTL/SWAYAM
5) Open elective papers are for other subjects (other than Geography) in the university. (OE)
6) At least one open elective should be provided in each semester and 8 credit need to be completed in two year program.

# Gg-C201: Agricultural Geography

**Credits 4: Theory Paper**

**Pre-requisite**

The candidate should familiar with the basic concepts from Agriculture Geography i.e. General Land-use, Agricultural Land-use, Cropping Pattern, Soil and Crop relationships etc.

**Course Objectives**

The objectives of this paper are, to understand the concepts from Physical and Human Geography, which will help to assess the cause-and-effect relationship between them, to study the principles of Agricultural Geography and fundaments of the same. Its prime aim is to understand and be capable to observe and note the micro to macro leveled changes in agrarian practices.

**Course Outcomes**

After completion of the paper / course, the students will get capabilities and skills to correlate the natural cycles as well as manmade acts and agrarian development. In short, the candidate will assess the cause-n-effect relationships, which will be helpful for answering reasoning types of questions asked in competitive examinations.

**Mode of Assessment**

10. Tutorial examinations
11. Home assignments
12. Seminars / Oral Presentation
13. Online / Offline Quizzes
14. Field studies and its presentation
15. Mid-term Theory Examination
16. End-term Theory Examination
17. PPT presentation on selected topic(s)

# Gg-C201: Agricultural Geography (Credits 4: Theory Paper)

## Course Contents

| Unit | Teaching and Learning points |
|---|---|
| I | **Introduction:**<br>• Nature scope and significance<br>• Different Approaches to study the subject<br>• General and Agricultural Land use<br>• Land use surveys<br>• Land Classification |
| II | **Determinants of Agricultural Patterns:**<br>• Physical Determinants: Relief, Climate, Water, Soil, Biodiversity etc<br>• Land holding, marketing, transport<br>• Irrigation<br>• Mechanization<br>• Biochemical inputs<br>• Crop Combination Techniques: Weaver and Thomas Method |
| III | **Agricultural Types:**<br>• Shifting cultivation<br>• Intensive subsistent farming<br>• Mixed farming<br>• Plantation agriculture<br>• Commercial grain farming<br>• Agricultural Efficiency: Kendall's Ranking Coefficient and Bhatia's Method |
| IV | **Problems & Prospects of Agriculture:**<br>• Definition and characteristics of arid and semi-arid regions<br>• Droughts and Famines<br>• Role of Irrigation and Dry Farming<br>• Agricultural regions of India |

## Reference Books:

**In English**


1) Aiyer, A.K.Y.N. (1949) – Agricultural and Allied Arts in Vedic India.
2) Grigg. D.G. (1974) – The Agricultural Systems of the world An Evolutionary Approach.
3) Grigg. D.G.(1964) – An Introduction to Agricultural Geography Hutchinson &Co.Ltd.,
4) Illbery, B.W. (1985) – Agricultural Geography, Social & Economic Analysis, Oxford University Press.
5) Morgan. W.B. & S.C. Monton (1971) – Agricultural Geography Methuen, London.
6) Randhawa, M.S. (1980) – A History of Agriculture in India Vols. I, II, III, IV ICAR, New Delhi.
7) Singh. J. and Dhillon S.S. (1994) – Agricultural Geography. Tata McGraw Hill, Publishing Co. Ltd.
8) Symons, Leslie (1970) – Agricultural Geography, G. Belt and Sons Ltd., London.
9) Tarrent, J.R. (1970) – Agricultural Geography, David and Charles, Newton Abbot.

# Gg-C202: Economic Geography

**Credits- 4 Theory Paper**

**Pre-requisite:** Basic knowledge about economic activities, geographical factors and their relationship with economical activities and economical development leads to social development, and knowledge of $10^{th}$ standard geography.

**Course Objectives:** After completion of the course the student gets knowledge about the economical activities are related to geographical factors and various theories and models of economic developments. On successful completion of the module, students should be capable of explaining the principles of economic geography and their relation with development of the nation.

**Course Outcome:** This course is useful in understanding about basics of economic geography. This will be useful for application of the principles of economics in geography. Knowledge of this course will used for sustainable development

**Mode of Assessment:**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

## Gg-C202: Economic Geography (Credits- 4 Theory Paper)

**Course Contents**

| Unit | Teaching / Learning Points |
|---|---|
| I | **A) Economic Geography:**<br>Definition, nature and scope, Recent trends in Economic Geography<br>**B) Basic Economic processes:**<br>Production, exchange & consumption<br>Classification of economic Activities and their characteristics<br>Location of Economic activities |
| II | **A) Resources:**<br>Classification of Resources<br>Resources and Environment - Scarcity and Sustainability, Conversation of resources<br>**B) Industries:**<br>Classification of Industries, Principles of Industrial Location<br>Profit maximization - Least cost location, Location theories – Weber &Losch. |
| III | **Trade and Transport:**<br>Major Transport Routes -Land, Rail, Water and Air Routes<br>Models of transportation and transport cost<br>Accessibility and connectivity, Trade - National and International |
| IV | **A) Economic Development:**<br>Measures of economic development, Sustainable Development<br>**B) Economic Development in India:**<br>Regional disparity in economic Development<br>Impact of Green Revolution, Privatization, Globalization |

**Reference Books**:


1. Alexander J.W. (1976): Economic Geography. Prentice Hall of India. New Delhi.
2. Hartshorne, T.A. and J.W. Alexander (1988) –Economic Geography, Prentice Hall.
3. Berry, Conkling & Ray (1988): Economic Geography Prentice Hall of India New Jersey.
4. Hurst Elliott (1986): Geography of Economic Behaviour. Unwin, London.
5. Johnson R.J. & Taylor D.J. (1989): A world in crisis. Basil-Blackwell, Oxford.
6. Losch (1954): Economics of Location. Yale University Press New York.
7. Redcliff M. (1987): Development & the environmental crisis. Methuen. London.
8. Sinha B.N.(1971): Industrial geography of India
9. Watts H.D. (1987): Industrial Geography, Longman scientific and Technical New York.
10. Haggett, Peter: Modern Synthesis in Geography.
11. Robinson H & Bamford C. G. (1978): Geography of Transport, Macdonald & Evans USA.
12. Jones &Darkenwald: Economic geography.
13. Fairbridge, R. W. (1968): Encyclopedia of Geomorphology, Reinholdts, New York.

# Gg-C203: Fundaments of Remote Sensing

**Credits- 4 Theory Paper**

**Pre-requisite:** Basic knowledge about 10 level physics and having the knowledge of geographical factors.

**Course Objectives**: The objectives of this course is to develop the skill of the remote sensing and use of remote sensing in the geography

**Course Outcomes:** After completion of the course, the students get capabilities and skills on remote sensing technology and application of the remote sensing in geography and map making.

**Mode of Assessment:**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

# Gg-C203: Fundaments of Remote Sensing (Credit-4 Theory Paper)

**Course Contents**

| Unit | Teaching / Learning Points |
|---|---|
| I | **Introduction of Remote Sensing:** Definition and scope of remote sensing; History and development of remote sensing technology; Electromagnetic radiation (EMR) and electromagnetic spectrum; EMR interaction with atmosphere and earth surface; Types of remote sensing; Principles and applications of remote sensing. |
| II | **Fundamentals of Aerial Photography**: History of Aerial Photographs, Types of Aerial Photographs- Vertical and Oblique Photographs, Aerial Cameras, Flying Plane, Photogrammetry -- Basic Geometric Characteristics- Scale, Overlap, Tilt, Distortion and Displacement of Aerial Photographs, Advantages and Disadvantages of Aerial Photographs, Photo Interpretation Elements. |
| III | **Satellite Remote Sensing:** Indian Remote Sensing Programme, Types of Satellites- Sun-synchronous and Geostationary Satellites, Launch Vehicles- PSLV, GSLV, Payloads, Active and Passive Remote Sensing, Classification of Remote Sensors, Resolution- Spatial, Spectral, Radiometric, Temporal, Microwave Sensors, SLAR, Digital Image Processing- Image Classification, Supervised and Unsupervised Classification. |
| IV | **Applications of Remote Sensing in Geography:** Interpretation of Visual and Digital data, Applications in Water Resources, Land use/Land Cover Mapping, Agriculture, Forest, Oceanography, Snow and Glaciers, Coastal, Landform analysis, Resource evaluation, Natural hazards assessment, and Urban & regional planning. |

**Reference Books:**


1. Jensen, J.R. (2004): Remote sensing of the environment: An Earth Resource Perspective, Prentice Hall, Englewood Cliffs, N.J.
2. Jones, C.B. (1997): Geographical Information Systems and Computer Cartography, Addison Wesley Longman Ltd. England.
3. Kraak, M.J. and A. Brown (1996): Web Cartography: Developments and Prospects, Addison Wesley Longman Ltd, England.
4. Monmonier, M.S. (1982): Computer Assisted Cartography: Principles and Prospects Prentice Hall, Inc. London.
5. Jenson, J.R.: Introduction to Digital image processing, Prentice Hall, Englewood cliffs, N.J.
6. Peuquet, D.J. & Marble, D.F. **:** Introductory Readings in Geographic information Systems Taylor & Francis, Washington, 1990
7. P. A. Burrough and R. A. McDonnell, Principles of Geographical Information System, 2000, Oxford University Press.
8. C.P.Lo and AlbertK. W. Yeung, Concepts and Techniques of Geographic Information System, 2002 Prentice –Hall, India.
9. George Joseph, Fundamentals of Remote Sensing, 2004, Universities Press Pvt. Ltd., Hyderabad.
10. Lillesand T.M. and Kiefer R.W., 2002, Remote Sensing and Image Interpretation, John Wiley and Sons, New Delhi.

# Gg-C204: Practical in Agricultural Geography

**Credits 2: Theory Paper**

**Pre-requisite**

The candidate should know the basic concepts from Agricultural Geography. The candidate should be able to solve the mathematical problems/ equations for calculating various types of index relating to agriculture.

**Course Objectives**

The objectives of this paper are, to understand the basic concepts of Agricultural Geography, to study the principles and fundamental things of agricultural studies. Its prime aim is to understand and be capable to correlate the things with number of parameters related to agrarian studies.

**Course Outcomes**

After completion of the paper / course, the students will get capabilities and skills to correlate and calculate values of parameters of agriculture with geo-scientific methods.

**Mode of Assessment**

1. Tutorial examinations
2. Home assignments
3. Seminars / Oral Presentation
4. Online / Offline Quizzes
5. Field studies and its presentation
6. Mid-term Theory Examination
7. End-term Theory Examination
8. PPT presentation on selected topic(s)

## Gg-C204: Practical in Agricultural Geography (Credits 2: Practical Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **To understand the various Types of Cropping System / Patterns**<br>1. Mixed Farming<br>2. Mixed Cropping<br>3. Monoculture<br>4. Multi-storeyed/ Multitier/ Multilevel Cropping<br>5. Parallel Cropping<br>6. Companion Cropping<br>7. Synergetic Cropping<br>8. Floriculture and Horticulture |
| II | **To calculate**<br>1. Ranks and prepare a table showing Ranking of Crops<br>2. Crop Combination by Weaver's Technique<br>3. Crop Intensity<br>4. Agricultural Density<br>5. Caloric Density<br>6. Nutritional Density<br>7. Economic Density<br>8. Marginal Resource Density<br>9. Index of Agricultural Efficiency<br>10. Agricultural Productivity<br>11. Index of Area under Crop<br>12. Index of Net Area Sown<br>13. Index of Cropping Pattern<br>14. Index of Yield<br>15. Index of Productivity per Hectare of Net Area<br>16. Relative Yield index |

**Reference Books:**

**In English**


1) Aiyer, A.K.Y.N. (1949) – Agricultural and Allied Arts in Vedic India.
2) Grigg. D.G. (1974) – The Agricultural Systems of the world An Evolutionary Approach.
3) Grigg. D.G. (1964) – An Introduction to Agricultural Geography Hutchinson &Co.Ltd.,
4) Illbery, B.W. (1985) – Agricultural Geography, Social & Economic Analysis, Oxford University Press.
5) Morgan. W.B. & S.C. Monton (1971) – Agricultural Geography Methuen, London.
6) Randhawa, M.S. (1980) – A History of Agriculture in India Vols. I, II, III, IV ICAR, New Delhi.
7) Singh. J. and Dhillon S.S. (1994) – Agricultural Geography. Tata McGraw Hill, Publishing Co. Ltd.
8) Symons, Leslie (1970) – Agricultural Geography, G. Belt and Sons Ltd., London.
9) Tarrent, J.R. (1970) – Agricultural Geography, David and Charles, Newton Abbot.

# Gg-C205: Practical in Economic Geography

**Credits- 2 Practical Paper**

**Pre-requisite:** practical knowledge about economic activities, geographical factors and their relationship with economical activities and economical development leads to social developments.

**Course Objectives:** The objectives of the course are to understand and develop the skill about economic activities of human and how geographical factors are responsible for different economic activities on the earth surface.

**Course Outcomes:** After completion of the course the student gets practical knowledge about the economical activities are related to geographical factors and various theories and models of economic developments. On successful completion of the module, students should be capable of representation economical geographical data with cartographic techniques and how to represent the data of economic activities.

**Mode of Assessment**

1. Tutorial examination
2. Home assignments
3. Field studies
4. Mid-term practical examination
5. End-term practical examination
6. Report of visit to Industrial Unit

## Gg-C205: Practical in Economic Geography (Credits- 2 Practical Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Distributional Maps:**<br>1. Choropleth maps: Socio-Economic Phenomena<br>2. Dot method & its relevance to distribution maps<br>3. Flow line charts & maps of transport flows |
| II | **Maps with Two and Three Dimensional Figures:**<br>1. Maps with proportional circles<br>2. Maps with divided circles<br>3. Maps with proportional spheres<br>4. Maps with Cube Diagram<br>5. Map with Proportional Square |
| III | **Techniques in Industrial Location Analysis:**<br>1.Location quotient<br>2.Lorenz curves<br>3.Gini's coefficient<br>(Visit to 2 Industrial units, out of which one has to be Agro based Industrial Unit) |

**Reference Books**:


1. Lawrence, G.R.P. (1973): Cartographic methods, Methuen & Co. London.
2. Mishra, R.P. (1982): Fundamentals of cartography, Prasaranga, University of Mysore.
3. Monkhouse, F.J.R & Wilkinson, H.R: Maps & diagrams, Methuen & company, London.
4. Raisz, Erwin: Principles of cartography, McGraw – hill Book Co., New York.
5. Robinson A.H. & Sale R.D. Element of Cartography, John House & Sons Ltd., London.
6. Singh R. L. Elements of Practical Geography.

# Gg-C206: Practical in Remote Sensing

**Credits- 2 Practical Paper**

**Pre-requisite:** Basic knowledge about 10 level physics and having the knowledge of geographical factors.

**Course Objectives**: The objectives of this course is to develop the skill of the remote sensing and use of remote sensing in the geography

**Course Outcomes:** After completion of the course, the students get capabilities and skills on remote sensing and application of the remote sensing in geography and map making.

**Mode of Assessment**

1. Tutorial examination
2. Home assignments
3. Field studies
4. Mid-term practical examination
5. End-term practical examination

## Gg-C206: Practical in Remote Sensing (Credit-2 Theory Paper)

**Course Contents**

| Unit | Teaching / Learning Points |
|---|---|
| I | Practical's in Aerial Photographs<br>1). Indexing of aerial photographs.<br>2) Introduction to vertical aerial photographs and its geometry.<br>3) Introduction to stereoscopes i) Stereoscopic Vision test ii) Orientation & construction of 3-D model under Pocket stereoscope and Mirror stereoscope.<br>4) Determination of scale - By establishing relationship between Photo distance and Ground distance ,By establishing relationship between Photo distance and Map distance ,By establishing relationship between Focal length and Flying height, Determination of Average Scale of Vertical Aerial Photograph<br>5) Relief Displacement - Calculation of Relief Displacement, Object height determination from relief Displacement<br>6) Parallax - Introduction to Parallax bar ,Object height determination from Parallax<br>7) Calculation of Photo coverage Area<br>8) Visual Interpretation and Mapping of Aerial photographs ,Land use/ Land cover mapping |
| II | Interpretation of Satellite Image<br>1) Annotations of Satellite image<br>2) Visual interpretation of satellite image- Satellite image interpretation in terrain and resource evaluation, environmental monitoring;<br>3) Land use/land cover mapping; water and forest Digital interpretation of satellite image- Digital image processing (DIP) techniques, Image enhancement, Image classification: Supervised and unsupervised. |

**Reference Books:**


1. Agarwal, C.S. and Garg, P.K. 2000. Textbook of Remote Sensing in Natural Resources Monitoring and Management. New Delhi: Wheeler Publishing.
2. Jensen, John R. 2000. Remote Sensing of the Environment – An Earth Resource Perspective. Pearson Education (First Indian Edition, 2003).
3. Rampal, K.K. 1999. Handbook of Aerial Photography and Interpretation. New Delhi: Concept Publishing Company.
4. Rampal, K.K. 1999. Handbook of Aerial Photography and Interpretation. New Delhi: Concept Publishing Company.
5. Floyd, F. Sabins, Jr. (1986): Remote Sensing: Principles and Interpretation, W.H. Freeman, N.Y.
6. M.Anjji Reddy.(2015): Remote Sensing & Geographical information system, BS-Publication, Hydrabad

# Gg-C207: Interpretation of Climatic Data

**Credits- 2 Practical Paper**

**Pre-requisite:**Basic knowledge about element of weather and climate, such as temperature, precipitation, humidity, wind speed and direction, knowledge of graph paper also required for this course.

**Course Objectives:** To understand knowledge of weather and climate element, their nature and data collection method. Drawing of different graphs with helps of climatic data and understands of weather instruments objectives of this course.

**Course Outcomes:** After completion of the paper, student will get knowledge about the nature of climatic data, collection of climatic data and their interpretation. Reading of weather instruments also a out came of this course.

**Mode of Assessment**

1. Tutorial examination
2. Home assignments
3. Field studies
4. Mid-term practical examination
5. End-term practical examination

## Gg-C207: Interpretation of Climatic Data (Credits- 2 Practical Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Climatic Data:** Nature and sources of climatic data. Application of climatic data in Geography |
| II | **Construction and Interpretations of Climatic Graphs:** Line graph, Bar graph, Trend graphs- moving averages and semi-Average, Climograph, Hythergraph, Water Budget graph and Soil-Moisture graph |
| III | **Weather Instruments:** Study of Thermograph, Barograph, Hair Hygrograph, Wind Vane, Rain Gauge, Anemometer |

## Reference Books:


1. Ashish Sarakar: Practical Geography A systematic approach. Orient Longman Limited, Kolkatta.
2. Critchifield: Principles of Climatology.
3. Lawrence, G.R.P.: Cartographic Methods. Mathur co., London
4. Mather JR (1974) Climatology, Fundamentals and applications. Mc Grew Hill Book Co, New York
5. R.L. Singh &Rana P.B. Singh: Element of Practical Geography. Kalyani Pub. New Delhi (1999).
6. Trewartha G.T.: An Introduction to climate McGraw – Hill Book Co. New York.
7. Monkhouse, F. J. and Wilkinson, H. R., (1976). Maps and Diagrams, Methuen & Co. London
8. Shastri Rama: Weather and Weather Forecasting, Ministry & Information NBT Delhi.
9. Ramashatri: Weather & Weather forecasting, Ministry of Information & Broadcasting.
10. Savindra Singh (2000): Climatology, PrayagPustakBhavan, Allahabad.
11. Mather JR (1975): Climatology: Fundamentals & Applications. Mc Gray Hills Book, New York.
12. Byers R.H.: "General Meteorology "McGraw Hill BKCo New York 1974

# Gg-E201: Industrial Geography

**Credits- 3 Theory Paper**

**Pre-requisite:** Basic knowledge about Industrial activities, geographical factors and their relationship with Industrial activities and Industrial development leads to social developments, and knowledge of $10^{th}$ standard geography.

**Course Objectives:** This course is useful in understanding about basics of Industrial geography. This will be useful for application of the principles of Industrial in geography. Knowledge of this course will used for sustainable development

**Course Outcome:** After completion of the course the student gets knowledge about the Industrial activities are related to geographical factors and various theories and models of Industrial developments. On successful completion of the module, students should be capable of explaining the principles of Industrial geography and their relation with development of the nation.

**Mode of Assessment:**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

# Gg-E201: Industrial Geography (Credit-3 Theory Paper)

**Course Contents**

| Unit | Teaching / Learning Points |
|---|---|
| I | **Industrial Geography:**<br>Definition, nature and scope<br>Role of Industries in Economic Development<br>Industries Location<br>Factors Affecting on Industrial Location<br>Location theories – Weber |
| II | **Major Industries:**<br>Engineering Industry<br>Cotton Industry<br>Sugar Industry<br>Information Technology Industry |
| III | **Major Industrial Region Of India:**<br>Structure of Indian Industry<br>Tourism Industry in India<br>Geographical Factors Influencing Tourism<br>Economic Importance of Tourism<br>Ecotourism<br>Tourist Centre in India |

**Reference Books**:


1. Watts H.D. (1987): Industrial Geography, Longman scientific and Technical New York.
2. Berry, Conkling & Ray (1988): Economic Geography Prentice Hall of India New Jersey.
3. Haggett, Peter: Modern Synthesis in Geography.
4. Johnson R.J. & Taylor D.J. (1989): A world in crisis. Basil-Blackwell, Oxford.
5. Losch (1954): Economics of Location. Yale University Press New York.
6. Redcliff M. (1987): Development & the environmental crisis. Methuen. London.
7. Hartshorne, T.A. and J.W. Alexander (1988) –Economic Geography, Prentice Hall.
8. Alexander J.W. (1976): Economic Geography. Prentice Hall of India. New Delhi.
9. Hurst Elliott (1986): Geography of Economic Behaviour. Unwin, London.
10. Robinson H & Bamford C. G. (1978): Geography of Transport, Macdonald & Evans USA.
11. Jones &Darkenwald: Economic geography.
12. Fairbridge R. W. (1968): Encyclopedia of Geomorphology, Reinholdts, New York.
13. Sinha B.N. (1971) Industrial Geography of India.

# Gg-E202: Human Geography of Maharashtra

**Credits 3: Theory Paper**

**Pre-requisite**

The candidate should know the basic concepts of region with the perspective of Human Geography. He / She should know the importance of all manmade characteristics of the region or any administrative region in the demarcation of a region and regional entities with their balanced identity or unbalanced changes.

**Course Objectives**

The objectives of this paper are to understand the basic concepts of Regional Geography with socio-cultural perspectives and fundamental theories about the region and their characteristics, mainly based on the economical and cultural activities of the region.

**Course Outcomes**

This paper is providing basic information about the human geographical set up of the state. The students will get knowledge and will acquire skills for comparative regional study and correlate the cause-n-effect relationships of all basic socio-economical, demographical and cultural aspects.

**Mode of Assessment**

1. Tutorial examinations
2. Home assignments
3. Seminars / Oral Presentation
4. Online / Offline Quizzes
5. Field studies and its presentation
6. Mid-term Theory Examination
7. End-term Theory Examination
8. PPT presentation on selected topic(s)

## Gg-E202: Human Geography of Maharashtra (Credits 3: Theory Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **A) Population:**<br>• Decadal Growth, District-wise Distribution<br>• Sex Ratio, Literacy Rate,<br>• Occupational structure, Seasonal Migration<br>**B) Settlement:**<br>• District-wise Rural and Urban Settlement<br>• Growth, Comparative Proportion and Trend of Urbanization |
| II | **Agriculture:**<br>• Major Crops and Cropping Pattern:<br>Wheat, Rice, Jawar, Bajra, Pulses, Oil seeds<br>• Cash Crops and Horticulture:<br>Cotton, Sugarcane, Banana, Grapes<br>• Problems and Prospects:<br>Influencing Factors, Irrigation, Regional Disparities |
| III | **A) Industries:**<br>• Major Industrial Belts / Pockets and Distribution<br>• Problems and Prospects of Industrialization<br>**B) Trade and Transportation:**<br>• Agro-based Goods & Their Trading<br>• Industrial Produces & Their Trading<br>• Transport Network |

**Reference Books:**

**In English**


1. Gazetteer of Maharashtra, Govt of India.
2. B. Arunchalm, Regional Geography of Maharashtra
3. B.D. Nag Choudhary, "Introduction to Environment Management" Inter Print Mehata House, New Delhi.
4. Brucu Mitchell "Geography and resources analysis" John willey and sons, New York.
5. C.D. Deshpande, "Geography of Maharashtra" National book Trust of India, New Delhi.
6. Cutler L, Renwick H.L. Exploitation conservation and preservation: A Geographical perspective and natural resource use, Rowmon and Allanhed, Towata.
7. Govt. of Maharashtra "Economic development of Maharashtra",MhEconomic Development Council.
8. Dixit K.R., "Maharashtra in Maps"
9. Deshpande, S.H. "Economy of Maharashtra"
10. Annual Socio-Economic Abstracts, (1951 to 2011, all concern districts), Govt of Maharashtra.
11. RBS, 2014, Visitors Guide India: Maharashtra, Publisher: Data And Expo India Pvt. Ltd.; Revised edition (2014), ISBN-10: 9380844093.
12. Road Atlas Maharashtra (English), Samarth UdyogPrakashan.
13. Prof. SangleShailaj, 2015, ParyatanBhugol, Tourism Geography, Diamond Publication Pune.

# Gg-E203: Human Geography of India

**Credits 3: Theory Paper**

**Pre-requisite**

The candidate should know the basic concepts of region with the perspective of Human Geography and India Socio-Cultural Set up with maps. He / She should know the importance of all manmade characteristics of the region or any administrative region in the demarcation of region and its entities with their balanced identity or unbalanced changes.

**Course Objectives**

The objectives of this paper are to understand the basic concepts of Regional Geography with socio-cultural perspectives, mainly based on the economical and cultural activities of the region. The objectives of this course are to understand the population, Agriculture, Agro-based Industries, Mineral & Power resources and Transport and communication systems in India.

**Course Outcomes**

This paper is providing basic information about the human geographical set up of the state. The students will get knowledge and will acquire skills for comparative regional study and correlate the cause-n-effect relationships of all basic socio-economical, demographical and cultural aspects. The students will get capabilities to understand the Human and allied set up of India with geographical perspective.

**Mode of Assessment**

1. Tutorial examinations
2. Home assignments
3. Seminars / Oral Presentation
4. Online / Offline Quizzes
5. Field studies and its presentation
6. Mid-term Theory Examination
7. End-term Theory Examination
8. PPT presentation on selected topic(s)

# Gg-E203: Human Geography of India (Credits 3: Theory Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Population:**<br>• Distribution and Growth<br>• State-wise Rural and Urban Population<br>• Urbanization: Problems and Prospects<br>• Population as a Problems of India<br>• Population and a Resource of India |
| II | **Agriculture:**<br>• Types of Agriculture: State-wise<br>• Irrigation: Proportion, Limitations, Development<br>• Crops: Major Crops (Rice, Wheat, Sugarcane, Cotton, Oil Seeds, Horticulture)<br>• Livestock (Dairy Farming): Development, Problems and Prospects<br>• Agro based Industries (Sugar, Cotton textile, Jute) |
| III | **Industrial and Transport Development:**<br>• Mineral & Power Resources: Iron, Mica, Manganese, Coal and Petroleum<br>• Major industries: Belts, Development and Problems<br>• Industrial region of India<br>• Transport Systems: Roads, Railways, Inland Waterways, Air Ways, Major ports & Sea Routes |

## Reference Books:

**In English**


1. Sharma, T.C. &Coutinho: "Economic& CommercialGeography of India", Vikas Pub. House, Delhi.
2. Negi, B.S: "Economic & Commercial Geography India", KedarNath Ram Nath, N.Delhi.
3. Mamoria, C.B. "Economic & Commercial Geography of India".
4. Singh, Gopal: "Geography of India".
5. Kuriyan. George: "India- A General Survey". National Bk. Trust.
6. Stamp, L.D: "Geography of Asia".
7. Spate, O.H.K.& Learmonth, A.T.A: "Geography of India & Pakistan".
8. Robinson: "India- resources & their Development.
9. TirthaRanjit (1996): Geography of India, Rawat Publication, Jaipur.
10. Tata McGraw Atlas: Socio Economic Atlas of India.
11. Singh R. L.: Regional Geography of India.
12. Majid Husain, 2015, Geography of India (Old edition), Publisher: McGraw Hill Education (August 15, 2015), ISBN-10: 9339220846, ISBN-13: 978-9339220846.
13. R. C. Tiwari, 2017, Geography of India (English), Pravalika Publication, Allahabad.
14. Sanjeev Sanyal and SowmyaRajendran, 2015, The Incredible History of India's Geography, Publisher: Penguin Books Limited; Latest edition (26 January 2015), ISBN-10: 9780143333661, ISBN-13: 978-0143333661.

# Gg-OE201: Human Geography of Marathwada

**Credits 2: Theory Paper**

**Pre-requisite**

The candidate should know the basic concepts ofregion with the perspective of Human Geography. The candidate should familiar with the socio-economical and cultural aspects and administrative boundaries and their relationships to each other. He / She should know the importance of all manmade characteristics of the region or any administrative region in the demarcation of a region and regional entities with their balanced identity or unbalanced changes.

**Course Objectives**

The objectives of this paper are to understand the basic concepts of Regional Geography with socio-cultural perspectives and fundamental theories about the region and their characteristics, mainly based on the economical and cultural activities of the region. Its prime aim is to understand the features of human geography and their spatial characters in details of the region as a whole and or with sub-regions and their pockets.

**Course Outcomes**

This paper is providing basic information about the human geographical set up of the state. The students will get knowledge and will acquire skills for comparative regional study and correlate the cause-n-effect relationships of all basic socio-economical, demographical and cultural aspects.

**Mode of Assessment**

1. Tutorial examinations
2. Home assignments
3. Seminars / Oral Presentation
4. Online / Offline Quizzes
5. Field studies and its presentation
6. Mid-term Theory Examination
7. End-term Theory Examination
8. PPT presentation on selected topic(s)

# Gg-OE201: Human Geography of Marathwada (Credits 2: Theory Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **A) Population:**<br>• Decadal Growth, District-wise Distribution<br>• Sex Ratio, Literacy Rate,<br>• Occupational structure, Seasonal Migration<br>**B) Settlement:**<br>• District-wise Rural Settlement<br>• District-wise Urban Settlement<br>• Growth & Comparative Proportion<br>• Trend of Urbanization |
| II | **A) Agriculture:**<br>• Major Crops, Cropping pattern<br>• Irrigated &Rainfed(Non-irrigated) crops<br>• Problems & Prospects of agriculture<br>**B) Industries:**<br>• Major Industrial Belts / Pockets, MIDC Zones<br>• Growth and Distribution, Connectivity<br>• Problems and Prospects of Industrialization |

## Reference Books:

**In English**


1. Gazetteer of Maharashtra, Govt of India.
2. B. Arunchalm, Regional Geography of Maharashtra
3. B.D. Nag Choudhary, "Introduction to Environment Management" Inter Print Mehata House, New Delhi.
4. Brucu Mitchell "Geography and resources analysis" John willey and sons, New York.
5. C.D. Deshpande, "Geography of Maharashtra" National book Trust of India, New Delhi.
6. Cutler L, Renwick H.L. Exploitation conservation and preservation: A Geographical perspective and natural resource use, Rowmon and Allanhed, Towata.
7. Govt. of Maharashtra "Economic development of Maharashtra", Maharashtra Economic Development Council.
8. Dixit K.R., "Maharashtra in Maps"
9. Deshpande, S.H. "Economy of Maharashtra"
10. Annual Socio-Economic Abstracts, (1951 to 2011, all concern districts), Govt of Maharashtra.
11. RBS, 2014, Visitors Guide India: Maharashtra, Publisher: Data And Expo India Pvt. Ltd.; Revised edition (2014), ISBN-10: 9380844093.
12. Road Atlas Maharashtra (English), Samarth UdyogPrakashan.
13. Prof. SangleShailaj, 2015, ParyatanBhugol, Tourism Geography, Diamond Publication Pune.
14. ManojHadwalane, 2010, KrishiParyatan: EkShetipurakVyavsay, Agri-Tourism, Diamond Publication Pune.
15. P.S Deshpande, 2010, Tourist Guide Maharashtra (Marathi), Publisher: Samarth Udyog.

# Gg-OE202: Map Reading

**Credits- 2Theory Paper**

**Pre-requisite:** Basic knowledge about map. The candidate should aware about the differences between map, picture, drawing, diagram, etc. The knowledge about physical and cultural features is required for this paper, and knowledge of $10^{th}$ standard geography.

**Course Objectives**: The objectives of this course are to understand the types and features of the map, to read the map and try to interpretation it.

**Course Outcomes:** After completion of the course, the students will get capabilities and skills to read and try to interpretation the map, with identification of the physical and cultural features of the map.

**Mode of Assessment**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

## Gg-OE202: Map Reading (Credits- 2 Theory Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Map**<br>A) Differences between Map and Picture / Drawing / Sketch / Diagram / etc.<br>B) Definition of Map<br>C) Map: Scale and Direction<br>D) Map Projection: Latitudes and Longitudes, Use of Projection<br>E) Scale: Types, Units, Conversion<br>F) Signs and Symbols<br>G) Point, Line and Polygon |
| II | **Map Reading**<br>A) Finding the Directions<br>B) Measuring distance between the points<br>C) Calculating area: Lake, Ground, Farm, etc<br>D) Reading and Identification of Physical Features / Elements from the map<br>E) Reading and Understanding the Socio-cultural Features / Elements from the map<br>F) Route Maps: Reading of Route maps - Railway, Airways, Roadways, etc<br>G) Choropleth / Colour maps: Reading of different types of maps |

**Reference Books:**


1. Monkhouse F.X.J. and Wilkinson H. R. (1971), Maps and Diagrams, London
2. Ramamurthy, K. (1982): Map interpretation, Madras
3. Petrie N. (1992), Analysis and Interpretation of Topographical Maps. Orient Longman Limited Calcutta
4. Singh R. L. (1997), Elements of Practical Geography, Kalyan Publishing, New Delhi
5. Meux A. H. (1960), Reading Topographical Maps.University of London Press Limited
6. Jones P. A. (1968), Fieldwork in Geography. Longmans, Green and Company Limited
7. Archer J. E and Dalton T. H. (1968), Fieldwork in Geography B.T. Batsford Limited London
8. Wheeler K.S. Ed (1970), Geography in the field. Blond Educational, London.
9. Gupta, K. K. and Tyagi, V. C. (1992): Working with maps, Survey of India Publication, Dehradun...
10. R.P. Mishra - Fundamentals of Cartography,

# Gg-OE203: Geographical Information System

**Credits- 2 Theory Paper**

**Pre-requisite:** Basic knowledge about computer and of geographical factors.

**Course Objectives**: The objectives of this course is to develop the skill of the Geographical Information Systemand use of Geographical Information System in the geography

**Course Outcomes:** After completion of the course, the students get capabilities and skills on Geographical Information Systemand application of the Geographical Information Systemin geography and map making.

**Mode of Assessment:**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

## Gg-OE203: Geographical Information System (Credits- 2 Theory Paper)

**Course Contents**

| Unit | Teaching / Learning Points |
|---|---|
| **I** | **Introduction of GIS**<br>A) Definition of GIS<br>B) History and Development of GIS<br>C) Component of GIS<br>• Hardware, Software, Data, People, Process, Network<br>D) Hardware and Software for GIS<br>• Digital type Reader, PC, Printer<br>• ArcGIS, SAGA GIS, QGIS,Geomedia ,MapInfo Professional |
| **II** | **Application of GIS**<br>A) GIS Data Structure<br>• Raster Data and Vector Data<br>B) Application of GIS<br>• Science and Social Science<br>C) Future of GIS<br>D) GIS for map making<br>• How to make a map with the help of GIS |

**Reference Books:**


1. Chang Kang-tsung. (2002): Introduction to GIS, TataMcGraw Hill, New Delhi.
2. Burrough, P.A. and R.A. McDonnell (2000): Principles of Geographical Information System, Oxford UniversityPress.
3. M.Anjji Reddy. (2015): Remote Sensing & Geographical information system, BS-Publication, Hydrabad
4. Lo, C.P.and Yeung AKW. (2004), Concepts and Techniques of GIS, Prentice – Hall of India, New Delhi.
5. Masood, A. S (2006), Introduction to GIS, Allahabad
6. Fazal S and Rahman A.(2007), GIS Terminology, New Age International Publishings, New Delhi
7. Leicka. A: GPS Satellite Surveying, John Wiley and Sons, New York.
8. N.K.Agarwal.(2004), Essentials of GPS, Spatial Network Pvt. Ltd.

# Gg-OE204: Islands of India

**Credits 2: Theory Paper**

**Pre-requisite**

The candidate should know the basics of Geography of India. The candidate should have the interest in Regional and Coastal Studies. It is necessary to understand the maps and travelling details.

**Course Objectives**

The objectives of this paper are, to understand the basics of our Indian Islands and their Life. Its prime aim is to understand and be capable to observe and note the overall differences and diversities at coastal and interior part of Oceans.

**Course Outcomes**

After completion of the paper / course, the students will get capabilities and skills to understand the beauty of Indian Islands, with geographical knowledge. In short, the candidate will assess the cause-n-effect relationships, which will be helpful for answering reasoning types of questions asked in competitive examinations.

**Mode of Assessment**

1. Tutorial examinations
2. Home assignments
3. Seminars / Oral Presentation
4. Online / Offline Quizzes
5. Field studies and its presentation
6. Mid-term Theory Examination
7. End-term Theory Examination
8. PPT presentation on selected topic(s)

# Gg-OE204: Islands of India (Credits 2: Theory Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **East Coast Indian Islands:**<br>• Andaman and Nicobar Islands:<br>Location, Geographical Area, Wildlife, Vegetation, Human Life<br>• State-wise Islands:<br>Total Number and Basic Study of Major Islands from Interior areas and Eastern Coastal zone |
| II | **West Coast Indian Islands:**<br>• Lakshadweep (Aminidivi, Laccadive and Minicoy) Islands:<br>Location, Geographical Area, Wildlife, Vegetation, Human Life<br>• State-wise Islands:<br>Total Number and Basic Study of Major Islands from Interior areas and Western Coastal zone |

**Reference Books:**

**In English**


1. Jesse Russell, 2019, Andaman and Nicobar Islands, India: Travel Guide Paperback, Publisher: Independently published on November 15, 2019, ISBN-10: 1708605134.
2. Tara Singh Pabla, 2018, History of Great Nicobar Island the Ascent: Andaman & Nicobar Islands, India Paperback, Publisher: Notion Press, ISBN-10: 1684661528.
3. Kailash Chandra and C. Raghunathan, 2018, Faunal Diversity of Biogeographic Zones: Islands of India, ISBN: 9788181715142, Published by Zoological Survey of India, Govt of India.
4. Donna Judd, 2009, India and Islands of the Indian Ocean: Mauritius, the Seychelles, and the Maldives PLUS Mumbai and Goa, India.
5. Pankaj Sekhsaria, 2018, Islands in Flux, The Andaman and Nicobar Story, Harper Collins Publishers India Pvt Ltd.
6. MadigaBheemalingappa and Boyina Ravi Prasad Rao, 2017, Trees of Baratang Island, Andaman Islands, India Paperback, Publisher: LAP LAMBERT Academic Publishing, ISBN-10: 3330022795.
7. DrTilakRanjanBera, 2013, the Andaman Islands: In Wonderland, SBN 10: 9383098651 / ISBN 13: 9789383098651, Published by Niyogi Books, New Delhi, India.
8. Adam Karlin, 2012, Andaman & Nicobar Islands: Chapter from India Travel Guide, Published by Lonely Planet.
9. Priti Singh, 2013, the Islands and Tribes of Andaman and Nicobar, ISBN 10: 8172341407 / ISBN 13: 9788172341404, Published by Prakash Books, New Delhi, India, 2006.

# Gg-OE205: Climatology-II

**Credits- 2 Theory Paper**

**Pre-requisite:** Basic knowledge about weather and climate elements, geographical factors and their relationship with climatic activities, and knowledge of $10^{th}$ standard geography.

**Course Objectives:** After completion of the course the student gets knowledge about the climatic activities are their relation to geographical factors. On successful completion of the module, students should be capable of explaining the climate change and their effect on human activities.

**Course Outcome:** This course is useful in understanding about basics of weather and climate. This will be useful for application in their daily activities related to climate. Knowledge of this course will used for climate change and classification of world climate understanding.

**Mode of Assessment:**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

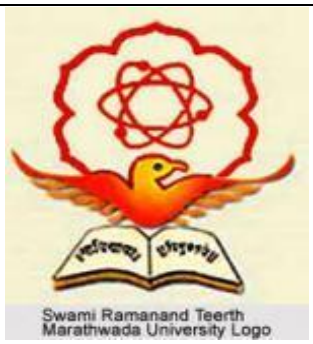
# Gg-OE205: Climatology-II (Credits- 2 Theory Paper)

**Course Contents**

| Unit | Teaching / Learning Points |
|---|---|
| I | **A) Air Masses and Fronts:**<br>Source Regions, Classification<br>Frontogenesis and Frontolysis,<br>Types of Fronts<br>**B) Atmospheric Disturbances:**<br>Stability and Instability of atmosphere<br>Cyclones, Anticyclones, Storms,<br>Water spouts, Thunderstorms and Tornadoes. |
| II | **A) Classification of Climate:**<br>Bases of Classification<br>Koppen's Classification of Climate<br><br>**B) Climate Change:**<br>Basics and Theories |

**Reference Books**:


1. Frederick K. Lutgen, Edward Tar buck: "The Atmosphere an Introduction to Meteorology" Prentice Hall, Englewood Cliffs, New Jersey 0762, 1998
2. Pettersons: "Introduction to Meteorology 1969
3. RichlH "Introduction to Atmosphere1972
4. Sellers W. D: "Physical Climatology"University of Chicago Press. 1965
5. Trewartha G.T: An Introduction to climate "McGraw Hill BK Co. New York, 1968.
6. Das P. K.: The Mansoon, PrayagpustakBhavan, Allahabad.
7. Shastri Rama: Weather and Weather Forecasting, Ministry & Information NBT Delhi.
8. Lal D. S.: Climatology. PrayagpustakBhavan, Allahabad.
9. Ramashatri: Weather & Weather forecasting, Ministry of Information & Broadcasting.
10. Savindra Singh (2000): Climatology, PrayagPustakBhavan, Allahabad.
11. Mather JR (1975): Climatology: Fundamentals & Applications. Mc Gray Hills Book, New York.
12. Hobbs J.E. (1980): Applied Climatology, Butterworth, London
13. Crist Field: Principles of Climatology; Prentice Hall, London.
14. Oliver J. E. (1973): Climate &Mans Environment, John Wiley & Sons; New York.
15. Byers R.H.: "General Meteorology "McGraw Hill BKCo New York 1974




## School of Earth Sciences

# SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED

## Semester III

# Syllabus

# M.A./M.Sc. in Geography

# 2020-21

| Type | Code | Semester III | Credits |
|---|---|---|---|
| Core Theory 1 | Gg-C301 | Urban Geography | **4** |
| Core Theory 2 | Gg-C302 | Climatology | **4** |
| Core Theory 3 | Gg-C303 | Fundamentals of Geographical Information System and Global Navigation Satellite System | **4** |
| | | | |
| Subject Elective Theory | Gg-E301 | Trade and Transportation Geography | **3** |
| | Gg-E302 | Geography of Tourism | **3** |
| | Gg-E303 | Regional Planning and Development | **3** |
| | | | |
| Open Elective Theory 1 | Gg-OE301 | Applied Climatology | **2** |
| Open Elective Theory 2 | Gg-OE302 | Physical Geography of World | **2** |
| Open Elective Theory 3 | Gg-OE303 | Global Positioning System | **2** |
| Open Elective Theory 4 | Gg-OE304 | Oceanography-I | **2** |
| Open Elective Theory 5 | Gg-OE305 | Surveying and Land Measurement | **2** |
| | | | |
| Practical 1 | Gg-C304 | Surveying | **2** |
| Practical 2 | Gg-C305 | Practical in Geographical Information System and GPS | **2** |
| Practical 3 | Gg-C306 | Practical in Climatology | **2** |
| Practical 4 | Gg-C307 | Computer Application in Geography | **1** |
| Practical 5 | Gg-C308 | Seminar / Field Report | **1** |
| | | | |
| | **Total Credits** | | **25** |

**NOTE:**

1) Core theory papers are compulsory papers. (C)
2) Select any one theory paper from subject electives papers (E)
3) All practical papers are compulsory papers. (C)
4) Additional credits can be obtained from MOOCS/NPTL/SWAYAM
5) Open elective papers are for other subjects (other than Geography) in the university. (OE)
6) At least one open elective should be provided in each semester and 8 credit need to be completed in two year program.

# Gg-C301: Urban Geography

**Credits- 4 Theory Paper**

**Pre-requisite:** Basic knowledge about elements of population and physical, culture and social geographical factors.

**Course Objectives**: The objective of this course is to understand urban growth, urban development in world and India, town planning and urban problems in India.

**Course Outcomes:** After completion of the course, the students get capabilities and skills on urban geographical techniques, concepts, model and theories related to urban geography. Also understand the various factor are affected of the urban growth and urban problems.

**Mode of Assessment**

10. Tutorial examination
11. Home assignments
12. Seminar
13. Field studies
14. Quizzes
15. Oral presentation
16. Mid-term examination
17. End-term examination
18. Dissertation thesis

# Gg-C301: Urban Geography (Credit-4 Theory Paper)

## Course Contents

| Unit | Teaching / Learning Points |
|---|---|
| I | **Urban Geography** – Definition, Nature, Scope and Significance.<br>Trends of Urbanization – World and India<br>Difference between Rural and Urban settlements.<br>Urban Settlements-Types and Pattern, Site and Situation |
| II | **Urbanization**<br>Concept of Urbanization,factors affecting on the urban growth<br>Urban growth in India and world<br>Functional Classification of Towns with reference to Indian cities<br>Urban Problems in Indian.<br>Urban Development and Planning in India: IDSMT, JNNURM, AMRUT and Smart City, National Urban Policy |
| III | **Various Concepts in Urban Geography**<br>Urban Sprawl, Ribbon corridor, Megalopolis, Satellite Town, Suburbs, Conurbation,City Region,Rural-Urban Fringe, Rank size rule, Primate City, Nodality Centrality, Range Threshold & Hierarchy,<br>Central Business District (CBD) and its Characteristics. |
| IV | **Theories and Model in Urban Geography**<br>i) Concentric Zone Model by E.W. Burgess,<br>ii) Sector Model by Homer Hoyt.<br>iii) Multiple Nuclei Model by Harris and Ullman.<br>iv) Central Place Theory by Walter Christaller. |

**Reference Books:**


1. Carter H.(1975):The study of urban geography. Edward Arnold, London.
2. David Peter & Hopkinson M.(1983): the geography of settlements, Oliver &Boyot,Edinburph.
3. Haggett Peter (1991): Geography a modern synthesis, Harper & Row, New York.
4. Johnston J.H.(1974): Urban Geography, Pergoman Press, Oxford.
5. Johnston R,.J.(1984): City & Society. Unwin hyman, London.
6. King L.J.&Golledge R.G.(1978): Cities, space & Behavior, Prentice Hall, engle wood cliff, New Jersey.
7. Mandal R.B.(2000): Urban Geography, Concept Publishing Co., New Delhi.
8. Mayer H.M. & Cohen (1967): Readings in Urban Geography, Central Book Depot. Allahabad.
9. Northam ray M.(1975): Urban Geography, John Willey & Sons, New York.
10. Ramachandran R.(1991): Urbanization and Urban Systems in India, Oxford Uty. Press. Delhi.
11. Robinson, Brian T.(1973): Urban growth, Mathuen& Company, London.
12.Singh R. L. – Readings in Settlement Geography. TheNational Geographical Society of India.
13.Sidhartha K. and Mukherjee. S. (2000): cities-Urbanizations & Urban Systems. Kisalaya pub. Pvt.Ltd.,New
Delhi.
14. Yeates& Garner (1971): Readings in Urban Geography. The North American City. Harper & Row. New York.

# Gg-C302: Climatology

**Credits- 4 Theory Paper**

**Pre-requisite:** Basic knowledge about weather and climate elements, geographical factors and their relationship with climatic activities

**Course Objectives:** After completion of the course the student gets knowledge about the climatic activities are their relation to geographical factors. On successful completion of the module, students should be capable of explaining the climate change and their effect on human activities.

**Course Outcomes:** This course is useful in understanding about basics of weather and climate. This will be useful for application in their daily activates related to climate. Knowledge of this course will used for climate change and classification of world climate understanding.

**Mode of Assessment:**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

# Gg-C302: Climatology (Credits- 4 Theory Paper)

**Course Contents**

| Unit | Teaching / Learning Points |
|---|---|
| I | **A) Basic Concepts:**<br>Weather and Climate,<br>Nature and Scope of Climatology,<br>Development of Modern Climatology<br>**B) Earth's Atmosphere:**<br>Composition and Vertical Structure,<br>Heat Balance and Budget of Earth |
| II | **A) Temperature and Air Pressure:**<br>Distribution of Temperature: Vertical and Horizontal<br>Distribution of Pressure,<br>Atmospheric pressure & general circulation of winds<br>**B) Humidity:**<br>Evaporation, Humidity, Condensation<br>Formation of Clouds and their types<br>Precipitation – types and characteristics. |
| III | **A) Air Masses and Fronts:**<br>Source Regions, Classification<br>Frontogenesis and Frontolysis,<br>Types of Fronts.<br>**B) Atmospheric Disturbances:**<br>Cyclones, Anticyclones, Storms,<br>Water spouts, thunderstorms and tornadoes. |
| IV | **Classification of Climate:**<br>Bases of Classification<br>Koppen's Classification of Climate |

**Reference Books**:


1. Frederick K. Lutgen, Edward Tar buck: "The Atmosphere an Introduction to Meteorology" Prentice Hall, Englewood Cliffs, New Jersey 0762, 1998
2. Pettersons : "Introduction to Meteorology 1969
3. RichlH : "Introduction to Atmosphere 1972
4. Sellers W.D: "Physical Climatology"University of Chicago Press. 1965
5. Trewartha G.T: An Introduction to climate "McGraw Hill BK Co. New York, 1968.
6. Das P. K.: The Mansoon, PrayagpustakBhavan, Allahabad.
7. Shastri Rama: Weather and Weather Forecasting, Ministry & Information NBT Delhi.
8. Lal D. S.: Climatology. PrayagpustakBhavan, Allahabad.
9. Ramashatri: Weather & Weather forecasting, Ministry of Information & Broadcasting.
10. Savindra Singh (2000): Climatology, PrayagPustakBhavan, Allahabad.
11. Mather JR (1975): Climatology: Fundamentals & Applications. Mc Gray Hills Book, New York.
12. Hobbs J.E. (1980): Applied Climatology, Butterworth, London
13. Crist Field: Principles of Climatology; Prentice Hall, London.
14. Oliver J. E. (1973): Climate &Mans Environment, John Wiley & Sons; New York.
15. Byers R.H.: "General Meteorology "McGraw Hill BKCo New York 1974

# Gg-C303: Fundamentals of Geographical Information System and Global Navigation Satellite System

**Credits- 4 Theory Paper**

**Pre-requisite:** Must have knowledge about elements of maps and having the knowledge of basics of computer handling.

**Course Objectives**: The objectives of this course is to develop the skill of the geographical information system and global positioning system, and their use in the geography

**Course Outcomes:** After completion of the course, the students get capabilities and skills on geographical information system and global positioning system and their application in geography and map making.

**Mode of Assessment**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

# Gg-C303: Fundamentals of Geographical Information System and Global Navigation Satellite System (Credit-4 Theory Paper)

**Course Contents**

| Unit | Teaching / Learning Points |
|---|---|
| I | **Introduction to Geographical Information System:**<br>Definition of GIS, History and development of GIS, Components of GIS, ,<br>Types of Geographic data; Raster and Vector data model: Advantages and Disadvantages<br>Spatial data input: Digitization and Conversion; Spatial Features: Point, line and polygon<br>Concept of Arc, node and vertices<br>Digitization errors; Topology and topological relationship |
| II | **GIS Analysis:**<br>Spatial analysis: Overlay and Buffer Analysis, Interpolation techniques in GIS<br>Terrain analysis: DEM: DTM, DSM and TIN<br>Non-spatial data: Data quality Issues<br>Database Management system (DBMS); Introduction to DSS |
| III | **Global Navigation Satellite System :**<br>Introduction to GNSS; GNSS - GPS Modernization, GLONASS, GALILEO, IRNSS, BEIDOU, DORIS, QZRS<br>Introduction to GPS -Meaning and Definition of GPS, Nature and Scope of GPS, History of GPS development, Importance of GPS technology<br>Component of GPS- Space Segment, Control Segment, User Segment<br>GPS Signal and Operation- Carriers, GPS codes: C/A, P, Binary codes. Navigational message,<br>Operation of the GPS Satellite visibility and availability<br>Differential GPS; GNSS and GIS Integration |
| IV | **Applications of GIS and GPS in Geography**<br>Surveying and Mapping, Urban and Regional planning, Agricultural Management, Forestry and Environment, Land use/ and Land cover mapping, Landform analysis, Disaster Management, Application in Navigation Mapping, Quick Response System |

**References:**


1. Elliott Kaplanand Christopher J. Hegarty(2017)Understanding GPS/GNSS: Principles and Applications, Third Edition (Gnss Technology and Applications Series) 3rd Edition, Published by Artech House
2. Peter Teunissen and Oliver Montenbruck(2017)Springer Handbook of Global Navigation Satellite Systems Springer International Publishing, Switzerland
3. Monmonier, M.S. (1982): Computer Assisted Cartography: Principles and Prospects, Prentice Hall, Inc. London.
4. Peuquet, D.J. & Marble, D.F. : Introductory Readings in Geographic information Systems Taylor & Francis, Washington, 1990
5. C.P. Lo and Albert K. W. Yeung, Concepts and Techniques of Geographic Information System, 2002Prentice –Hall, India.
6. Burrongh P.A. & Rachael A.M. (1998): Principles of Geographic Information System for land Resources Assessment. Oxford University press.
7. Maguire D.J. & good Child M.F. &Rhindd.w. (Eds)(1991): Geographic Information System: Principles & Applications, Vol. II Longman London, I.
8. Tor Bemuandsen (1992) Geographic Information System VIAKIT & Norwegian Mapping Authorities, Arendal Norway

# Gg-C304: Surveying

**Credits 2: Practical Paper**

**Pre-requisite**

The candidate should know the basic concepts of maps, SOI Toposheet maps, various types of geographical field studies, and surveying.

**Course Objectives**

The objectives of this paper are, to understand the basic concepts of Surveying and Leveling, to study the principles of surveying and land / height / distance measurements. Its prime aim is to understand and be capable to observe and note the field measurements and handle the instruments with skills.

**Course Outcomes**

After completion of the paper / course, the students will get capabilities and skills to measure the height, distance, land etc with perfection by using instruments.

**Mode of Assessment**

1. Tests/ examinations
2. Home work / Preparation of Journal (Practical Book)
3. Oral Presentation
4. Online / Offline Quizzes
5. Mid-term Practical Examination
6. End-term Practical Examination

# Gg-C304: Surveying (Credits 2: Practical Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Basic Concepts:**<br>• To understand the concept o Surveying.<br>• To enlist the various types of Surveys.<br>• To understand the concepts of Geodetic Surveying, Horizontal Positioning and Astronomic / Geodetic Coordinates.<br>• To understand the Triangulation method of and draw a Triangulation Net.<br>• To understand the vertical poisoning and types of leveling.<br>• To elaborate the concepts Benchmarks, Spot Heights, Interpolation and Contouring with figures/ diagrams. |
| II | **Dumpy Level:**<br>• To understand and draw a diagrams of Dumpy Level instrument and their parts with its uses.<br>• To understand the methods of Dumpy Level Surveys and its uses.<br>• To draw a road profile by using Dumpy Level Survey Rise and Fall Method (At least 2 Field Surveys)<br>• To draw a road profile by using Dumpy Level Survey Rise and Fall Method (At least 2 Field Surveys): Following Skills should develop:<br>◆ Centering, Leveling, Focusing,<br>◆ Taking Foresight (FS) and Backsight (BS) reading,<br>◆ Preparation of Field Observation book and<br>◆ Plotting the graph. |

**Reference Books:**
**In English**


1) N.N. Basak, 2017, Surveying and Leveling, Publisher: McGraw Hill Education; ISBN-10: 9789332901537.
2) R. Subramanian, 2014, Fundamentals of Surveying and Leveling, Publisher: Oxford University Press; First edition (28 July 2014), ISBN-10: 0199454728
3) Gupta, K. K. andTyagi, V. C. (1992): Working with maps, Survey of India Publication, Dehradun
4) Kanetakar T.P. &Kukarni S.V. 1986. Surveying & leveling, Pune VidyarthiGrihaPrakshan, Pune
5) Maslov A.V. Gordeev A.V., Batrakov Yu. G. Geodetic surveying,1984, Mir Publishers, Moscow
6) V. Natarajan P., Adler Ron K. Advanced Surveying, B.1 Publ. Bombay.
7) Jones P. A. (1968), Fieldwork in Geography. Longmans, Green and Company Limited.
8) Archer J. E and Dalton T. H. (1968), Field work in Geography B.T. Batsford Limited London

# Gg-C305: Practical in Geographical Information System and Global Positioning System

**Credits- 2 Practical Paper**

**Pre-requisite:** Must have knowledge about elements of maps and having the knowledge of basics of computer handling.

**Course Objectives**: The objectives of this course is to develop the skill of the geographical information system and global positioning system, and their use in the geography

**Course Outcomes:** After completion of the course, the students get capabilities and skills on geographical information system and global positioning system and their application in geography and map making.

**Mode of Assessment:**

1. Tutorial examination
2. Home assignments
3. Field studies
4. Mid-term practical examination
5. End-term practical examination

## Gg-C305: Practical in Geographical Information System and Global Positioning System (Credit-2 Practical Paper)

**Course Contents**

| Unit | Teaching / Learning Points |
|---|---|
| I | **1.Introduction to GIS**- Definition, Terminology, Component of GIS , Grid System<br>**2.Spatial Data Modeling-** Raster Data and Vector Data Modeling<br>**3.Data Base Management System-**i)Function of DBMSii)Components of DBMS<br>4.**GIS Softwares-** Introduction |
| II | 1.**Georeference** - Georeference of Map and Satellite Image<br>2.**Designing and Creation of Geodatabase** - Creating the feature data set, Geodatabase annotation<br>3.**Data Input and Editing**<br>i. Creation of Data set (Digitization), ii. Create Attribute Table, iii. Create Map<br>iv. Map Export |
| III | **Hands-on GPS Receiver :**<br>Initial Setting of GPS instrument, field observation<br>GPS Reading **:** Object reading- Point, Line, Polyline, Polygon,<br>Latitude, Longitude, Height, Route Tracking etc.<br>**GPS Data Acquisition :**<br>Point data collection using GPS and measurements,<br>GPS data collection for area calculation,<br>Transfusion of GPS data set to computer<br>Introduction to GPS Software |

**Reference Books:**


1. Elliott Kaplanand Christopher J. Hearty(2017)Understanding GPS/GNSS: Principles and Applications, Third Edition (Gnss Technology and Applications Series) 3rd Edition, Published by Artech House
2. Peter Teunissen and Oliver Montenbruck(2017)Springer Handbook of Global Navigation Satellite Systems Springer International Publishing, Switzerland
3. C. P. Lo and AlbertK. W. Yeung, 2002, Concepts and Techniques of Geographic Information System, Prentice –Hall, India.
4. Burrongh P.A. & Rachael A.M.(1998): Principles of Geographic Information System for land Resources Assessment. Oxford University press.
5. Maguire D.J. & good Child M.F. &Rhindd.w. (Eds)(1991): Geographic Information System: Principles and Applications, Vol. II Longman London I.
6. Tor Bernuandsen (1992): Geographic Information System VIAKIT & Norwegian Mapping Authorities, Arendal,Norway.
7. Chang Kang-tsung. (2002): Introduction to GIS, TataMcGraw Hill, New Delhi.
8. M.Anjji Reddy.(2015): Remote Sensing & Geographical information system, BS-Publication, Hyderabad
9. Masood, A.S .(2006), Introduction to GIS, Allahabad
10. Leicka. A: GPS Satellite Surveying, John Wiley and Sons, New York.
11. N. K. Agarwal (2002) Essentials of GPS, Spatial Network Pvt. Ltd.

# Gg-C306: Practical in Climatology

**Credits- 2 Practical Paper**

**Pre-requisite:** Basic knowledge about weather and climate elements, geographical factors and their relationship with climatic activities

**Course Objectives:** After completion of the course the student gets knowledge about the climatic activities are their relation to geographical factors. On successful completion of the module, students should be capable of explaining the weather report, maps and diagrams.

**Course Outcomes:** This course is useful in understanding about basics of weather and climate. This will be useful for application in their daily activates related to climate. Knowledge of this course will used for interpretation of climatic data, maps and diagrams, and classification of world climate understanding.

**Mode of Assessment:**

1. Tutorial examination
2. Home assignments
3. Field studies
4. Mid-term practical examination
5. End-term practical examination

# Gg-C306: Practical in Climatology (Credit-2 Practical Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Preparation and Interpretation of the Climatic diagrams:**<br>Temperature Dispersion diagram, Rainfall Dispersion diagram,<br>Height Temperature diagram (Tephigram), Wind Rose, and Scatter Diagram |
| II | **Climatic Maps:**<br>Isothermal Map, Isobaric Map, Isohytes Map |
| III | **Indian Daily Weather Report:**<br>Its format, Reproduction of weather details by Weather Signs and symbols.<br>Reading and interpretation of weather maps of representative seasons |

**Reference Books**:


1. Ashish Sarakar: Practical Geography A systematic approach. Orient Longman Limited, Kolkatta.
2. Critchifield: Principles of Climatology.
3. Lawrence, G.R.P.: Cartographic Methods. Mathur co., London
4. Mather JR (1974) Climatology, Fundamentals and applications. Mc Grew Hill Book Co, New York
5. R.L. Singh &Rana P.B. Singh: Element of Practical Geography. Kalyani Pub. New Delhi (1999).
6. Trewartha G.T.: An Introduction to climate McGraw – Hill Book Co. New York.
7. Monkhouse, F. J. and Wilkinson, H. R., (1976). Maps and Diagrams, Methuen & Co. London
8. Shastri Rama: Weather and Weather Forecasting, Ministry & Information NBT Delhi.
9. Ramashatri: Weather & Weather forecasting, Ministry of Information & Broadcasting.
10. Savindra Singh (2000): Climatology, PrayagPustakBhavan, Allahabad.
11. Mather JR (1975): Climatology: Fundamentals & Applications. Mc Gray Hills Book, New York.
12. Byers R.H.: "General Meteorology "McGraw Hill BKCo New York 1974

# Gg-C307: Computer Application in Geography

**Credits- 1 Practical Paper**

**Pre-requisite:** Must have knowledge about of basics of computer and having the knowledge of computer handling.

**Course Objectives**: The objectives of this course is to develop the skill of the computer applications in the geography

**Course Outcomes:** After completion of the course, the students get capabilities and skills on computer applications in geography and, maps and graphs making.

**Mode of Assessment:**

1. Tutorial examination
2. Home assignments
3. Field studies
4. Mid-term practical examination
5. End-term practical examination

## Gg-C307: Computer Application in Geography (Credits- 1 Practical Paper)

## Course Contents

| Unit | Teaching and Learning points |
|---|---|
| I | Computers: definition, characteristic, Hardware & software, Number system, Operating Systems, Introduction to DOS, WINDOWS, WORD, and EXCEL<br>Computer and Geographic data: Scale of measurement, Location data, and Data structure |
| II | Computers in Cartography: Hardware and Software for Computer Mapping. Application of computer Cartography: Simple Exercises for Representation of Geographic data – Histogram, Bar Graphs, Line Graph, Multiple Line Graph, Scatter Diagram, and Pie Diagram. |
| III | Importance of information technology in Geographical Studies, Advantages of internet, Browsing & Surfing the geographical sites, web Pages, Portals & Down Loading files. |

**Reference Books:**


1. D.J.Unnwin& J.A. Dawson(1987): Computer Programming for Geographers, Longman, London.
2. Monmonier, M.S.(1982): Computer Assisted cartography, Prentice Hall.
3. David J. Maguire (1989): Computers in Geography, Longman scientific & Technical,London.
4. Paul M.mather (1993): Computer application in geography John Wiley & Sons, New York U.S.A.
6. Hagget Peter (1990): Geography a modern synthesis Harper international, New York.
7. R.L.singh&Rana P.B.Singh: Element of Practical Geography. Kalyani Pub. New Delhi (1999).
8. Lawrence,G.R.P.: Cartographic Methods. Mathur co., London

# Gg-E301: Trade and Transport Geography

**Credits- 3 Theory Paper**

**Pre-requisite:** Basic knowledge about economic activities, geographical factors and their relationship with economical activities and economical development leads to social developments.

**Course Objectives:** After completion of the course the student gets knowledge about the economical activities are related to geographical factors and various theories and models of trade and transportation. On successful completion of the module, students should be capable of explaining the principles of trade and transportation geography and their relation with development of the nation.

**Course Outcomes:** This course is useful in understanding about basics of trade and transportation geography. This will be useful for application of the principles of trade and transportation in development of nation. Knowledge of this course will used for sustainable development

**Mode of Assessment**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

## Gg-E301: Trade and Transport Geography (Credits- 3 Theory Paper)

**Course Contents**

| Unit | Teaching / Learning Points |
|---|---|
| I | **A) Trade and Transport Geography:**<br>Definition, nature and scope<br>Significance of trade and transportation in world and regional economies<br>**B) Modes of transportation: (with reference to India)**<br>1. Landways: Roadways, railways, Pipeline, Ropeways and Cableways<br>2. Waterways: Ocean and inland 3. Airways<br>Characteristics and relative significance of different modes of transport |
| II | **Transport network:**<br>Structural Analysis of Transport Networks: Networks, Networks Graphs and Types<br>Measures of individual elements of transportation networks: Mileage, Nodality Matrix, Weighted Mileage Matrix, Weighted Nodality Matrix, Gross accessibility<br>Measures of route density, Measure of route sinuosity, Connectivity of Networks |
| III | **A) Trade:**<br>Concept of trade, Types of trade, Concept of Balance of trade<br>Geographical factors influencing international trade<br>Problems and prospects of international trade in Globalisation<br>**B)Significance of Trade in National and International Economy** –<br>WTO, TRIPS, TRIMS, ASEAN,<br>Concept of EPZs & SEZs, Privatization, Globalization |

**Reference Books**:


1. Chorely R. J. and Haggett P. (1968): Network Analysis Edward Arnold, Methuen and Company London
2. Taffe, E. J. and Gauthier H. L. (1973): Geography of Transportation, Prentice-Hall
3. Thoman and Conkling: Geography of International Trade
4. O'Dell and Richards (1968): Railways and Geography
5. Sealy (1968): Geography of Air Transportation. Hutchinson University
6. Hammond, R. and Mc Cullagh, P.S. (1989), Quantitative Techniques in Geography; An Introduction, Clarendon Press, Oxford
7. Singh K N (1990): Transport network in Rural Development, Institute of Rural Economic Development, Varanasi.
8. Thoman, Gonkling, Vegles (1974): Geography of Economic Acivity
9. Tolley R. S. and Turton B. J. 91989): Transport system, Policy and Planning Longman Group, Singapore
10. White H.P. and Senior M.L. 91989): Transport Geography, Longman Group, Hongking
11. Bhandari S (1992): Transport and Regional Development, Concept Publication, New Delhi
12. Pande (1991): Transport Geography, Concept Publication, New Delhi

# Gg-E302: Geography of Tourism

**Credits 3: Theory Paper**

**Pre-requisite**

The candidate should know the basics about relations of tourism and tourism activities with geographical features of the region. He / She should take an interest in mapping and global study.

**Course Objectives**

The objectives of this paper are, to explain the interrelationship and complexity of tourism with geographical points of view, to demonstrate understanding to the importance of employability skills, excellent attitude and values and to demonstrate familiarity to the career and entrepreneurial opportunities in tourism and hospitality business.

**Course Outcomes**

Upon completion of this course, students will able to describe the profile, organization and characteristics of tourism as well as hospitality with the geographical points of view.

**Mode of Assessment**

1. Tutorial examinations
2. Home assignments
3. Seminars / Oral Presentation
4. Online / Offline Quizzes
5. Field studies and its presentation
6. Mid-term Theory Examination
7. End-term Theory Examination
8. PPT presentation on selected topic(s)

# Gg-E302: Geography of Tourism (Credits 3: Theory Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Basics:**<br>• Concepts: Tour, Tourist, Tourism, Travel, Tourist Place, Tourist Plan, Tourism Business, Route Map and Hospitalities.<br>• Perspective of Study: Geographical, Historical, Economical, Sociological, Managerial, Research / Scientific,<br>• Elements: Space, Climate, Time, Culture, Accessibility, Attractions etc<br>• Types of Tourism: Geographical, Cultural, Historical, Seasonal, Eco-tourism, Agri-Tourism, Study Tours. |
| II | **Service Sectors:**<br>• Food<br>• Accommodation (Lodging and Boarding and other types)<br>• Travel and Transport<br>• Entertainment<br>• Study and Research (Study Material, Books, Maps, Research Projects etc)<br>• Administration and Security<br>• Finance / Banking / Insurance / etc |
| III | **Geographer and Tourist Industry:**<br>• Role and Scope of Geographer in Tourist Industry<br>• Geographical Knowledge and Eyesight of Tourist<br>• Mapping and Tourism<br>• Career and Entrepreneurial Opportunities |

**Reference Books:**


1) Sampad Kumar Swain and Jitendra Mohan Mishra, 2011, Tourism: Principles and Practices, Oxford Higher Education, Publisher: Oxford University Press
2) SunetraRoday, ArchanaBiwalandJoshi Vandana, 2009, Tourism Operations and Management 1st Edition, Publisher: Oxford University Press
3) M R Dileep, 2018, Tourism: Concepts, Theory and Practice, ISBN : 9789385909672, Published by Indian Books and Periodicals
4) Charles R. Goeldner and J. R. Brent Ritchie, 2008, Tourism: Principles, Practices, Philosophies, Publisher: John Wiley & Sons; 11th Revised edition.

**Marathi Books**

5) Prof. SangleShailaj, 2015, ParyatanBhugol, Tourism Geography, Diamond Publication Pune.
6) ManojHadwalane, 2010, KrishiParyatan: EkShetipurakVyavsay, Agri-Tourism, Diamond Publication Pune.

# Gg-E303: Regional Planning and Development

**Credits 3: Theory Paper**

**Pre-requisite**

The candidate should know the basic concepts from physical as well as human geography, particularly with reference to Indian geographical set up.

**Course Objectives**

The objectives of this paper are, to understand the basic concepts of Regional Geography, to study the principles of natural resources and depending developmental activities with regional limitations and prospectuses. Its prime aim is to understand and be capable to observe and note the imbalances in planning and development of the region.

**Course Outcomes**

After completion of the paper / course, the students will get capabilities and skills to correlate the natural cycles and manmade activities at primary level. In short, the candidate will assess the cause-n-effect relationships, which will be helpful for answering reasoning types of questions asked in competitive examinations.

**Mode of Assessment**

1. Tutorial examinations
2. Home assignments
3. Seminars / Oral Presentation
4. Online / Offline Quizzes
5. Field studies and its presentation
6. Mid-term Theory Examination
7. End-term Theory Examination
8. PPT presentation on selected topic(s)

## Gg-E303: Regional Planning and Development (Credits 3: Theory Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Basic Concepts:**<br>• Region, Planning, Development, Regional Planning and Development,<br>• Need of Regional Planning and Development<br>• Role of Geography<br>• Geographical Indication |
| II | **Types and hierarchy of regions:**<br>• Types of Region<br>• Types of planning and Development<br>• Approaches to Regional planning<br>• Concept of growth and development.<br>• Indicators of development<br>• Measures of regional development<br>• Rastows stages of economic growth |
| III | **Regional imbalances in India:**<br>• Industrial<br>• Agricultural<br>• Rural-Urban ratio<br>• Metropolitan planning<br>• Rural development planning<br>• Tribal area development planning |

**Reference Books:**


1) Chandana, RC, 2000, Regional Planning, Kalyani Publications, Ludhiyana.
2) Friedmann, JAW, 1967, Regional Development and Planning, MIT Press Mass.
3) Mishra RP, 1992, Regional Planning, Concepts, Techniques, Policies and Case Studies, (Edited Book) Concept Publications, New Delhi.
4) Dube KN, 1990, Planning and Development in India, (Edited Book), Asia Publishing House, New Delhi.
5) Govt. of India, 1986, Regional Plan 2001 – National Capital Region, NCRPB, Ministry of Urban Development, New Delhi.
6) Bhat LS, 1973, Regional Planning in India, Statistical Publishing Society, Kolkata.
7) Cand&Puri, 2013, Regional Planning in India, Allied Publishers, New Delhi.

# Gg-OE301: Applied Climatology

**Credits- 2 Theory Paper**

**Pre-requisite:** Basic knowledge about weather and climate elements, geographical factors and their relationship with climatic activities

**Course Objectives:** After completion of the course the student gets knowledge about the climatic activities are their relation to geographical factors. On successful completion of the module, students should be capable of explaining the climate change and their effect on human activities.

**Course Outcomes:** This course is useful in understanding about basics of weather and climate. This will be useful for application in their daily activities related to climate. Knowledge of this course will used for climate change understanding.

**Mode of Assessment**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

# Gg-OE301: Applied Climatology-(Credits- 2 Theory Paper)

## Course Contents

| Unit | Teaching / Learning Points |
|---|---|
| I | A)Agroclimatology:<br>Droughts, irrigation scheduling<br>Agroclimatic regions of India.<br>B) Physiological climatology:<br>Climate & Clothing – Role of Clothing in providing insulation to human body<br>Climate & Human Comfort,<br>Climate & Health<br>Acclimatization |
| II | A) Paleoclimatology:<br>Climatic changes of the geological past - causes & effects<br>Recent climatic Changes- causes & consequences.<br>B) Climate Change and Environmental Problems:<br>Urban heat island<br>Green house effect<br>Global warming<br>Ozone layer depletion |

**Reference Books**:


1. Frederick K. Lutgen, Edward Tar buck: "The Atmosphere an Introduction to Meteorology" Prentice Hall, Englewood Cliffs, New Jersey 0762, 1998
2. Pettersons: "Introduction to Meteorology 1969
3. Richl H: "Introduction to Atmosphere 1972
4. Sellers W.D: "Physical Climatology"University of Chicago Press. 1965
5. Trewartha G.T: An Introduction to climate "McGraw Hill BK Co. New York, 1968.
6. Das P. K.: The Mansoon, PrayagpustakBhavan, Allahabad.
7. Shastri Rama: Weather and Weather Forecasting, Ministry & Information NBT Delhi.
8. Lal D. S.: Climatology. PrayagpustakBhavan, Allahabad.
9. Ramashatri: Weather & Weather forecasting, Ministry of Information & Broadcasting.
10. Savindra Singh (2000): Climatology, PrayagPustakBhavan, Allahabad.
11. Mather JR (1975): Climatology: Fundamentals & Applications. Mc Gray Hills Book, New York.
12. Hobbs J.E. (1980): Applied Climatology, Butterworth, London
13. Crist Field: Principles of Climatology; Prentice Hall, London.
14. Oliver J. E. (1973): Climate &Mans Environment, John Wiley & Sons; New York.
15. Byers R.H.: "General Meteorology "McGraw Hill BKCo New York 1974
16. Critchfield: "General Climatology" Prentice Hall London.

# Gg-OE302: Physical Geography of World

**Credits 2: Theory Paper**

**Pre-requisite**

The candidate should know the basic information of the world and World's Geographical – Physical, Political structure. He / She should be able to read all types of global maps / world map.

**Course Objectives**

The objectives of this paper are, to understand the basic concepts of Physical Geography of the World, to study the basics about the whole world and its basics about the natural set up, e.g. physiography, ocean, drainage, climate, forests, soils, wildlife, etc.

**Course Outcomes**

After completion of the paper / course, the students will get capabilities and skills to correlate the world wide natural resources at primary level. In short, the candidate will assess the cause-n-effect relationships, which will be helpful for answering reasoning types of questions asked in competitive examinations.

**Mode of Assessment**

1. Tutorial examinations
2. Home assignments
3. Seminars / Oral Presentation
4. Online / Offline Quizzes
5. Field studies and its presentation
6. Mid-term Theory Examination
7. End-term Theory Examination
8. PPT presentation on selected topic(s)

## Gg-OE302: Physical Geography of World (Credits 2: Theory Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Physiography of the Worlds:**<br>• North and South Hemisphere, Latitudes and Longitudes<br>• Land and Ocean (Continents and Oceans)<br>• Deserts,<br>• Rivers<br>• Mountains |
| II | **Climatic Regions and Resources:**<br>• Major Natural (Climatic) Regions<br>• Rainfall and Temperature<br>• Plants and Wildlife<br>• Resources: Conventional and Non-conventional Resources<br>• Natural Disasters: Volcano, Earth quakes, Storms, Land sliding, Floods<br>• Climate Change |

**Reference Books:**


1. Majid Husain, 2016, World Geography (Fifth Edition: Revised and Enlarged), Rawat Publications, Jaipur.
2. Boehm, 2016, Lencoe World Geography, Publisher: McGraw-Hill / Glencoe.
3. Thomas J. Baerwald and Celeste Fraser, 2005, World Geography: Building a Global Perspective, Student Edition, Publisher: Prentice Hall
4. Houghton Mifflin Harcourt, 2019, World Geography: Student Edition 2019 1st Edition, Publisher: Houghton Mifflin Harcourt.
5. Robert J. Sager and David M. Helgren, 2005, World Geography Today, Published by Holt McDougal

# Gg-OE 303: Global Positioning System

**Credits- 2 Theory Paper**

**Pre-requisite:** Have knowledge about elements of maps and having the knowledge of basics of computer handling.

**Course Objectives**: The objective of this course is to develop the skill of the global positioning system, and their use in the mapping.

**Course Outcomes:** After completion of the course, the students get capabilities and skills on global positioning system and their application in geography and map making.

**Mode of Assessment**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

## Gg-OE303: Global Positioning System (Credit-2 Theory Paper)
## Course Contents

| Unit | Teaching / Learning Points |
|---|---|
| I | **Global Navigation Satellite System :**<br>**Introduction to GNSS**; GNSS - GPS Modernization, GLONASS, GALILEO, IRNSS, BEIDOU, DORIS, QZRS<br>**Introduction to GPS** -Meaning and Definition of GPS, Nature and Scope of GPS, History of GPS development, Importance of GPS technology<br>**Component of GPS**- Space Segment, Control Segment, User Segment<br>**GPS Signal and Operation**- Carriers, GPS codes: C/A, P, Binary codes. Navigational message, Operation of the GPS Satellite visibility and availability<br>**GPS Receivers -** Types of receiver, Types of Units, GPS Tracker |
| II | **Applications of Global Positioning System:**<br>Surveying and Mapping, Urban and Regional planning, Agricultural Management, Forestry and Environment, Land use/ and Land cover mapping, Landform analysis, Disaster Management, Application in Navigation Mapping, Quick Response System<br>**Future of Geopositioning:**<br>Future of GNSS, Positioning Technology Trends, GNSS Receiver Trends Mobile Phone Positioning Technology, Competitor of GPS |

**References:**


1. Elliott Kaplanand Christopher J. Hegarty(2017)Understanding GPS/GNSS: Principles and Applications, Third Edition (Gnss Technology and Applications Series) 3rd Edition, Published by Artech House
2. Peter Teunissen and Oliver Montenbruck (2017)Springer Handbook of Global Navigation Satellite Systems Springer International Publishing, Switzerland
3. Monmonier, M.S. (1982): Computer Assisted Cartography: Principles and Prospects, Prentice Hall, Inc. London.
4. Peuquet, D.J. & Marble, D.F. : Introductory Readings in Geographic information Systems Taylor & Francis, Washington, 1990
5. C.P .Lo and Albert K. W. Yeung, Concepts and Techniques of Geographic Information System,
   2002Prentice –Hall, India.
6. Burrongh P.A. & Rachael A.M.(1998): Principles of Geographic Information System for land Resources Assessment. Oxford University press.
7. Maguire D.J. & good Child M.F. &Rhindd.w. (Eds)(1991): Geographic Information System: Principles & Applications, Vol. II Longman London, I.
8. Tor Bernuandsen (1992): Geographic Information System VIAKIT & Norwegian Mapping Authorities, Arendal,Norway.

# Gg-OE304: Oceanography-I

**Credits- 2 Theory Paper**

**Pre-requisite:** Basic knowledge about ocean water elements, geographical factors and their relationship with oceanic activities

**Course Objectives:** After completion of the course the student gets knowledge about the oceanic activities are their relation to geographical factors. On successful completion of the module, students should be capable of explaining the ocean floor, submarine relief, ocean circulation and their effect on human activities.

**Course Outcomes:** This course is useful in understanding about basics of weather and ocean circulation. This will be useful for application in their daily activities related to elements of ocean. Knowledge of this course will used for understanding the ocean floor, submarine relief, ocean circulation and their effect on human activities.

**Mode of Assessment**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

# Gg-OE304: Oceanography-I (Credits- 2 Theory Paper)

**Course Contents**

| Unit | Teaching / Learning Points |
|---|---|
| I | **A)Introduction of Oceanography**-<br>Definition, Nature and Scope of Oceanography<br>Foundation of Modern Oceanography<br>B) **Origin of the Ocean Basins**:<br>1. Continental Drift 2. Seafloor Spreading<br>3. Plate Tectonics 4. World Oceans and their formations |
| II | **A)Submarine Relief**-<br>General idea of the submarine relief,<br>Continental shelf, continental slope, Abyssal plains,<br>Oceanic trenches and deeps, Hypsographic curve,<br>**B)Relief of Oceans**:<br>Atlantic Ocean, Pacific Ocean, India Ocean |
| III | **Properties of Ocean Water:**<br>**A)Temperature of oceanic wate**r- factors and distribution<br>**B**)**Salinity of oceanic water**- factors and distribution<br>**C)Density of oceanic water**- factors and distribution |

**Reference Books:**


1. Negi, S.S. (1994): Geographical Science and water resource management; Printwell Jaipur (India)
2. Joseph, w. & Howard, P: Introductory oceanography, McGraw Hill. Kogakusha, Ltd., New Delhi. (International Student Education)
3. Peter K.W. (1970): Oceanography: An Introduction to the marine Environment, John Wiley & Sons Inc, New York.
4. Sharma R.C. (1970): Oceanography for Geographers, Chaitanya publishing house, Allahabad.
5. Negi B.S (1994-95): Climatology and oceanography Kedarnath, RamanathMeerat, New Delhi.
6. Michael A.M.(1978): Irrigation; theory and practices, VikasPub.House, New Delhi.
7. Savinder Singh (1999) Physical Geography, PrayagPustakBhavan, Allahabad.
8. Strahler A. (1996) physical Geography; science and system of the Human Environment, New York, Jahu Wiley
9. Siddhartha K. (1999): Oceanography A Brief Introduction. Kaisalya Pub Pvt. Ltd. New Delhi.
10. Basu S.K. (2003) (ed): Handbook of Oceanography, Global Vision, Delhi
11. Davis Richard A. (1972): Oceanography, Addition Wesley Publishing Co
12.Garrison Tom (2004): Essentials of Oceanography. Thompson, Australia
13.Thurman Harold V. (1985): Introductory Oceanography. Bell & Howell Co. London

# Gg-OE305: Survey and Land Measurement

**Credits 2: Theory Paper**

**Pre-requisite**

The candidate should know the basic concepts from Cartography and Surveying. The candidate should know the basics about the maps i.e. types of maps, scale, direction, units, etc.

**Course Objectives**

The objectives of this paper are, to understand the basic concepts of Survey and Land Measurement in Geography, to study and to develop the capability in survey and land measurement with scientific and geographical methods.

**Course Outcomes**

After completion of the paper / course, the students will get capabilities and skills to conduct and field survey and measure the land as per the purpose. In short, the candidate will develop extra soft skills, which will be helpful for any reason in his academic and or whole life.

**Mode of Assessment**

1. Tutorial examinations
2. Home assignments
3. Seminars / Oral Presentation
4. Online / Offline Quizzes
5. Field studies and its presentation
6. Mid-term Theory Examination
7. End-term Theory Examination
8. PPT presentation on selected topic(s)

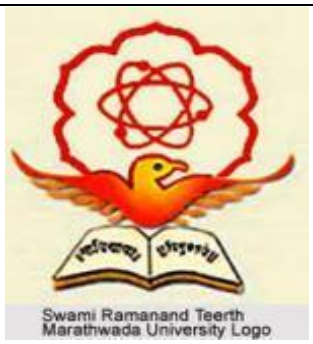
## Gg-OE305: Survey and Land Measurement (Credits 2: Theory Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Basics of Survey:**<br>• Definition of Survey and Land Measurement<br>• Map: Scale and Direction<br>• Units: Unit of Scale, Types (British and Metric Method),<br>• Conversion: Line Distance and Area of Polygon<br>• Types of Survey for Land Measurement<br>• Instruments and Equipments of Measurement (Distance, Height, Angle) |
| II | **Land Measurement:**<br>• Types of Land: Height/ Slope, Shape<br>• Measurement of Distance: Methods, Tools, Techniques, Merits - Demerits<br>• Survey Method for Land (Area) Measurement<br>• Land (Area) Measurement from Map |

**Reference Books:**
**In English**


1) N.N. Basak, 2017, Surveying and Leveling, Publisher: McGraw Hill Education; ISBN-10: 9789332901537.
2) R. Subramanian, 2014, Fundamentals of Surveying and Leveling, Publisher: Oxford University Press; First edition (28 July 2014), ISBN-10: 0199454728
3) Gupta, K. K. andTyagi, V. C. (1992): Working with maps, Survey of India Publication, Dehradun
4) Kanetakar T.P. &Kukarni S.V. 1986. Surveying & leveling, Pune VidyarthiGrihaPrakshan, Pune
5) Maslov A.V. Gordeev A.V.,BatrakovYu.G. Geodetic surveying,1984, Mir Publishers, Moscow
6) V. Natarajan P., Adler Ron K. Advanced Surveying, B.1 Publ. Bombay.
7) Jones P. A. (1968), Fieldwork in Geography. Longmans, Green and Company Limited.
8) Archer J. E and Dalton T. H. (1968), Field work in Geography B.T. Batsford Limited London




## School of Earth Sciences

# SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED

## Semester IV

# Syllabus

# M.A./M.Sc. in Geography

# 2020-21

| Type | Code | Semester IV | Credits |
|---|---|---|---|
| Core Theory 1 | Gg-C401 | Oceanography | **4** |
| Core Theory 2 | Gg-C402 | Social and Cultural Geography | **4** |
| Core Theory 3 | Gg-C403 | Dissertation | **4** |
| | | | |
| Subject Elective Theory | Gg-E401 | Research Methods in Geography | **3** |
| | Gg-E402 | Rural Settlement Geography | **3** |
| | Gg-E403 | Political Geography | **3** |
| | | | |
| Open Elective Theory 1 | Gg-OE401 | Fundaments of Tourism | **2** |
| Open Elective Theory 2 | Gg-OE402 | Tourism in Maharashtra | **2** |
| Open Elective Theory 3 | Gg-OE403 | Human Geography of World | **2** |
| Open Elective Theory 4 | Gg-OE404 | Oceanography-II | **2** |
| Open Elective Theory 5 | Gg-OE405 | Bio-geography | **2** |
| | | | |
| Practical 1 | Gg-C404 | Practical in Settlement Geography | **2** |
| Practical 2 | Gg-C405 | Statistical Methods in Geography | **2** |
| Practical 3 | Gg-C406 | Dissertation | **2** |
| Practical 4 | Gg-C407 | Soil Analysis | **1** |
| Practical 5 | Gg-C408 | Seminar / Field Report | **1** |
| | | | |
| | **Total Credits** | | **25** |

**NOTE:**

1) Core theory papers are compulsory papers. (C)
2) Select any one theory paper from subject electives papers (E)
3) All practical papers are compulsory papers. (C)
4) Additional credits can be obtained from MOOCS/NPTL/SWAYAM
5) Open elective papers are for other subjects (other than Geography) in the university.(OE)
6) At least one open elective should be provided in each semester and 8 credit need to be completed in two year program.

# Gg-C401: Oceanography

**Credits- 4 Theory Paper**

**Pre-requisite:** Basic knowledge about ocean water elements, geographical factors and their relationship with oceanic activities

**Course Objectives:** After completion of the course the student gets knowledge about the oceanic activities are their relation to geographical factors. On successful completion of the module, students should be capable of explaining the ocean floor, submarine relief, ocean circulation and their effect on human activities.

**Course Outcomes:** This course is useful in understanding about basics of weather and ocean circulation. This will be useful for application in their daily activities related to elements of ocean. Knowledge of this course will used for understanding the ocean floor, submarine relief, ocean circulation and their effect on human activities.

**Mode of Assessment**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

# Gg-C401: Oceanography (Credits- 4 Theory Paper)

## Course Contents

| Unit | Teaching / Learning Points |
|---|---|
| I | **Introduction of Oceanography**- Definition, Nature and Scope of Oceanography, Foundation of Modern Oceanography |
| II | **Submarine Relief**- General idea of the submarine relief, Continental shelf, continental slope, Abyssal plains, oceanic trenches and deeps, Hypsographic curve, Relief of Atlantic, Pacific, and Indian Ocean |
| III | **Salinity and Temperature of Oceanic Wate**r- factors and distribution<br>**Oceanic Deposition**- types of deposition, types of Coral |
| IV | **Ocean Circulation:** Types of Tides, Factors affecting ocean currents, currents of Atlantic, Pacific & Indian Ocean, EL. Nino, La Nino.<br>**Man and Oceans:** Oceans as a storehouse of mineral & food resources. |

**Reference Books:**


1. Negi, S.S. (1994): Geographical Science and water resource management; Printwell Jaipur (India)
2. Joseph, w. & Howard, P: Introductory oceanography, McGraw Hill. Kogakusha, Ltd., New Delhi. (International Student Education)
3. Peter K.W. (1970): Oceanography: An Introduction to the marine Environment, John Wiley & Sons Inc, New York.
4. Sharma R.C. (1970): Oceanography for Geographers, Chaitanya publishing house, Allahabad.
5. Negi B.S (1994-95): Climatology and oceanography Kedarnath, Ramanath Meerat, New Delhi.
6. Michael A.M. (1978): Irrigation; theory and practices, Vikas Pub.House, New Delhi.
7. Savinder Singh (1999) Physical Geography, Prayag Pustak Bhavan, Allahabad.
8. Strahler A. (1996) physical Geography; science and system of the Human Environment, New York, Jahu Wiley
9. Siddhartha K. (1999): Oceanography A Brief Introduction. Kaisalya Pub Pvt. Ltd. New Delhi.
10. Basu S.K. (2003) (ed): Handbook of Oceanography, Global Vision, Delhi
11. Davis Richard A. (1972): Oceanography, Addition Wesley Publishing Co
12.Garrison Tom (2004): Essentials of Oceanography. Thompson, Australia
13. Grant Gross M. (1982): Oceanography, Prentice hall, Ince, New Jersey
14.King Cuchlain A. M (1962): Oceanography for Geographers (ED) Edward Arnold
15.Thurman Harold V. (1985): Introductory Oceanography. Bell & Howell Co. London

# Gg-C402: Social and Cultural Geography

**Credits 4: Theory Paper**

**Pre-requisite**

The candidate should know the basic concepts from Human Geography and its various sub-branches. He should know the nature and scope of main sub-branches of human geography. It is necessary to strengthen the views of any geographer about an interdisciplinary and multidisciplinary nature of human as well as physical geography.

**Course Objectives**

It is a basic sub-branch of Human Geography. The students should know the effect of physical situation of any region on the socio-cultural setup. It is therefore the objectives of this paper are, to understand the basic concepts of social and cultural Geography, to study the principle theories and models for understanding the spatio-temporal trend of development. Its prime aim is to understand and be capable to observe and note the differences and inequalities in the society according to the natural resources and the historical base behind it.

**Course Outcomes**

After completion of the paper / course, the students will get capabilities and skills to correlate the natural cycles, resources and its effect on / correlation with social and cultural development. In short, the candidate will assess the cause-n-effect relationships, which will be helpful for answering reasoning types of questions asked in competitive examinations.

**Mode of Assessment**

1. Regular Tutorial examinations and Home assignments
2. Seminars / Oral Presentation
3. Online / Offline Quizzes
4. Field studies and its presentation
5. Mid-term Theory Examination
6. End-term Theory Examination
7. PPT presentation on selected topic(s)

# Gg-C402: Social and Cultural Geography (Credits 4: Theory Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Nature and Scope:**<br>• Definition of Social Geography and Cultural Geography<br>• Nature and Scope of Social and Cultural Geography<br>• Evolution of Culture and Social Things<br>• Culture and Society: An Essential Elements of Geographical Studies |
| II | **Socio-Cultural Setup and Regions**<br>**A) Concepts**<br>1) Region, 2) Social Diversity, 3) Social Areas,<br>4) North-South and East-West Socio-Cultural Diversity of India<br>5) Griffith Taylor's theory of human evolution (Human Race)<br>**B) Differential Factor of Socio-Cultural Set-up**<br>1) Human Race 2) Language 3) Religion<br>4) Castes 5) Tribes 6) Migration |
| III | **Regional Differentiation of Social and Cultural Characteristics**<br>• Social and Cultural Region<br>• Tribal Region and their Social Activities<br>• Tribes Region and their Cultural activities<br>• Social and Cultural Reforms<br>• Urban and Rural Difference |
| IV | **Issues**<br>• Causes of Social and Cultural Problems<br>• Socio-Cultural Problems and Migration<br>• Socio-Cultural Setup and Demography of the Region<br>• Human Development Index<br>• Social Wellbeing (meaning Patterns, measuring, method)<br>• Social justice: Equality and Welfare |

**Reference Books:**


1) Ahmed Aijazuddin, 1999, Social Geography, Rawat Publication, Jaipur.
2) G.S. Mohanty, 2007, Social and Cultural Geography, Isha Books, New Delhi
3) Majid Hussain, 1994, Human Geography, Rawat Publication, Jaipur.
4) Joy McCarthy, 2010, Social and Cultural Geography, Edited Book, Published by Apple Academics, Press, Inc.
5) Jyotirmoy Sen, 2011, Textbook Social Cultural Geography, Kalyani Publishers
6) Chris Hamnett, 1996, Social Geography: A Reader, Edited book, published by Arnold.
7) Vincent J. Del Casino, Jr., Mary Thomas, Paul Cloke, Ruth Panelli, 2011, A Companion to Social Geography, edited book, Published by Wiley-Blackwell.
8) By Vincent J. Del Casino, Jr., 2009, Social Geography: A Critical Introduction, Published by Wiley-Blackwell.

# Gg-C403: Dissertation

**Credits- 4 Theory Paper**

**Pre-requisite:** Basic and advance knowledge about the topic choose for the dissertation

**Course Objectives:** The Paper is designed to acquaint the student with the importance of field work as one of the methodologies in Geography and especially in research work. The students are to be sensitized about field work and data/ information collection and report writing.

**Course Outcomes:** This course is useful in understanding about basics of research methodology in geography. This will be useful for application tools and techniques in geography in their report writing of the dissertation and it will also help to students how the geographical problems tackle with the help of research methodology.

**Mode of Assessment:**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

# Gg-C403: Dissertation (Credits- 4 Theory Paper)

## Course Contents

**1)** The topic should be selected only from field of Geography and it can cover any branch of Geography. Concern teacher/supervisor will allot relevant topic to the student.

**2)** Objective: The paper is designed to acquaint the student with the importance of field work as one of the methodologies in Geography and especially in research work. The students are to be sensitized about field work and data/ information collection and report writing.

**3)** The students should be sensitized about the research methodology, synopsis preparation, data collection, tabulation and mapping exercise. Students will also submit precise Dissertation Report along with table, maps and diagrams with signature of supervisor.

**4)** The Candidates are required to submit their Dissertation Reports one week before the commencement of Examination to the concerned supervisor and Head of the Department. 10 minutes power point presentations on the Dissertation work are compulsory for the students.

**5)** Assessment of Report will be done by a Board of Examiners, consisting of external examiner and internal examiner.

**Reference Books:**


1. Dr. Ranjit Kumar- Research Methodology: A Step-by-Step Guide for Beginners
2. Geoffrey R. Marczyk - Essentials of Research Design and Methodology
3. Sharan B. Merriam- Qualitative Research: A Guide to Design and Implementation
4. C.R. Kothari -Research Methodology: Methods and Techniques
5. Rashmi Agrawal- Research Methods
6. S P Gupta- Statistical Methods
7. Iain Hay- Qualitative Research Methods in Human Geography
8. John Paul Jones, Basil Gomez- Research Methods in Geography: A Critical Introduction
9. Paul Sutton, Daniel R. Montello- An Introduction to Scientific Research Methods in Geography
10. Nick Tate, Rob Kitchin - Conducting Research in Human Geography: Theory, Methodology and Practice
11. Dydia DeLyser - The SAGE Handbook of Qualitative Geography

# Gg-C404: Practical in Settlement Geography

**Credits- 2 Practical Paper**

**Pre-requisite:** Basic knowledge about population, geographical factors and their relationship with human habitat.

**Course Objectives:** After completion of the course the student gets knowledge about the human settlements analysis with their relation to geographical factors. On successful completion of the module, students should be capable of explaining the settlements analysis with maps and diagrams.

**Course Outcomes:** This course is useful in understanding about basics of human settlements analysis. Knowledge of this course will used for interpretation of settlements analysis with maps and diagrams.

**Mode of Assessment:**

1. Tutorial examination
2. Home assignments
3. Field studies
4. Mid-term practical examination
5. End-term practical examination

## Gg-C404: Practical in Settlement Geography (Credit-2 Practical Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Methods for calculation of Urban data and Dispersion**<br>i) Rank size rule.<br>ii) Nearest Neighbour Technique.<br>iii)Functional classification of towns- H.J. Nelson's method<br>iv)Calculation of centrality<br>iv)Methods used to calculate degree of dispersion by Demangeon, Bernard, Debouverie |
| II | **Identification of Settlement Pattern From Toposheet**<br>i) Toposheet Reading,<br>ii)Identification of settlement pattern<br>iii)Site and situation of the settlement,<br>iv) Find out rural and urban settlement and their services. |
| III | **Measures of Network Structure**<br>Network indices1. Ratio Measure<br>2. Alpha, Beta, Gamma<br>3. Associated Number<br>4. Cyclomatric Number |

**Reference Books:**


1. Aslam Mahmood (1977): Statistical methods in geographical studies Rajesh Pub. New Delhi.
2. Gregory s. (1963): statistical methods and the Geographer, Longman's London.
3. Hammond R. & Mc Cullagh P. (1974): Quantitative Techniques in Geography Clarendon Press, Oxford.
4. Haring, Lloyed (1975): Scientific Geographic Research. W.C. Brow Company, U.S.A.
5. Hagget Peter (1990): Geography a modern synthesis. Harper International, New York.
6. Kothari, C.R. (1996): Research methodology. Vishwas Prakashan, New Delhi.
7. Mishra, R.P. (1991): Research methodology in Geography. Concept Publishing, New Delhi.
8. Carter Harold (1977): The study of Urban Geography
9. Singh, R. L. Reading in Rural Settlement Geography
10. Yeats, M. H. (1974). An introduction to Quantitative Analysis in Human Geography
11. Michael E. and E. Hurse: Transportation Geography

# Gg-C405: Statistical Methods for Geography

**Credits 2: Practical Paper**

**Pre-requisite**

The candidate should know the basic concepts of statistical methods. He /She should aware about the different types of geographical variables and their numerical information.

**Course Objectives**

The objectives of this practical paper are, to understand the basic concepts of statistical methods, particularly for geographical studies, to understand and practice for calculations for geographical reasoning studies and analytical base.

**Course Outcomes**

After completion of the practical paper / course, the students will get capabilities and skills to handle geographical data, for analysis and concluding remarks.

**Mode of Assessment**

1. Tests/ examinations
2. Home work / Preparation of Journal (Practical Book)
3. Oral Presentation
4. Online / Offline Quizzes
5. Mid-term Practical Examination
6. End-term Practical Examination

# Gg-C405: Statistical Methods for Geography (Credits 2: Practical Paper)

## Course Contents (List of Practical)

| Unit | List of Practical |
|---|---|
| I | **Role of Statistics in Geography**<br>• To define Data and Data types in Geography.<br>• To describe and summarize Spatial Data.<br>• To understand the Ungrouped Data Set and their Geographical Examples.<br>• To understand the Grouped Data Set and their Geographical Examples. |
| II | **Spatial measures of central tendency**<br>• To measure Simple Mean of given ungrouped data.<br>• To measure Median of given ungrouped data.<br>• To measure Mode of given ungrouped data.<br>• To prepare a Frequency table.<br>• To measure Simple Mean of given grouped data.<br>• To measure Median of given grouped data.<br>• To measure Mode of given grouped data. |
| III | **Conceptual Understanding**<br>• To understand ranking method and its uses in Geographical Analysis.<br>• To understand: Skewness of Data, its types and causes with examples.<br>• To understand: Kurtosis of Data, its types and importance.<br>• To understand Correlation between geographical variables and types. |
| IV | **Standard Deviation (SD)**<br>• To understand Standard Deviation of a Data Set: meaning and importance.<br>• To calculate SD by using Actual Mean Method of given ungrouped data.<br>• To calculate SD by using Assumed Mean Method of given ungrouped data.<br>• To calculate SD by using Assumed Zero Method of given ungrouped data.<br>• To calculate SD by using Common Factor Method of given ungrouped data.<br>• To calculate SD by using Actual Mean Method of given grouped data.<br>• To calculate SD by using Assumed Mean Method of given grouped data.<br>• To calculate SD by using Assumed Zero Method of given grouped data.<br>• To calculate SD by using Common Factor Method of given grouped data. |

**Reference Books:**


1. Peter A. Rogerson Statistical Methods for Geography - A Student' S Guide, SAGE Publications, W.DC.
2. Peter A. Rogerson, 2001, Statistical Methods for Geography, SAGE Publications Ltd; First edition (2 January 2001)
3. Aslam Mahmood, 1999, Statistical Methods in Geographical Studies: Student Edition Paperback – Jan 1999, Publisher: Rajesh; New Delhi.
4. S. P. Gupta, 2014, Statistical Methods 43rd Edition Publisher: Sultan Chand, ISBN: 9788180549892, 8180549895
5. N Das, 2017, Statistical Methods (Combined edition volume 1 & 2), Publisher: McGraw Hill Education

# Gg-C406: Dissertation

**Credits- 2 Practical Paper**

**Pre-requisite:** Basic and advance knowledge about the topic choose for the dissertation

**Course Objectives:** The Paper is designed to acquaint the student with the importance of field work as one of the methodologies in Geography and especially in research work. The students are to be sensitized about field work and data/ information collection and report writing.

**Course Outcomes:** This course is useful in understanding about basics of research methodology in geography. This will be useful for application tools and techniques in geography in their report writing of the dissertation and it will also help to students how the geographical problems tackle with the help of research methodology.

## Gg-C406: Dissertation (Credits- 2 Practical Paper)

## Practical and Viva-Voce based on DissertationGg-C403

### Course Contents

**1)** The topic should be selected only from field of Geography and it can cover any branch of Geography. Concern teacher/supervisor will allot relevant topic to the student.

**2)** Objective: The paper is designed to acquaint the student with the importance of field work as one of the methodologies in Geography and especially in research work. The students are to be sensitized about field work and data/ information collection and report writing.

**3)** The students should be sensitized about the research methodology, synopsis preparation, data collection, tabulation and mapping exercise. Students will also submit precise Dissertation Report along with table, maps and diagrams with signature of supervisor.

**4)** The Candidates are required to submit their Dissertation Reports one week before the commencement of Examination to the concerned supervisor and Head of the Department. 10 minutes power point presentations on the Dissertation work are compulsory for the students.

**5)** Assessment of Report will be done by a Board of Examiners, consisting of external examiner and internal examiner.

**Reference Books:**


1. Dr. Ranjit Kumar- Research Methodology: A Step-by-Step Guide for Beginners
2. Geoffrey R. Marczyk - Essentials of Research Design and Methodology
3. Sharan B. Merriam- Qualitative Research: A Guide to Design and Implementation
4. C.R. Kothari -Research Methodology: Methods and Techniques
5. Rashmi Agrawal- Research Methods
6. S P Gupta- Statistical Methods
7. Iain Hay- Qualitative Research Methods in Human Geography
8. John Paul Jones, Basil Gomez- Research Methods in Geography: A Critical Introduction
9. Paul Sutton, Daniel R. Montello- An Introduction to Scientific Research Methods in Geography
10. Nick Tate, Rob Kitchin - Conducting Research in Human Geography: Theory, Methodology and Practice
11. Dydia DeLyser - The SAGE Handbook of Qualitative Geography

# Gg-C407: Soil Analysis

**Credit 1: Practical Paper**

**Pre-requisite**

The candidate should know the basic concepts of soil geography and agricultural geography. The candidate should have an experience to work in the field and laboratory. He / she should know the rules and regulations of field and laboratory work.

**Course Objectives**

The objectives of this paper are, to understand the basic concepts of soil sciences and its relation with agricultural practices. The prime aim is to develop scientific approach to the students for studying the soil in the field and with the laboratory tests.

**Course Outcomes**

The candidate will work in the field of agricultural geography with field and laboratory experiences, which will be purely science base. In the field research, he/ she will correlate the things of farm (crops) with the type of soil.

**Mode of Assessment**

1. Tests/ examinations
2. Home work / Preparation of Journal (Practical Book)
3. Oral Presentation
4. Online / Offline Quizzes
5. Mid-term Practical Examination
6. End-term Practical Examination

# Gg-C407: Soil Analysis (Credit 1: Practical Paper)

**Course Contents (List of Practical)**

| Unit | List of Practical |
|---|---|
| I | **Sample Collection:**<br>• To select the Farm / Agricultural Land for Soil Sample Collection.<br>• To collect the representative soil sample.<br>• To understand the methods of processing and handling of soil sample in the laboratory.<br>• To understand the type of Physical and Chemical Soil analysis methods.<br>• To understand the Analytical instruments.<br>• To Understand the Principles of pH and Conductivity Meter. |
| II | **Laboratory Methods:**<br>• To determine soil pH of collected samples.<br>• To determine the Electric Conductivity of soil.<br>• To determine the available Nitrogen in Soil.<br>• To determine the available Phosphorous in Soil.<br>• To determine the available Potassium in Soil.<br>• To determine the available Sulphur in the Soil.<br>• To determine the exchangeable Ca and Mg in Soil.<br>• To determine the Bulk Density<br>• To estimate soil moisture (Direct / Gravimetric Method).<br>• To determine the Soil Organic Carbon.<br>• To determine Grain Size of Soil by Wet Grain Size Sieve Analysis Method.<br>• To determine Grain Size of Soil by Dry Grain Size Sieve Analysis Method. |

**Reference Books:**


1. Soil Analysis: Handbook of Reference Methods, Published by Soil and Plant Analysis Council Inc.
2. Robert W. Day, 2001, Soil Testing Manual: Procedures, Classification Data, and Sampling Practices, Publisher: McGraw-Hill Education, ISBN-10: 9780071363631, ISBN-13: 978-0071363631, ASIN: 0071363637
3. Susanta Kumar Pal, 2019, Methods of Soil and Plant Analysis, ISBN : 9789387973589
4. Ashok Kumar V. Rajani, 2019, Comprehension Book of Soil Science Laboratory Analysis, ISBN : 9789387590724
5. Ajit Kumar Kolay, 2017, Basic Concepts of Soil Science, Publisher: Newage publishers

# Gg-E401: Research Methods in Geography

**Credits 3: Theory Paper**

**Pre-requisite**

The candidate should know the basic concepts from field and laboratory work with research point of view. He / She should know the various fields of research in Geography at primary level.

**Course Objectives**

Aim of the course is to introduce a research aptitude among young geographers. Specific Objectives of the Course are to give post graduate students and young researchers a general understanding of the Methodology of Geography, to enable the scholars to know the Fundamental theory of geographical research, to strengthen the need of Interdisciplinary Research, to inculcate the role of Case study analysis in the Methodology of Geography, to understand the value of Field work and the preparation of Thematic / digital maps in Geographical Research.

**Course Outcomes**

After completion of the paper / course, the students will get capabilities and skills to correlate the natural cycles and manmade activities at primary level with scientific and research point of views.

**Mode of Assessment**

1. Tutorial examinations
2. Home assignments
3. Seminars / Oral Presentation
4. Online / Offline Quizzes
5. Field studies and its presentation
6. Mid-term Theory Examination
7. End-term Theory Examination
8. PPT presentation on selected topic(s)

# Gg-E401: Research Methods in Geography (Credits 3: Theory Paper)

## Course Contents

| Unit | Teaching and Learning points |
|---|---|
| I | **Basics Concepts of Research:**<br>• Meaning , Types and Methods<br>• Fundamental theoretical research<br>• Diagnostic and action oriented research.<br>• Literature Reviews, Research Objectives, Methodology/ Techniques<br>• Need for Scientific Research<br>• Approaches: Inter-, trans- and multi-disciplinary.<br>• Hypothesis: Types, Characteristics, Formulation and testing of Hypothesis |
| II | **Research Design and Case Studies:**<br>• Identification and Selection of problem<br>• Collection of Data – Techniques and Methods (primary and secondary data)<br>• Construction of Schedules,<br>• Field work: Physical and Human Geography<br>• Need of pilot study: RRA PRA methods.<br>• Case Study: Approach, Selection and Organization of case studies. |
| III | **Data Analysis and Presentation:**<br>• Use of suitable statistical and cartographic techniques<br>• Preparation of Thematic / Digital maps and diagrams<br>• Modern tools, techniques and methods<br>• Digital data analysis: Use of Computer, Remote Sensing, GPS and GIS<br>• Research Report: Arrangement of Text, List of Tables, Maps, Photo Plates, References, Appendix |

**Reference Books:**


1. Majid Hussain (1994), Methodology of Geography, Anmol Publication, New Delhi.
2. K.L. Narasimha Murthy (1999), Geographical Research, Concept Publishing Company.
3. G.S. Gosal (1999), Fourth Survey of Research in Geography, Manak publication.
4. R.P. Misra (1983), Contributions in Indian Geography, Hilky publishers, New Delhi.
5. Hanagi l.L (1973), An Introduction to Scientific Geographical Research, Brown co.
6. Amedo Dand C. (1975), an Introduction to Science and Reasoning in Geography, John Willey.
7. Davis K.D (1971), Conceptual revolutions in Geography, University of London.
8. Research Methodology - Methods and Techniques, Revised Edited by C.R. Kothari (2004), New Age International Publishers, New Delhi.
9. Social Research Methods by David Dooley (1995), Prentice Hall, London.
10. A Survey Research in Geography- ICSSR, New Delhi (1972), Popular Prakashan, Bombay.
11. A Survey Research in Geography -1969-1972, Edited by Moonis Raza (1979), Allied publishers private limited, Bombay.
12. Basic Guide to Evaluation for Development by Francis Robin (2009), Oxford Publication.
13. New Methods in Social Science Research by Allen, T. Harrell (1978), Praeger Publishers, New York.
14. The Design of Social Research by Ackoff Russell (1961), Chicago University Press.
15. The Principles of Scientific Research by Freedman, P (1960), Pergamon Press, New York.

# Gg-E402: Rural Settlement Geography

**Credits- 3 Theory Paper**

**Pre-requisite:** Basic knowledge about elements of population and physical, culture and social geographical factors.

**Course Objectives**: The objective of this course is to understand rural settlement growth, rural development in world and India, planning and problems of rural settlements in India.

**Course Outcomes:** After completion of the course, the students get capabilities and skills on rural settlement geographical techniques, concepts, model and theories related to rural settlement geography. Also understand the various factor are affected on the growth and problems of rural settlements.

**Mode of Assessment:**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

# Gg-E402: Rural Settlement Geography (Credit-3 Theory Paper)

**Course Contents**

| Unit | Teaching / Learning Points |
|---|---|
| I | **Settlement Geography:**<br>Definition, Nature, Scope and Significance.<br>Development of Rural Settlement; Approaches to Settlement Geography<br>Difference between Rural and Urban settlements. |
| II | **Rural Settlements:**<br>Types and Pattern of Rural Settlements<br>Site and Situationof Rural Settlements<br>Size and Spacing of Rural Settlement<br>Functional classification of Rural Settlement |
| III | **Rural-Urban Transformation:**<br>Spatio-Temporal Dimensions and Morphogensis of Rural Settlement<br>City Region, Rural-Urban Fringe<br>Cause of Rural Urban Nexus; Spatial Relation of an Indian Rural Settlement<br>Rural Service Centres and Planning of Rural Settlement.<br>Problems of Indian Rural Settlement |

**Reference Books:**


1. Alam S.M. et. al.: Settlement System of India Oxford and IBH PublicationCo., New Delhi 1982.
2. Chisholm M.: Rural Settlement and Land use. John Wiley, New York, 1967
3. Clout H.D.: Rural Geography, Pergamon, Oxford, 1977.
4. Doniel P and Hopkinson M: The Geography of settlement Oliver & Byod, Edinburgh, 1986.
5. Grover N. Rural Settlement – A Cultural Geographical Analysis. Inter India Publication, Delhi,
6. Hudson F.S. : A Geography of Settlements. Macdonald and Evans, New York, 1976.
7. Ramchandran H.: Village clusters and Rural Development. Concept Publication, New Delhi, 1985
8. Rao R. N. Strategy for Integrated Rural Development. B.R. Publication, Delhi, 1986.
9. Rapoport A. House Form and Culture, Prentice Hall, New Jersey, 1969
10. Sen L.K. (ed) Readings in Micro-level Planning and Rural Growth Centers, National Institute of Community Development, Hyderabad. 1972
11. Srinivas M.N: Village India, Asia Publication House, Bombay, 1968.
12. Wanmati S.: Service Centers in Rural India, B.R. Publication Corporation, Delhi, 1983.
13. Singh R. L. Reading in Rural Settlement Geography.
14. Mandal R.B: Rural Settlement Geography, Concept Publishing Co., New Delhi.

# Gg-E403: Political Geography

**Credits- 3 Theory Paper**

**Pre-requisite:** Basic knowledge about elements of population, political map of world and India, physical, culture and social geographical factors.

**Course Objectives**: The objectives of this course is to understand concept of Nation, State, Nationalism and Nation- Building

**Course Outcomes:** After completion of the course, the students get understand concept of Nation, State, Nationalism and Nation- Building, and Geopolitical problems of India

**Mode of Assessment**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

# Gg-E403: Political Geography Credits- 3 Theory Paper

## Course Contents

| Unit | Teaching / Learning Points |
|---|---|
| I | **A. Political Geography**: Nature and scope, subject matter and recent trends<br>**B. Concepts** - Nation, State, Nation- State, Nationalism and Nation- Building<br>**C) Frontiers and Boundaries** - Distinction between frontiers & boundaries, Genetic, functional & morphological classification of boundaries, Border lands, Buffer zones and Buffer states, Land Locked states. |
| II | **Geopolitics:**<br>Rise and Demise of German Geopolitics;<br>Geo-strategic theories of Mackinder and Spykman;<br>Geopolitics in the post-Cold War World- NATO and EU |
| III | **Political Geography Of India**:<br>Boundary dispute and Geo-Political setting of India—SAARC.<br>Bases of Re-organization of Indian states since Independence.<br>Federalism in India and center-state relation.<br>National and International water Disputes |

**Reference Books:**


1. Agnew, J.A. (1987), Place and Politics, Boston: Allen and Unwin
2. Blacksell, Mark (2003), Political Geography, London Routledge.
3. Cox, Kevin R. (2008) The Sage Handbook of Political Geography, New Delhi sage.
4. Dicken, Peter (2003), Global Shift, New Delhi: Sage
5. Dikshit, R.D. (2000) Political Geography: The Spatiality of Politics, New Delhi: Tata Mc Graw Hill
6. Jones, Martin Rhys Jones and Michael Woods (2003), an Introduction to Political Geography, London:
   Routledge
7. Khor, Martin (2001) Rethinking in Globalization, London: Zed Books.
8. Painter J. (1995) Politics, Geography and Political Geography, London: Arnold.
9. Taylor, P.J. and Colin Flint (2001), Political Geography, New Delhi: Pearson.
10. Taylor, P.J. and R.J. Johnston (1979), Geography of Elections Hammondsworth: Penguin
11. Adhikari, Sudeepto (2008), Political Geography of India, Allahabad: Sharda Pustak Bhandar
12. Zelinsky, W (1966): A Prologue of Population Geography, Prentice Hall Inc, M.J
13. Sawant & Athawale A. S: Population Geography, Mehta Kolhapur.

# Gg-OE401: Fundaments of Tourism

**Credits 2: Theory Paper**

**Pre-requisite**

The candidate should know the basics about tourism and tourism activities. He / She should take an interest in mapping and global study.

**Course Objectives**

The objectives of this paper are, to explain the interrelationship and complexity of industry sectors, travel motivation factors, significance and impact of tourism industry to the economy and geographical scenario, to demonstrate understanding to the importance of employability skills, excellent attitude and values and to demonstrate familiarity to the career and entrepreneurial opportunities in tourism and hospitality business.

**Course Outcomes**

Upon completion of this course, students will able to describe the profile, organization and characteristics of tourism as well as hospitality with the geographical points of view.

**Mode of Assessment**

1. Tutorial examinations
2. Home assignments
3. Seminars / Oral Presentation
4. Online / Offline Quizzes
5. Field studies and its presentation
6. Mid-term Theory Examination
7. End-term Theory Examination
8. PPT presentation on selected topic(s)

# Gg-OE401: Fundaments of Tourism (Credits 2: Theory Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Basics**<br>• Concepts: Tour, Tourist, Tourism, Travel, Tourist Place, Tourist Plan, Tourism Business, Route Map and Hospitalities.<br>• Types of Tourism: Geographical, Cultural, Historical, Seasonal, Eco-tourism, Agri-Tourism, Study Tours,<br>• Perspective of Study: Geographical, Historical, Economical, Sociological, Managerial, Research / Scientific,<br>• Elements: Space, Climate, Time, Culture, Accessibility, Attractions etc |
| II | **Service Sectors**<br>• Food<br>• Accommodation (Lodging and Boarding and other types)<br>• Travel and Transport<br>• Entertainment<br>• Study and Research (Study Material, Books, Maps, Research Projects etc)<br>• Administration and Security<br>• Finance / Banking / Insurance / etc<br>• Career and Entrepreneurial Opportunities |

**Reference Books:**


1) Sampad Kumar Swain and Jitendra Mohan Mishra, 2011, Tourism: Principles and Practices, Oxford Higher Education, Publisher: Oxford University Press
2) Sunetra Roday, Archana Biwaland Joshi Vandana, 2009, Tourism Operations and Management 1st Edition, Publisher: Oxford University Press
3) M R Dileep, 2018, Tourism: Concepts, Theory and Practice, ISBN : 9789385909672, Published by Indian Books and Periodicals
4) Charles R. Goeldner and J. R. Brent Ritchie, 2008, Tourism: Principles, Practices, Philosophies, Publisher: John Wiley & Sons; 11th Revised edition.


**Marathi Books**


5) Prof. Sangle Shailaj, 2015, Paryatan Bhugol, Tourism Geography, Diamond Publication Pune.
6) Manoj Hadwalane, 2010, Krishi Paryatan: Ek Shetipurak Vyavsay, Agri-Tourism, Diamond Publication Pune.

# Gg-OE402: Tourism in Maharashtra

**Credits 2: Theory Paper**

**Pre-requisite**

The candidate should know the basics about tourism and tourism activities. He / She should take an interest in mapping and tourism in Maharashtra. It is necessary to have knowledge about Geography of Maharashtra with the historical and socio-cultural set up of the state.

**Course Objectives**

The objectives of this paper are, to explain the interrelationship and complexity of all such sectors, related to the overall development of the state, to demonstrate understanding to the importance of the historical and socio-cultural heritages of the state in the developmental stage.

**Course Outcomes**

Upon completion of this course, students will able to describe the state's geographical profile and organization and characteristics of tourism activities of the state as well as hospitality with the geographical points of view.

**Mode of Assessment**

1. Tutorial examinations
2. Home assignments
3. Seminars / Oral Presentation
4. Online / Offline Quizzes
5. Field studies and its presentation
6. Mid-term Theory Examination
7. End-term Theory Examination
8. PPT presentation on selected topic(s)

# Gg-OE402: Tourism in Maharashtra (Credits 2: Theory Paper)

## Course Contents

| Unit | Teaching and Learning points |
|---|---|
| I | **Basics of Tourism (with reference to Tourism in Maharashtra)**<br>• Concepts: Tour, Tourist, Tourism, Travel, Tourist Place, Tourist Plan, Tourism Business, Route Map and Hospitalities.<br>• Types of Tourism: Geographical, Cultural, Historical, Seasonal, Eco-tourism, Agri-Tourism, Study Tours,<br>• Perspective of Study: Geographical, Historical, Economical, Sociological, Managerial, Research / Scientific,<br>• Elements: Space, Climate, Time, Culture, Accessibility, Attractions etc<br>• Service Sectors: Food, Accommodation, Travel, Entertainment, Finance etc |
| II | **Tourist Places / Heritages from the State (Case Studies)**<br>• Sea / Beaches: Kashid Beach (Near Alibaug), Shriwardhan & Harihareshwar<br>• Water Falls: Lingmala Waterfall (Near Mahabaleshwar), Thoseghar Falls (Near Satara)<br>• Hill stations: Mahabaleshwar, Lonavala<br>• Historical: Shivneri, Murud-Janjira Fort (Near Alibaug)<br>• Archeological: Ajanta Caves, Ellora Caves<br>• Pilgrimage: Pandharpur, Shirdi<br>• Wildlife: Tadoba National Park, Karnala Bird Sanctuary (Near Lonavala)<br>• Research and Education: SRTM University, Nanded and Shivaji University, Kolhapur as the Watershed Management Model<br>• Model Village / Community-Social work: Hiware Bazar, Ralegan-Siddhi |

**Reference Books:**


**English Books**

1) Sampad Kumar Swain and Jitendra Mohan Mishra, 2011, Tourism: Principles and Practices, Oxford Higher Education, Publisher: Oxford University Press
2) Sunetra Roday, Archana Biwaland Joshi Vandana, 2009, Tourism Operations and Management 1st Edition, Publisher: Oxford University Press
3) M R Dileep, 2018, Tourism: Concepts, Theory and Practice, ISBN : 9789385909672, Published by Indian Books and Periodicals
4) Charles R. Goeldner and J. R. Brent Ritchie, 2008, Tourism: Principles, Practices, Philosophies, Publisher: John Wiley & Sons; 11th Revised edition.
5) RBS, 2014, Visitors Guide India: Maharashtra, Publisher: Data And Expo India Pvt. Ltd.; Revised edition (2014), ISBN-10: 9380844093.
6) Road Atlas Maharashtra (English), Samarth Udyog Prakashan.

**Marathi Books**

7) Prof. Sangle Shailaj, 2015, Paryatan Bhugol, Tourism Geography, Diamond Publication Pune.
8) Manoj Hadwalane, 2010, Krishi Paryatan: Ek Shetipurak Vyavsay, Agri-Tourism, Diamond Publication Pune.
9) P.S Deshpande, 2010, Tourist Guide Maharashtra (Marathi), Publisher: Samarth Udyog.
10) Pradod Maruti Mande, 2014, Fort Caste of Maharashtra Book,Wholesale Trader: India MART Member.

# Gg-OE403: Human Geography of World

**Credits 2: Theory Paper**

**Pre-requisite**

The candidate should know the basic information of the world and World's Geographical – Political structure. He / She should be able to read all types of global maps / world map.

**Course Objectives**

The objectives of this paper are, to understand the basic concepts of Human Geography of the World, to study the basics about the whole world and its basics about the human, e.g. population, settlement, agricultural and industrial development.

**Course Outcomes**

After completion of the paper / course, the students will get capabilities and skills to correlate the world wide natural - Human things / resources and manmade activities at primary level. In short, the candidate will assess the cause-n-effect relationships, which will be helpful for answering reasoning types of questions asked in competitive examinations.

**Mode of Assessment**

1. Tutorial examinations
2. Home assignments
3. Seminars / Oral Presentation
4. Online / Offline Quizzes
5. Field studies and its presentation
6. Mid-term Theory Examination
7. End-term Theory Examination
8. PPT presentation on selected topic(s)

# Gg-OE403: Human Geography of World (Credits 2: Theory Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **World Population:**<br>• Distribution as per: Race, Religion, Language, Tribes, Rural and Urban<br>• Population Growth: Overall, High, Medium, Low and Negative<br>• Sex Ratio, Age-Sex Pyramid, Literacy, Life Expectancy<br>• Migration, Brain-Drain, Human Development Index |
| II | **Settlement and Economy:**<br>• Historical Cities / Colonization<br>• Major Cities<br>• Trend of Urbanization<br>• Rural and Tribal Settlement<br>• Health and Sanitation<br>• Agricultural Development: Modern Agronomy, Dairy Farming<br>• Resources: Natural and Manmade, Industrial Development |

**Reference Books:**

**In English**


1. Majid Husain, 2016, World Geography (Fifth Edition: Revised and Enlarged), Rawat Publications, Jaipur.
2. Boehm, 2016, Lencoe World Geography, Publisher: McGraw-Hill / Glencoe.
3. Thomas J. Baerwald and Celeste Fraser, 2005, World Geography: Building a Global Perspective, Student Edition, Publisher: Prentice Hall
4. Houghton Mifflin Harcourt, 2019, World Geography: Student Edition 2019 1st Edition, Publisher: Houghton Mifflin Harcourt.
5. Robert J. Sager and David M. Helgren, 2005, World Geography Today, Published by Holt McDougal

# Gg-OE404: Oceanography-II

**Credits- 2 Theory Paper**

**Pre-requisite:** Basic knowledge about ocean water elements, geographical factors and their relationship with oceanic activities

**Course Objectives:** After completion of the course the student gets knowledge about the oceanic activities are their relation to geographical factors. On successful completion of the module, students should be capable of explaining the ocean floor, submarine relief, ocean circulation and their effect on human activities.

**Course Outcomes:** This course is useful in understanding about basics of weather and ocean circulation. This will be useful for application in their daily activities related to elements of ocean. Knowledge of this course will used for understanding the ocean floor, submarine relief, ocean circulation and their effect on human activities.

**Mode of Assessment:**

1. Tutorial examination
2. Home assignments
3. Seminar
4. Field studies
5. Quizzes
6. Oral presentation
7. Mid-term examination
8. End-term examination
9. Dissertation thesis

## Gg-OE404: Oceanography-II (Credits- 2 Theory Paper)

**Course Contents**

| Unit | Teaching / Learning Points |
|---|---|
| I | **Oceanic Waves:**<br>Wave height, length and period, formation of sea waves and swell<br>Capillary, gravity, shallow water and deep water waves<br>Internal and standing waves, seismic waves (Tsunami) and storm surges<br>**Ocean circulation:**<br>**Tides-** generating forces, Equilibrium Theory of Tides<br>Dynamical Theory of Tides, types of tides,<br>**Ocean Currents** - Factors affecting ocean currents,<br>Ocean currents of Atlantic, Pacific and Indian Ocean,<br>EL. Nino, La Nino and Indian Monsoon |
| II | **Oceanic Deposition**:<br>Types of deposition, types of Coral<br>Lithogenous particles (derived from Rocks)<br>Biogenous particles (derived from organisms)<br>Hydrogenous particles (derived from water),<br>Distribution of sediment deposits<br>Oceanic ooze |
| III | **Man and Oceans:** Oceans as a storehouse of mineral & food resources. |

**Reference Books:**


1. Negi, S.S. (1994): Geographical Science and water resource management; Printwell Jaipur (India)
2. Joseph, w. & Howard, P: Introductory oceanography, McGraw Hill. Kogakusha, Ltd., New Delhi. (International Student Education)
3. Peter K.W. (1970): Oceanography: An Introduction to the marine Environment, John Wiley & Sons Inc, New York.
4. Sharma R.C. (1970): Oceanography for Geographers, Chaitanya publishing house, Allahabad.
5. Negi B.S (1994-95): Climatology and oceanography Kedarnath, Ramanath Meerat, New Delhi.
6. Michael A.M. (1978): Irrigation; theory and practices, Vikas Pub.House, New Delhi.
7. Savinder Singh (1999) Physical Geography, Prayag Pustak Bhavan, Allahabad.
8. Strahler A. (1996) physical Geography; science and system of the Human Environment, New York,
9. Siddhartha K. (1999): Oceanography A Brief Introduction. Kaisalya Pub Pvt. Ltd. New Delhi.
10. Basu S.K. (2003) (ed): Handbook of Oceanography, Global Vision, Delhi
11. Davis Richard A. (1972): Oceanography, Addition Wesley Publishing Co
12.Garrison Tom (2004): Essentials of Oceanography. Thompson, Australia
13. Grant Gross M. (1982): Oceanography, Prentice hall, Ince, New Jersey
14.King Cuchlain A. M (1962): Oceanography for Geographers (ED) Edward Arnold
15.Thurman Harold V. (1985): Introductory Oceanography. Bell & Howell Co. London

# Gg-OE405: Biogeography

**Credits 2: Theory Paper**

**Pre-requisite**

The candidate should know the basic concepts from physical and Environmental Geography.

**Course Objectives**

The objectives of this paper are, to understand the basic concepts of physical Geography and Environmental Geography, to study the principles of Plant, Soil, Water and Climatic evolution. Its prime aim is to understand and be capable to observe and note the ecological things and related changes on the earth.

**Course Outcomes**

After completion of the paper / course, the students will get capabilities and skills to correlate the natural – Environmental cycles and all kinds of activities at primary level. In short, the candidate will assess the cause-n-effect relationships, which will be helpful for answering reasoning types of questions asked in competitive examinations.

**Mode of Assessment**

1. Tutorial examinations
2. Home assignments
3. Seminars / Oral Presentation
4. Online / Offline Quizzes
5. Field studies and its presentation
6. Mid-term Theory Examination
7. End-term Theory Examination
8. PPT presentation on selected topic(s)

## Gg-OE405: Biogeography (Credits 2: Theory Paper)

**Course Contents**

| Unit | Teaching and Learning points |
|---|---|
| I | **Basics of Biogeography:**<br>• Nature, Scope & Significance.<br>• Elements of Biogeography with special reference to India.<br>• Geographical basis of plant classification.<br>Plant Geography: Influence of physical environment on plants<br>• Bioclimatic frontiers.<br>• Soil: Colour, texture, Structure, Soil horizons. Soil classification.<br>• Forests: Need, Types, Deforestation, Forestation & Social forestry in India. |
| II | **Environment Balance:**<br>• Environmental Control: on Plant and Animal.<br>• Ecosystems: Forms & Functions (Major Types)<br>• Conservation of Ecosystems: Need, Conservation & Management<br>• Ecological Balance: Need and Limitations |

## Reference Books:

**In English**


1. Barry C., 1977, Biogeography – An ecological & evolutionary Approach, Oxford.
2. Cole M.M., 1975, Recent developments in Biogeography, Longman, London.
3. Darlington P.J. (1957): Zoogeography – Methew, New York.
4. Joy T.V. (1997); Biogeography – study of plants in the ecosphere.
5. Mathur H.S. (1986): Elements of Biogeography, Pointer Jaipur.
6. Martin C. (1975): Plant Geography. Methuen, London.
7. Muller P. (1986): Biogeography; Harper & Row, New York.
8. New big in M.I. (1986): Plant & Animal Geography: Methuen, London.
9. Pears N. (1985): Basic Biogeography, Longman, London.
10. Watts, d. (1971): Principles of Biogeography, McMillan, London.
11. Simmms T. G.: Biogeography, Natural & Cultural, Arnold & Heinemann, London.